



MISSISSIPPI POWER & LIGHT COMPANY

Helping Build Mississippi

P. O. BOX 1640, JACKSON, MISSISSIPPI 39205

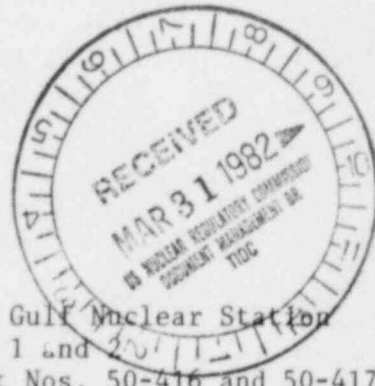
March 26, 1982

JAMES P. MCGAUGHY, JR.
ASSISTANT VICE PRESIDENT

U.S. Nuclear Regulatory Commission
Office of Nuclear Reactor Regulation
Washington, D.C. 20555

Attention: Mr. Harold R. Denton, Director

Dear Mr. Denton:



SUBJECT: Grand Gulf Nuclear Station
Units 1 and 2
Docket Nos. 50-416 and 50-417
File 0260/L-860.0
GGNS Quality Assurance and
Design Control Program
AECM-82/119

In view of the recent quality assurance and design control concerns involving the Diablo Canyon Project, Mississippi Power & Light Company (MP&L) has conducted a detailed review of the procedures and practices used in the control of the design and construction of the Grand Gulf Nuclear Station (GGNS). This review has reinforced our confidence that the Grand Gulf Nuclear Station has been designed and constructed with adequate controls and can be operated safely.

This letter summarizes the quality assurance and design control practices used on the Grand Gulf Nuclear Station Project and documents the information provided to you during our February 8, 1982, meeting. The following information highlights some of the significant design control and quality assurance features which support our confidence in the project. The attachments provide additional information on the quality assurance and design control programs and examples of objective evidence showing satisfactory performance.

I. MP&L has implemented a comprehensive system of checks and balances (including Quality Assurance audits), and has not relied solely on contractors to maintain a thorough quality assurance program.

A. MP&L QA ORGANIZATION, INDEPENDENCE AND EXPERIENCE.
(See Figure 17.2-1[2/5/82], Attachment A Sheet 1)

1) MP&L has a strong commitment to quality assurance. The Quality Assurance (QA) organization is independent of the Engineering, Construction and Operating organizations with freedom to identify quality problems and reports directly to senior management. The Manager of QA reports directly to the Senior Vice President - Nuclear; line managers with direct responsibility for engineering and operations report through the Assistant Vice President,

Boo!
s
1/1
Limited Dist.
SEND Encl. to:
PM
Vollmer
PDR
LPDR
NSIC
NTIS
Reg Files

8204010337 820323
PDR ADOCK 05000416
A PDR

umber Middle South Utilities System

Nuclear Production or the Site Manager. At the GGNS Construction Site, the MP&L Quality Assurance organization functions under the direction of the Quality Assurance Field Supervisor (QAFS) independently of the construction site organization. The QAFS reports off-site to the Manager of Quality Assurance who reports in turn to the Senior Vice President - Nuclear. In May 1974, the first tree was cut to commence site construction work at the Grand Gulf Nuclear Station (GGNS) under a Limited Work Authorization (LWA) issued by the Atomic Energy Commission (AEC). The Construction Permit for GGNS was issued in September 1974. Before either of the above milestones was reached, a QA Program had been written, a QA organization (Quality Surveillance Committee [QSC]) had been established and two team audits of Bechtel's design and design control activities had taken place.

- 2) MP&L's commitment to Quality Assurance starts at the executive level. Throughout the life of the Grand Gulf Project, MP&L management has insisted on obtaining those items or services for which we contract. To quote our President & Chief Executive Officer, Mr. D. C. Lutken, "You get what you inspect, not what you expect." Reference Attachment A, Sheet 2 for a copy of the quote which is posted in MP&L offices.
- 3) MP&L management has emphasized their support for quality and nuclear safety at the jobsite. In August 1977, a copy of a notice (to address employee/worker concerns) was given to all Bechtel construction manual and non-manual employees, and all contractors at the Grand Gulf Construction site. MP&L posted this notice at various locations on the site on October 3, 1977. The notice was signed by the Senior Vice President - Nuclear (Vice President in 1977). That notice stated in part:

"If at any time you see an area of work that you feel is not in accordance with quality requirements, please bring forth this information to your immediate supervisor. If you feel the matter is not being resolved through this normal channel, then you may go directly to Bechtel's Quality Control and Quality Assurance personnel. Let us assure you that our primary concern on this jobsite is nuclear safety and quality and that any such matters will receive immediate attention.

You have the right and obligation to notify MP&L anytime you feel that required quality is being compromised, but we believe that if you avail yourself of the above opportunities you will find this action will never be necessary. If you see the need for a contact with MP&L, please call any of the following Mississippi Power & Light Company personnel:"

*(The notice then listed the names and telephone numbers of three MP&L QA personnel: the Manager of QA, the QA Field Supervisor and a QA Engineer.)

"If, after contacting the persons mentioned above, you are still concerned that certain quality or nuclear safety requirements at the station are not being met, or if for some reason you are hesitant about contacting these people, you may bring these matters to the attention of a Nuclear Regulatory Commission inspector or the nearest Nuclear Regulatory Commission Regional Office. The Nuclear Regulatory Commission Regional Office will accept collect telephone calls from nuclear industry workers who wish to speak with them concerning quality of work, radiological safety or safeguards programs at a nuclear power facility. Region II, Directorate of Regulatory Operations of the Nuclear Regulatory Commission, located in Atlanta, Georgia (Telephone: 404-221-4503) has jurisdiction over Grand Gulf Nuclear Station..."

Reference Attachment A, Sheet 3 for a copy of the July 1977 letter.

- 4) The GGNS Site Quality Assurance Group has expanded over the years to keep pace with the construction activities, and currently consists of fourteen qualified professionals assisted and augmented by a General Office QA Staff of seventeen professionals.

The thirty-one QA professionals located both on site and in the General Office have a total of 181.5 years of nuclear experience or approximately 5.85 years per professional. These QA professionals have a total of 233.5 years of other technical or engineering experience for an average of 7.53 years per QA professional. Eighteen QA professionals have a four year degree in engineering or a related science and six hold Professional Engineer registrations. There are five QA professionals with four year degrees in non-technical subjects and two with Masters degrees. Included in this group are two MP&L QA consultants, one on-site and one off-site. Collectively these consultants have over thirty years of nuclear experience. Reference Attachment A, Sheets 4, 5, 6 & 7 for QA Organization Charts and summary of QA education and experience.

- 5) The Manager of Quality Assurance has responsibility and authority to stop unsatisfactory work or to stop further processing of unsatisfactory materials during design and construction of nuclear plants such as Grand Gulf. Quality Assurance personnel are required to promptly report conditions adverse to quality which need immediate

action but, which cannot be resolved at the respective locations, to the Manager of Quality Assurance or his designated alternate for action. There have been six cases of stop-work by the Manager of Quality Assurance at GGNS. The three external stop-works Nos. 1, 4 & 5 are directly related to the subject of control of design. Reference Attachment A, Sheets 8 and 9 for a copy of the MP&L stop-work status log.

Bechtel also has a Quality Assurance organization located both on site and in their Engineering offices. Bechtel has issued a total of 24 stop-work orders covering Construction and Engineering activities.

B. MP&L's QA AUDITING PERFORMANCE/PARTICIPATION HAVE BEEN EXTENSIVE

- 1) Audits of the architect-engineer's (A-E) design activities are given special attention by MP&L Corporate Quality Assurance management. These audits cover all aspects of the quality assurance program and provide assurance of compliance to the requirements of 10CFR50, Appendix B.

Audits of the A-E were performed by qualified MP&L quality assurance personnel. Occasionally, independent technically qualified design personnel with expertise in a particular design activity were assigned to the audit teams as specialists. (Examples of MP&L Audit Checklists are provided in Attachment G.)

MP&L's twelve audits performed on the architect-engineer identified 233 nonconformances with all but four (4) items being resolved as of December 31, 1981. These four (4) items do not directly relate to the adequacy of design or construction. (See Attachment B for more detail.)

- 2) Twenty (20) audits of Bechtel construction identified 216 nonconformances with all items resolved as of December 31, 1981.

Since June of 1979, Monitoring Audits have been performed at GGNS. As of February 1, 1982, 191 Monitoring Audits have been conducted on site. MP&L's Quality Assurance section is currently performing such Monitoring Audits at the rate of about 150 a year.

- 3) MP&L QA monitoring activities on construction work have identified 116 nonconformances with all but 4 items resolved as of December 31, 1981. These four items do not directly relate to the adequacy of design or construction.

Reference Attachment B, Sheets 1 & 2 for listing of construction audits and numbers of nonconformances identified.

- 4) MP&L QA auditors assisted and participated in Bechtel's and Middle South Services' (MSS) audits of GE - San Jose (NSSS) and GE - Wilmington (nuclear fuel). MP&L auditors were fully qualified, had audit assignments, and otherwise were full-fledged participants; they were not simply observers. Ten audits of GE - Wilmington were performed with Bechtel QA between 1974 and the end of 1981. Forty-nine findings/nonconformances were identified; with all but one resolved as of December 31, 1981. This item does not directly relate to the adequacy of design.
- 5) Fifteen audits of GE - San Jose have been conducted by Bechtel from 1973 through 1981. During the audits, seventy-six (76) findings/nonconformances were identified. All but three (3) of these items were resolved as of December 31, 1981.
- 6) During the period (1980) when fuel for GGNS Unit 1 was being manufactured, MSS performed four audits of GE - Wilmington. Eight findings/nonconformances were identified, and all have been resolved. Reference Attachment B, Sheets 3, 4 & 5 for listing of audits and MP&L participation.

C. EXTERNAL ASSESSMENTS ARE MADE OF THE EFFECTIVENESS OF MP&L'S QA PROGRAM

- 1) Three organizations external to MP&L QA assess the effectiveness of the QA program for GGNS: MP&L Internal Auditing; Middle South Services, Inc. (MSS); and the U.S. Nuclear Regulatory Commission (NRC).

In 1973 the President & Chief Executive Officer of MP&L initiated a management audit program for the Grand Gulf Project. Eleven Management Audits have been performed, resulting in a number of recommendations to various organizations including QA.

- 2) In 1980 the MP&L Manager of Quality Assurance requested that the MSS, Inc. QA organization perform audits on MP&L QA activities. Two audits have been performed by MSS, Inc. QA with 8 findings/nonconformances identified. All items have been resolved. Reference Attachment C, Sheets 1 & 2 for listing of external audits.
- 3) The NRC's Office of Inspection and Enforcement, Region II, has in the past looked thoroughly at the QA Program's implementation and effectiveness. As recently as

December 1981, an inspection by Region II inspectors (Report Nos. 50-416/81-55 and 50-417/81-24, See Attachment J) found the areas of Design Assurance, Design Assurance Audits, and Design inputs in compliance with applicable requirements. In the area of Design Assurance Audits, the inspection report (Details, item 6.d) stated in part: "The MP&L audits of Bechtel for calendar year 1981 were reviewed to determine that objective and scope established in the audit plan was [sic] accomplished, that followup on audit findings was timely, and that corrective action was acceptable. ...Within this area, no violations or deviations were identified."

D. MP&L QA SUPPLIER EVALUATION PROGRAM.

In 1975 MP&L QA initiated a Supplier Evaluation Program in which our QA auditors accompanied those of our A-E. During the A-E's Supplier Quality (SQ) audits of the various subtier suppliers, the MP&L auditor evaluated the Bechtel Audit Team Leader, audit team members, and conduct of the supplier audit. Participation was controlled to allow us to evaluate virtually all of the active Bechtel SQ Audit Team Leaders. This provided confidence in the adequacy of the audits conducted by the A-E for MP&L. Fourteen audits covering eleven major suppliers to GGNS were completed under this Program through December 1979.

Reference Attachment D, Sheets 1 & 2 for listing of suppliers evaluated.

E. BECHTEL INITIATED LICENSING COMMITMENT TRACKING SYSTEM (LCTS) AS A RESULT OF MP&L QA AUDIT FINDING.

During the MP&L audits of Bechtel - Gaithersburg in the Fall of 1973 and 1974, QA identified a lack of tracking to assure that our commitments were translated into design documents. As a result, Corrective Action Request (CAR) 20 was issued to Bechtel. The corrective action resulted in the creation and implementation of a first-of-a-kind (at least for Bechtel) computer based LCTS which has a data base of all pertinent GGNS commitments which it then tracks until they have been incorporated into the applicable design documents. The system, operational since March 1976, continues to be an integral part of the Bechtel GGNS Project licensing effort. Reference Attachment E, Sheet 1 for summary of LCTS system.

F. MP&L HAS BEEN OPEN WITH THE NRC.

Since reporting began on September 23, 1974, MP&L has identified 196 Potentially Reportable Deficiencies (PRDs). Of these, 90 or 46% later have been determined to be non-reportable. We believe that this type of openness provides the NRC and the public an assurance that any potential items of concern will be presented and available for scrutiny and independent assessment of disposition. Reference Attachment F, Sheets 1-14 for PRD summary listing.

- G. MP&L QA HAS, THROUGH THE AUDIT PROGRAM, IDENTIFIED AS NON-CONFORMANCES A NUMBER OF SALIENT ITEMS AT BECHTEL GAITHERSBURG DESIGN WHICH REQUIRED BOTH QA AND TECHNICAL EXPERTISE TO IDENTIFY.

As indicated above, MP&L QA has performed or participated in audits which have identified a considerable number of findings/nonconformances on the Bechtel design organization (Gaithersburg). Examples of MP&L QA involvement in the design control activity have been provided in Attachment G, which summaries nonconformances identified and provides copies of audit checklists. It is our belief that the depth and technical content of these type items provides a level of confidence that MP&L QA can and does identify the more salient nonconformances in the design control process for GGNS.

A list of specific audit checklists and salient nonconformances is provided in Attachment G.

- H. MP&L QA ACTION IN EXCESS OF REQUIREMENTS.

MP&L QA has consistently maintained a conservative approach to the resolution of nonconformances. An example of this approach is evident in the disposition of a problem relating to the code acceptability of our NSSS vendor supplied radiographs. MP&L contracted Nondestructive Testing Engineering Division, Hartford Steam Boiler Inspection to perform a 100% review of on site GE supplied film for Unit 1. The review was conducted by a team of four reviewers, one certified Level III and three certified Level II interpreters. On completion of this review, MP&L acquired the services of two recognized expert consultants in the field of radiography and they, along with a MP&L QA representative experienced in radiography, reviewed each potential problem that had been identified by the review team and recommended a disposition to each concern.

MP&L's efforts in this area far exceeded those recommended by the NSSS vendor. However, they were considered by MP&L to be the amount of effort required to reach a determination that operational safety would in no way be compromised or indeterminate. A complete discussion of this matter is currently on file with the NRC in our closure of Potentially Reportable Deficiency 80/28.

- II. MP&L employed an experienced architect-engineer and constructor who has performed safety related design and construction work under an approved Quality Assurance Program. The Quality Assurance Program provides the basis for addressing the general requirements in the design, construction, and checkout testing performed for Grand Gulf. In addition, several major design verification efforts, including some conducted by the NRC, provided further assurance of the adequacy of the design control program.

A. MP&L EMPLOYED AN EXPERIENCED ARCHITECT-ENGINEER AND CONSTRUCTOR.

Bechtel Power Corporation has been employed as the architect-engineer since the inception of the Grand Gulf Project. Bechtel has had extensive experience in the power plant industry, including 30 years in the nuclear energy area. It has designed and/or constructed 91 nuclear power plant units worldwide, with 34 units now in operation. Bechtel plants include Skagit and Kuosheng, both Mark III plants, the latter being the first BWR 6/Mark III in operation. Total nuclear power capacity designed and/or constructed by Bechtel accounts for 78,000 MWe.

B. THE PROJECT DESIGN CONTROL PROCEDURES PROVIDE FOR SEVERAL LEVELS OF REVIEW AND THE PROJECT HAS UTILIZED FEW TECHNICAL SERVICES AGREEMENTS.

The Bechtel system of design and review is based on the project system which provides as many as four levels of review above the responsible engineer who performs the work. These levels of review include the checker, the discipline group leader, the discipline group supervisor, and the Project Engineer.

Due to the depth of expertise available within the Bechtel organization the Project Engineer has utilized very few technical services agreements on Grand Gulf. This has had the effect of minimizing the number of external design interfaces on the project. The few organizations with which Bechtel has technical services agreements were audited to assure their compliance with the applicable QA program.

Engineering on-project technical reviews provide for a departmental evaluation of design work by the discipline groups. The cognizant Chief Engineers provide an intra-departmental monitoring of Project Engineering design activities. The Grand Gulf Project has had twenty-six (26) technical reviews since the inception of the program in 1978.

In addition, each discipline Chief Engineer reviews selected documents specified on the Project Design Control Checklist. The Chief Engineer's review and approval is accomplished on drawings which are to be "issued for construction" and on specifications which will be transmitted outside Bechtel offices for client approval, or for bids, purchase orders, etc. All drawing and specification revisions thereafter require the same internal project review and approval as the original design. The Chief Engineer's review and approval is required for document changes that affect design concepts, design criteria, and SAR commitments. The approval of these documents by the discipline and Nuclear Chief Engineer are documented on a Design and Review Notice form.

- C. A QUALITY ENGINEER AND A SUPPORTING STAFF ARE ASSIGNED TO THE PROJECT TO VERIFY EFFECTIVE IMPLEMENTATION OF THE QUALITY PROGRAM AMONG EACH DESIGN DISCIPLINE.

The Project Quality Engineer and his supporting staff are assigned to the project to perform the detailed work involved in verifying that the engineering design is in compliance with project procedures. During the time period of 1974 through the end of the year 1981, a total of 260 surveillances were performed by the project quality engineering staff. A review of these records reveals that findings were primarily of an administrative nature and did not reflect technical problems.

The Project Quality Engineer and his staff review:

- Design calculations, specifications, and drawings.
- Design Control Checklist, Q-List, Control Logs, vendor controls, and other design interface controls.
- Processing of nonconformance reports, field change requests, and safety analysis reports.

Other responsibilities of the Project Quality Engineer and his staff include:

- 1) Developing, coordinating, and scheduling indoctrination and training sessions on the engineering procedures.
- 2) Preparing engineering procedures that assure compliance with the Quality Assurance Program.
- 3) Coordinating the development, preparation, and maintenance of the Design Control Checklist. This includes verification that the design reviews were completed in a timely manner and that the resulting Design Review Notices are properly completed.

- D. DESIGN VERIFICATION ACTIVITIES HAVE BEEN AN INTEGRAL PART OF THE DESIGN PROCESS FOR THE GRAND GULF NUCLEAR STATION.

- 1) Technical reviews of on-project engineering activities are provided by the cognizant Chief Engineer and/or his staff, who are not associated directly with the project engineering team. These reviews are conducted annually by the Chief Engineer for departmental evaluation of selected design work on the project. Follow-up corrective measures, when deficiencies are discovered, are established and documented. Additionally, followup actions for design improvement purposes, when appropriate, are established and implemented.
- 2) All safety related structures, systems, and components in the Grand Gulf Containment Building were reanalyzed between 1978 and 1981 as a result of the Mark III

containment loads evaluation (new loads adequacy). The most significant issue in the design of the Grand Gulf containment has been the incorporation of dynamic loads associated with the suppression pool that were not included in the original design of the containment. The initial design of the containment was released and construction had begun and progressed considerably when, in late 1975, it was determined that the Mark III pressure/suppression containment concept had not recognized certain dynamic loads.

The suppression pool hydrodynamic load criteria was a continually evolving design loading criteria as information became available from a variety of full scale and reduced scale testing facilities and analyses. Structural redesign work was initiated in 1975 and during the ensuing years, numerous redesigns took place while the load testing program was in progress. In March 1978 it was determined that the basic hydrodynamic loads that were being used for the design may not totally envelope the test program results. It was then necessary to reanalyze all safety related structures, systems, and components within the Grand Gulf containment.

Previously established detailed procedures for design control were used for the reanalysis. In March 1978 the reanalysis and redesign began. This reanalysis and redesign included safety related piping, supports, HVAC (heating, ventilating, air conditioning) duct work and its associated supports, conduit supports, cable tray and associated supports, structures, and equipment. This reanalysis and redesign work, carried out under stringent design control, gives us additional confidence that safety related systems have been designed properly.

- 3) NRC IE Bulletin 79-14 requires that computer analyzed seismic Category I piping be inspected to insure that the as-built condition agrees with the as-analyzed condition. Piping systems were walked-down by trained personnel utilizing a written procedure. The walkdown team is independent from the construction team and works under the direction of the Bechtel Project Plant Design Engineering Supervisor. The walkdown team documents the as-built conditions; and the data collected are evaluated by stress analyst for reconciliation with the original analysis. All open items are then tracked on a system punchlist. Several walkdowns are performed until all open items for a given system are closed (i.e., as-built condition agrees with the as-designed condition). Finally, a report is prepared by the stress analyst summarizing the results of the inspection.

- 4) Design verification during startup testing is accomplished by the Checkout and Turnover Organization (CTO) prior to system turnover to MP&L and MP&L Startup after the equipment is turned over to MP&L. CTO and MP&L Startup testing is performed to the latest revision of documents with scheduled and unscheduled QC surveillance to insure conformity to test procedures and design requirements. CTO and MP&L Startup field reports document and initiate corrective action for design deficiencies, component failures, safety hazards, or as-built conditions not per the design documents. All startup field reports are reviewed by applicable quality departments and organizations for 10CFR (50.55e and 21) considerations.
- 5) An Engineering Review Team (ERT) is utilized at Grand Gulf to review the installation of all safety related equipment for possible exposure to conditions or hazards that may affect the ability of the equipment to perform its safety function. The ERT does not relieve Project Engineering or Field Engineering of their respective design responsibilities. The intent is to have an independent review to assure that all possible conditions or hazards have been identified.

The design criteria used as a basis for review of potentially hazardous conditions are as follows:

- Design Criteria Manual, "Failure of Non-seismic Category I Equipment Which May Strike Safety Related Equipment During a Seismic Event"
- Specification M-195.0: 1. "High Energy Pipe Break",
2. "Jet Impingement for a High Energy Pipe Break",
3. "Flooding or Spray Wetting"
- FSAR Section 3.5: "Missile Protection"
- Specification J-702.0: "Separation of Redundant Safety Related Offline Instruments"

The review itself is accomplished by an interdisciplinary team composed of representatives from the various project and field disciplines, as determined by the Project Engineering ERT Coordinator. The ERT performs a walkdown of all areas containing safety related equipment on a room-by-room basis. Any potential hazards are reported and logged in accordance with Bechtel Project Engineering procedures.

The Project ERT Coordinator organizes the walkdown teams, plans the walkdown schedules, logs all documentation, and monitors all outstanding ERT items. The final ERT walkdown effort has been completed and all outstanding

ERT reports have been assigned to the responsible disciplines for evaluation and disposition.

After final walkdown of a given area, Field Engineering is notified of the walkdown completion. Field Engineering then monitors all additional construction activities in that area and notifies the Project ERT Coordinator of any additional ERT evaluations that may be required.

- 6) As a part of the NRC's technical review of the Grand Gulf Nuclear Station Final Safety Analysis Report, two independent technical design verification audits were conducted. These audits included: a structural design verification audit conducted by EG&G for the Structural Engineering Branch, and a confirmatory piping stress analysis conducted by Pacific Northwest Laboratories (Battelle) for the Mechanical Engineering Branch.

In March 1980, EG&G Idaho, Inc., contracted by the NRC Structural Engineering Branch, conducted an independent structural design verification audit of Grand Gulf. This extensive technical audit was conducted to review and assess the techniques and methodology employed to demonstrate compliance of all Category I structural design to applicable codes, standards, and regulatory guidance. The pre-audit checklist used to conduct this week long audit is included as Attachment I.

After the initial audit, EG&G performed an extensive independent seismic analysis of the Grand Gulf Containment and Auxiliary Building. EG&G independently developed seismic mathematical models and used independent computer codes in performing the analysis. The EG&G analysis confirmed the acceptability of the Grand Gulf analysis.

In summary, the independent design verification found techniques, methodologies, and compliance to codes, standards, and regulatory guidance acceptable.

During the Grand Gulf licensing review Pacific Northwest Laboratories (Battelle), under contract to NRC's Mechanical Engineering Branch, conducted an independent confirmatory analysis of a major Grand Gulf stress analysis.

The piping system chosen was a Main Steam Safety Relief Valve line. This piping is subjected to a wide range of loading conditions which include static (weight and thermal), seismic (OBE and SSE), dynamic (steam hammer force-time history), and hydrodynamic (SRVA, chugging, etc.) conditions. Battelle confirmed calculated stresses, strains, and displacements. The confirmatory analysis verified that the methodologies used in the original analysis were correct.

Several other design verifications were conducted which together with those described above provide additional assurance that the quality assurance and design control programs utilized on the Grand Gulf Project are adequate.

In summary, MP&L has a strong corporate commitment to design control and quality assurance. MP&L selected an experienced architect-engineer/constructor with a well established design control program and minimal external interface. MP&L has implemented a well defined, effective and independent quality assurance program. The MP&L Quality Assurance Section has maintained an active involvement in all phases of the Grand Gulf Project. Through comprehensive monitoring and auditing activities and verification of both remedial and preventive corrective actions, MP&L is confident that the requirements of 10CFR50, Appendix B, have been implemented and that the safety related aspects of GGNS Unit 1 are acceptably designed and constructed.

MP&L has strong confidence in the quality assurance and design control programs established for GGNS and in the overall design adequacy and safety of the plant. As a result of these programs and the confirmations of their effectiveness through independent audits, design verifications, and NRC inspections; MP&L believes that Grand Gulf Nuclear Station has been designed and constructed in a way that will assure it meets the requirements of the Final Safety Analysis Report.

Yours truly,

L F De
for J. P. McGaughey

JPM:lm
Attachments

cc: Mr. N. L. Stampley (w/o)
Mr. C. B. Taylor (w/a)
Mr. R. B. McGehee (w/a)
Mr. T. B. Conner (w/a)

Mr. Richard C. DeYoung, Director (w/a)
Office of Inspection & Enforcement
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Mr. J. P. O'Reilly, Regional Administrator (w/a)
Office of Inspection & Enforcement
U.S. Nuclear Regulatory Commission
Region II
101 Marietta Str., N.W., Suite 3100
Atlanta, Georgia 30303

SUMMARY OF ATTACHMENTS

- A-1 Corporate Organization Chart
- A-2 Quote from CEO Mr. D. C. Lutken
- A-3 July 1977 Letter to Persons Involved With GGNS
- A-4 MP&L Site QA Organization Chart
- A-5 MP&L General Office Organization Chart
- A-6 & 7 Summary of MP&L QA Education & Experience
- A-8 & 9 Summary of MP&L Stop Work Orders
- B-1 Audits Performed on A/E
- B-1 & 2 Audits Performed on Construction
- B-3 Audit of GE Internal Components
- B-4 Audits of GE Engineering, Procurement & C&ID
- B-5 Audits of GE Fuels
- C-1 & 2 MP&L Management Audits & Middle South Services Audits of QA Program
- D-1 & 2 Evaluation of Supplier Audit Program
- E-1 Licensing Commitment Tracking System
- F-1-14 Summary Listing of Potentially Reportable Deficiencies
- G-1 Summary of Attachment G Inclosures GI through GVIII listed below:
 - G-I-1-27 MP&L Audit of Bechtel Gaithersburg, October 29 - November 1, 1974
 - G-II-1-42 MP&L Audit of Bechtel Gaithersburg, August 30 - September 3, 1976
 - G-III-1-64 MP&L Audit of Bechtel Gaithersburg, July 19 - 22, 1977
 - G-IV-1-77 MP&L Audit of Bechtel Gaithersburg, July 17 - 21, 1978
 - G-V-1-155 MP&L Audit of Bechtel Gaithersburg, June 19 - 22, 1979
 - G-VI-1-31 MP&L Audit of Bechtel Gaithersburg, January 5 - 9, 1981
 - G-VII-1-182 MP&L Audit of Bechtel Gaithersburg, July 13 - 17, 1981
 - G-VIII-1-34 MP&L Audit of Bechtel Gaithersburg, September 28 - October 1, 1981

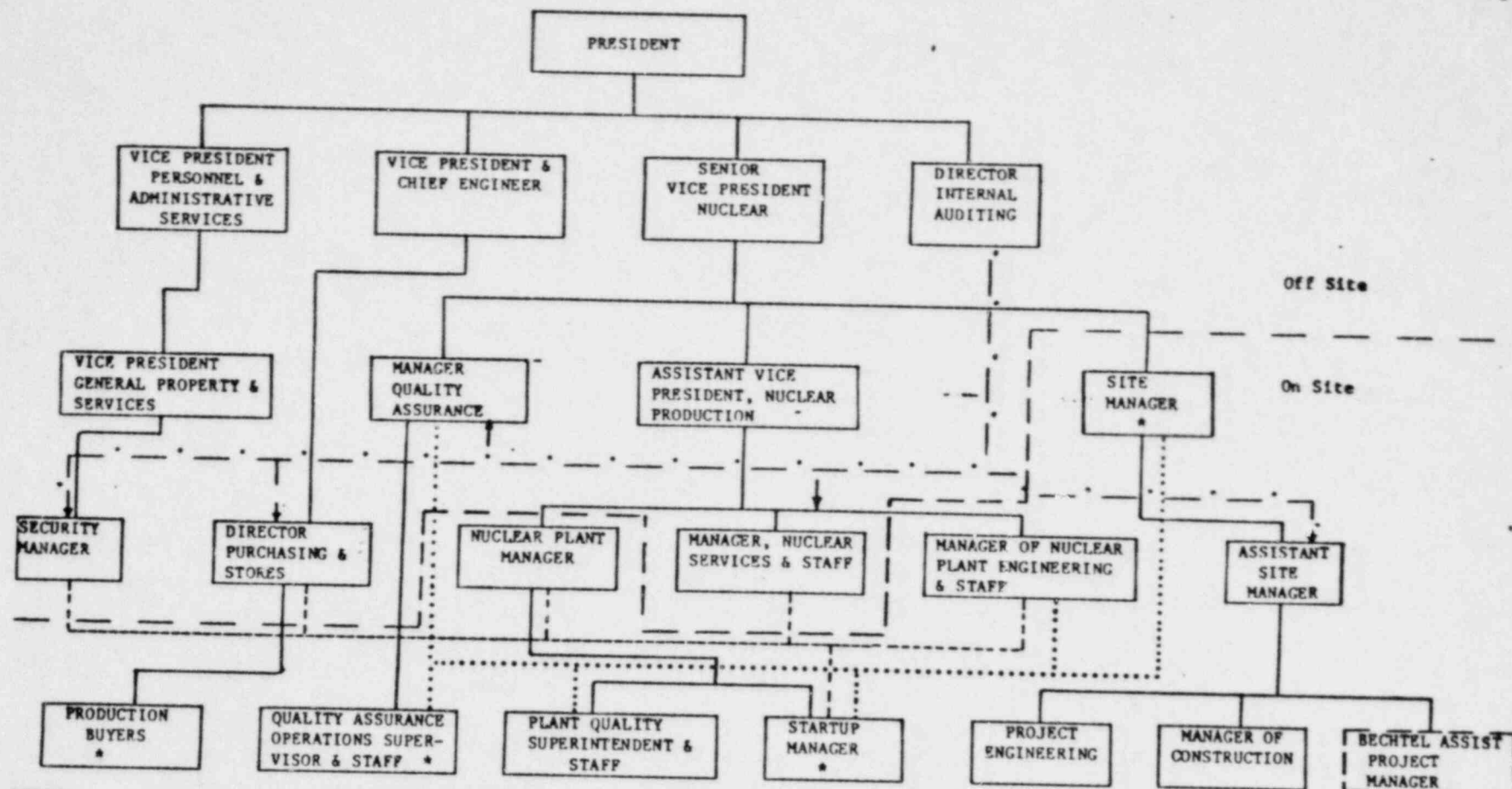
- H-1-39 Design Control for the Grand Gulf Nuclear Station, Units 1 and 2
- I Pre-Audit Checklist - Structural Design Verification Audit for GGNS
- J Quality Assurance and Design Control Handouts of the February 8,
1982 Meeting with NRC - NRC Inspection Report Nos. 50-416/81-55
and 50-417/81-24



OPERATIONAL QUALITY ASSURANCE MANUAL
TITLE: ORGANIZATION

A-1

REV. 3	DATE
PAGE 1 of 1	2/5/82
	17.2-1



LEGEND

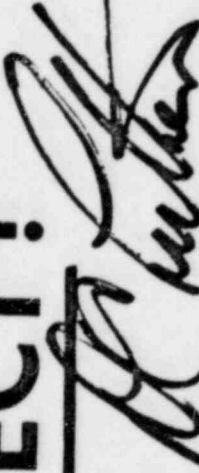
..... WORKING & QUALITY INTERFACE & DIRECT COMMUNICATION
—— TECHNICAL & ADMINISTRATIVE AUTHORITY
- - - MANAGEMENT AUDITS
- - - WORKING INTERFACE & COMMUNICATION
ON SITE/OFF SITE BOUNDARY LINE
MP&L OPERATIONAL QUALITY ASSURANCE PROGRAM
ORGANIZATION FIGURE 17.2-1

* LOCATED PHYSICALLY ON SITE BUT
CONSIDERED OFF-SITE WITHIN THE PROGRAM.

Attachment A

YOU GET WHAT YOU INSPECT

NOT WHAT YOU EXPECT!


.....D. C. Lutken



MISSISSIPPI POWER & LIGHT COMPANY
Helping Build Mississippi
 P. O. BOX 1640, JACKSON, MISSISSIPPI 39205

NORRIS L. STAMPLEY
 VICE PRESIDENT

July 1977

TO ALL PERSONS DIRECTLY INVOLVED WITH
 THE GRAND GULF NUCLEAR STATION PROJECT

As you are all aware, any work, equipment or material involved in any of the areas of the station that are critical to nuclear safety are subject to the requirements of a Quality Assurance Program. This requirement is to assure that all aspects of this work meet preestablished design and installation criteria, and that the necessary documentation exists to show that requirements have been met. The Quality Assurance Program details the plant design and construction practices to a much greater extent than most other construction work. There is also a requirement for a much greater level of inspection, surveillance and documentation.

Mississippi Power & Light Company is totally responsible to the Nuclear Regulatory Commission to assure that all work meets the necessary requirements. Each Contractor, however, has the prime responsibility for the quality of his own work. Bechtel acts as MP&L's agent for quality control inspection and for quality assurance surveillance and audit of their own and Contractor's work. Mississippi Power & Light Company maintains independent quality assurance review and audit over all site activities.

The craftsman's skill, experience and qualifications, working within established procedures and requirements, are a vital necessity to assure high quality work. We feel strongly that all work to date has resulted in an installation of very high quality. This has resulted from your high level of skill, workmanship, and supervision in conjunction with quality procedures and design details. We fully expect this same high level of quality to be maintained through the completion of construction.

If at any time you see an area of work that you feel is not in accordance with quality requirements, please bring forth this information to your immediate supervisor. If you feel the matter is not being resolved through this normal channel, then you may go directly to Bechtel's Quality Control and Quality Assurance personnel. Let us assure you that our primary concern on this jobsite is nuclear safety and quality and that any such matters will receive immediate attention.

You have the right and obligation to notify MP&L anytime you feel that required quality is being compromised, but we believe that if you avail yourself of the above opportunities you will find this action will never be necessary.

If you see the need for a contact with MP&L, please call any of the following Mississippi Power & Light Company personnel:

Mr. J. C. Fuller, Quality Assurance Engineer (601) 437-8011, Ext. 541

Mr. P. W. Sly, Quality Assurance Field Supervisor (601) 437-8011, Ext. 318

Mr. T. E. Reeves, Jr., Manager of Quality Assurance (601) 969-2476

If after contacting the persons mentioned above, you are still concerned that certain quality or nuclear safety requirements at the station are not being met, or if for some reason you are hesitant about contacting these people, you may bring these matters to the attention of a Nuclear Regulatory Commission inspector or the nearest Nuclear Regulatory Commission Regional Office. The Nuclear Regulatory Commission Regional Office will accept collect telephone calls from nuclear industry workers who wish to speak with them concerning quality of work, radiological safety or safeguards programs at a nuclear power facility. Region 11, Directorate of Regulatory Operations of the Nuclear Regulatory Commission, located in Atlanta, Georgia (Telephone: 404 221-4503) has jurisdiction over Grand Gulf Nuclear Station. MP&L is also posting notices at different places in the station informing nuclear workers of these improved channels of communication with Nuclear Regulatory Commission inspectors and Regional Office.

Very truly yours,

N. L. Stampley
 N. L. Stampley
 Vice President

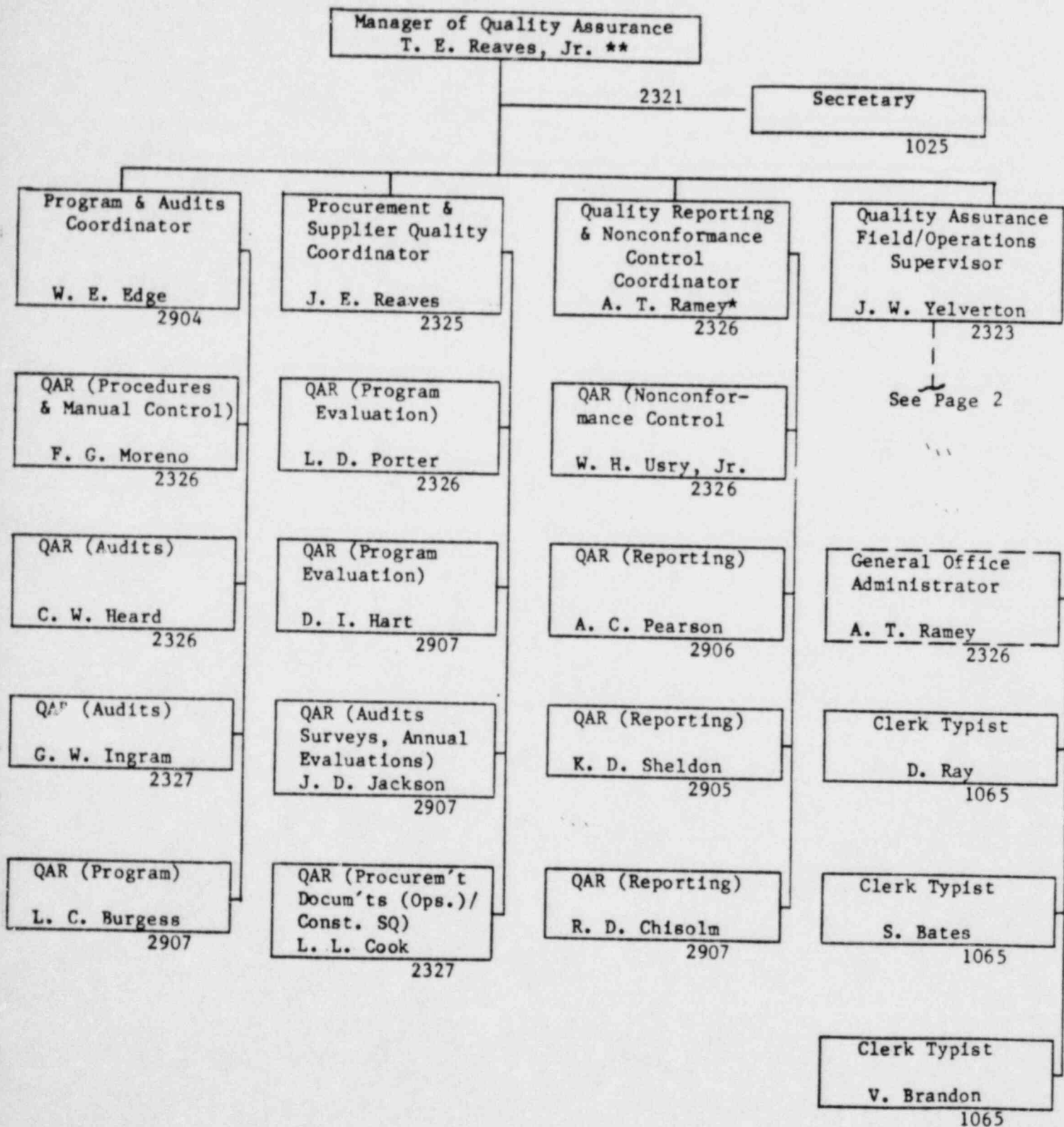
Mississippi Power & Light Company

Sr. Clerk-Typist
R. A. Hedrick

Clerk Typist
Mitzi Shelton



**ORGANIZATION CHART BY REPORTING RELATIONSHIP
QUALITY ASSURANCE - NUCLEAR PRODUCTION DEPARTMENT**



NOTES: *Reports to MQA for General Office Administrative Responsibilities.
 **Supporting Quality Reporting & Nonconformance Control as required.

ATTACHMENT A

MP&L QA ORGANIZATION
EDUCATION & EXPERIENCE

NAME	ENGR. OR RELATED DEGREE	PE-(#)	OTHER DEGREE ¹	GRAD. DEGREE	NUC. WORK EXPER.	TECH. WORK EXPER. ⁵	TOTAL WORK EXPER. ²	TOTAL YRS ON GGNS PROJECT ⁶
NOTE: ALL EXPERIENCE COLUMNS IN YEARS								
T.E. REAVES, JR. MQA	BSME	(4307)	-	-	8.0	12.5	20.5	8.0
<u>GEN. OFFICE</u>								
L.C. BURGESS	BSCE	-	-	-	-	9.0	9.0	-
R.D. CHISOLM	BSEE	-	-	-	-	1.0	1.0	-
L.L. COOK	-	-	BS BTY	MS BTY	2.0	-	3.0	-
W.E. EDGE	BSNE	(6730)	-	-	10.0	-	10.0	10.0
C.W. HEARD	-	-	BBA	MBA	1.5	10.0	13.5	1.5
D.I. HART	BSIE	-	-	-	-	1.0	1.0	-
G.W. INGRAM	-	-	-	-	1.0	16.0	18.0	1.0
J.D. JACKSON	BSME	-	-	-	.5	.5	1.0	.5
F.G. MORENO	-	-	BS MGT	-	1.5	11.0	24.0	1.5
A.C. PEARSON	BSME	-	-	-	.5	4.0	4.5	.5
L. D. PORTER	-	-	2-AAAs ³	-	1.0	22.0	23.0	1.0
A.T. RAMEY	-	-	BS PoL. SCI.	-	3.5	-	12.5	3.5
J.E. REAVES	-	-	-	-	5.0	24.0	29.0	5.0
K.D. SHELDON	BSNE	-	-	-	3.0	7.0	10.0	1.0
W.H. USRY, JR.	-	-	BS PSYCH	-	1.0	4.0	12.0	1.0
W.A. RUHLMAN ⁴	-	(0715)	AA BA	-	20.0	3.0	23.0	1.0
<u>SITE</u>								
E.N. ADCOCK	BSCE	-	-	-	-	1.0	1.0	-
J.C. BELL	BS PHY	-	-	-	7.5	1.0	8.5	1.5
W.C. EIFF	BSCE	(C27834)	-	-	8.5	6.0	14.5	1.5

ATTACHMENT A

NAME (CON'T)	ENGR. OR RELATED DEGREE	PE-(#)	OTHER DEGREE ¹	GRAD. DEGREE	NUC. WORK EXPER.	TECH. WORK EXPER. ⁵	TOTAL WORK EXPER. ²	TOTAL ON GGNS PROJECT ⁶
W.M. GARNER	BS IND TECH.	-	-	-	12.0	1.0	14.0	7.5
J.M. KELLEY	-	(2198)	-	-	18.0	9.0	27.0	5.0
B.C. LEE	BE TECH ELEC.	-	-	-	6.0	2.0	9.0	6.0
D.D. LITTLE	-	-	-	-	7.5	20.0	31.5	4.5
D.F. MAHONEY	BS CHEM	(0898)	-	-	28.5	4.0	32.5	6.0
A.R. MATURA	-	-	-	-	1.5	14.0	15.5	1.5
H.S. PYLE	BSEE	-	-	-	4.5	23.5	28.0	4.5
T. D. SHRIVER	BS ENGR. PHYSICS	-	-	-	1.0	14.0	15.0	-
S.F. TANNER	-	-	-	-	8.0	1.0	9.0	6.0
J.W. YELVERTON	BSNE	-	-	-	10.0	4.0	14.0	6.0
M. LACEY ⁴	BSME	-	-	-	10.0	8.0	18.0	1.0
TOTAL:	18	6	7	2	181.5	233.5	425.5	85.5
AVERAGE:	-	-	-	-	5.85	7.53	14.59	2.75
% OF TOTAL:	58%	22%	19%	6%	-	-	-	-

¹OTHER DEGREE IS COMPRISED OF ALL DEGREES EXCEPT FOUR YEAR ENGINEERING OR RELATED DEGREES.

²TOTAL WORK EXPERIENCE IS COMPRISED OF NUCLEAR WORK EXPERIENCE PLUS TECHNICAL WORK EXPERIENCE PLUS ANY OTHER WORK EXPERIENCE.

³AA - AERONAUTICAL TECHNOLOGY PLUS AA IN MECHANICAL TECHNOLOGY.

⁴QUALITY ASSURANCE CONSULTANTS

⁵TECHNICAL WORK EXPERIENCE DOES NOT INCLUDE NUCLEAR WORK EXPERIENCE.

⁶(-) IN COLUMN HEADED "TOTAL ON GGNS PROJECT" INDICATES NEW HIRES AFTER NOVEMBER 1981.

MP&L STOP WORK ORDER
STATUS LOG

NUMBER	ISSUE DATE/ TIME/LTR.	TO	DESCRIPTION (WORK STOPPED & REASON) CORRECTIVE ACTION VERIFICATION	RELEASE DATE/LTR.
1	*9/23/75 4:00 P.M. BMP-75/454	BECHTEL H. P. MARSH	<u>WORK STOPPED</u> ANY BECHTEL ENGINEERING ACTIVITY PERTAINING TO THE REVISION OR CHANGING OF THE GRAND GULF PROCUREMENT DOCUMENTS <u>REASON</u> BECHTEL'S IMPLEMENTATION OF AN UNAPPROVED CORRESPONDENCE PROCEDURE FOR REVISING SAFETY- RELATED ("Q" LIST) TECHNICAL SPECIFICATION REQUIREMENTS.	10/22/75 MPB-75/0787 (10/22/75) ADDITIONAL INFORMATION MPB-76/0238 (3/15/76)
2	12/6/76 9:00 A.M. PMI-76/499	MP&L J. P. McGAUGHY	<u>WORK STOPPED</u> ALL MP&L DIRECT SAFETY-RELATED PROCUREMENTS FOR GGNS (EXCEPT ISI SERVICES & FUEL RELOAD) <u>REASON</u> MP&L DOES NOT HAVE PROCEDURES ESTABLISHED TO COMPLY WITH CRITERIA IV & VII OF 10CFR50, APPENDIX B AND ANSI N45.2.13 FOR DIRECT PROCUREMENT OF GGNS SAFETY-RELATED ITEMS OR SERVICES.	PMI-77/611 (7/5/77)
3	4/27/78 8:20 A.M. PMI-78/455	MP&L J. P. McGAUGHY	<u>WORK STOPPED</u> ALL NON-SAFETY-RELATED DIRECT PROCUREMENT FOR GGNS <u>REASON</u> IMMEDIATE ACTION MEMO, PMI-78/402, DATED 4/6/78, WAS BREACHED BY THE ISSUING OF A CONTRACT TO PROJ. SOFTWARE & DEVELOPMENT, INC., APRIL 12, 1978.	APU-78/109 (8/2/78)

NOTE: THIS STOP WORK WAS ISSUED BY THE MANAGER OF QA AS THE RESULTS OF REVIEW CONDUCTED IN THE GAITHERSBURG ENGINEERING OFFICES.

NUMBER	ISSUE DATE/ TIME/LTR.	TO	DESCRIPTION (WORK STOPPED & REASON) CORRECTIVE ACTION VERIFICATION	RELEASE DATE/LTR.
(CONT'D)				
4	7/25/80 11:30 A.M. BCQM-80/129 (7/25/80)	BECHTEL H. D. BRUNER	<u>WORK STOPPED</u> ALL WORK ACTIVITIES WHERE ACT- IVITY DEVIATES FROM APPROVED DRAWINGS OTHER THAN THAT CON- TROLLED BY WP/P-5, REV. 3, THROUGH THE USE OF FDR/FCN/CRN PROCEDURES. <u>REASON</u> DESIGN CHANGES ARE BEING IMPL- MENTED PRIOR TO APPROVAL WITHOUT CONTROLLED PROCEDURE IN PLACE TO CONTROL THE ACTIVITY.	2/2/81 BCQM-81/39 (2/2/81)
5	10/15/80 3:45 P.M. BCQM-80/195 (10/22/80)	BECHTEL R. L. SCOTT	<u>WORK STOPPED</u> INSTALLATION OF TEMPORARY MATER- IALS, PARTS AND COMPONENTS, WHICH IS SIMILAR TO THE PERMANENT PLANT EQUIPMENT AND USED IN LIEU OF PERMANENT PLANT EQUIPMENT. <u>REASON</u> NO PROCEDURE EXISTS TO IDENTIFY AND CONTROL THE INSTALLATION OF TEMPORARY ITEMS.	5/1/81 BCQM-81/140 (5/1/81)
6	11/25/80 5:00 P.M. PMI-80/2584 (11/26/80)	MP&L D. WILLIAMS	<u>WORK STOPPED</u> (1) SAFETY-RELATED USE OF ITEMS RECEIVED FROM APPLIED PHYSICS TECHNOLOGY (APT). (2) SHIPMENT OF SAFETY-RELATED ITEMS TO GGNS FROM APT & THEIR SUPPLIER, ANALYTICS, INC. <u>REASON</u> MP&L AUDIT REVEALED QA PROGRAM REQUIREMENTS WERE NOT EXTENDED TO THEIR SUPPLIER.	8/6/81 PMI-81/3074 (8/6/81)

SUMMARY MP&L QA AUDIT PERFORMANCE/PARTICIPATION

I. MP&L QA AUDITS PERFORMED: BECHTEL GAITHERSBURG 1973-1982

<u>DATES OF AUDIT</u>	<u>NUMBER OF AUDITORS</u>	<u>AUDITOR-DAYS BECHTEL/GAITHERSBURG</u>	<u>NUMBER OF*** FINDINGS/ NONCONFORMANCES</u>
2/15-16/73	2	4	5
10/3-5/73	9	27	22
10/29-11/1/74	3	12	13
8/30-9/3/76	6	30	13
7/19-22/77	5	20	23
7/17-21/78	6	30	16
6/19-22/79	6	24	26
10/16-19/79	5	25	9
1/5-9/81	7	35	20
7/13-17/81	9	45	16
9/28-10/2/81	4	20	7
1/12-14/82	2	6	0

TOTALS:

12 AUDITS/ 9 YEARS	64 AUDITORS*/ 12 AUDITS	278 AUDITOR-DAYS/ 12 AUDITS	170 NonCONF./ 12 AUDITS
-----------------------	----------------------------	--------------------------------	----------------------------

AVG.:

1.3 AUDITS/ YEAR	5.33 AUDITORS/ AUDIT	23.16 AUDITOR-DAYS/ AUDIT	14.16 NonCONF./ AUDIT
---------------------	-------------------------	------------------------------	--------------------------

NOTES: * TWENTY-EIGHT DIFFERENT AUDITORS HAVE PARTICIPATED IN MP&L AUDITS OF BECHTEL-GAITHERSBURG. TWENTY-ONE OF THESE AUDITORS ARE PRESENTLY EMPLOYED BY MP&L (17) OR MIDDLE SOUTH SERVICES, INC. (4)

II. MP&L QA AUDITS PERFORMED: BECHTEL CONSTRUCTION SITE 1974-1982

<u>DATES OF AUDIT</u>	<u>NUMBER OF AUDITORS</u>	<u>AUDITOR-DAYS BECHTEL/CONSTRUCTION SITE</u>	<u>FINDINGS/*** NONCONFORMANCES</u>
4/11/74	4	4	6
7/2/74	2	2	4
11/19/74	2	2	3
4/15-17/75	4	12	16
6/3-4/75	7	14	11
5/27-30/75	2	8	10
12/9-11/75	5	15	16
2/23-27/76	1	5	0
6/1-4/76	4	16	15
12/1-3/76	7	21	7
5/9-12/77	6	24	17

ATTACHMENT B

<u>DATES OF AUDIT</u> (CONTINUED)	<u>NUMBER OF AUDITORS</u>	<u>AUDITOR-DAYS BECHTEL/CONSTRUCTION SITE</u>	<u>NUMBER OF*** FINDINGS/ NONCONFORMANCES</u>
9/9-12/77	2	8	8
12/5-7/77	7	21	10
6/12-15/78	9	36	6
11/6-9/78	5	20	9
5/1-4/79	7	28	22
11/12-16/79	6	30	8
2/11-15/80	5	25	6
3/17-21/80	6	30	12
4/6-10/81	6	30	8
TOTALS: 20 AUDITS/ 8 YEARS	97 AUDITORS*/ 20 AUDITS	351 AUDITOR-DAYS/ 20 AUDITS	194 NonCONF / 20 AUDITS
AVG.: 2.5 AUDITS/ YEAR	4.85 AUDITORS/ AUDIT	17.55 AUDITOR-DAY/ AUDITS	9.7 NonCONF./ AUDIT

NOTES: * TWENTY-NINE DIFFERENT AUDITORS HAVE PARTICIPATED IN MP&L AUDITS OF BECHTEL-CONSTRUCTION SITE. SEVENTEEN OF THESE AUDITORS ARE PRESENTLY EMPLOYED BY MP&L (16) OR MIDDLE SOUTH SERVICES, INC. (1).

** THE MP&L SITE QA STAFF HAS PERFORMED (SINCE JUNE 1979) APPROXIMATELY 191 MONITORING AUDITS ON BECHTEL CONSTRUCTION OR BECHTEL CONSTRUCTION CONTRACTORS WITH SOME 211 FINDINGS/ NONCONFORMANCES BEING IDENTIFIED. THIS IDENTIFIED 1.1 NONCONFORMANCES PER MONITORING AUDIT. MONITORING AUDITS ARE UNANNOUNCED, LIMITED SCOPE AUDITS NORMALLY PERFORMED BY ONE AUDITOR.

*** FOR ITEMS I. & II. ABOVE A TOTAL OF FIVE HUNDRED SEVENTY FIVE DEFICIENCIES HAVE BEEN IDENTIFIED OF WHICH ONLY TEN REMAIN OPEN AS OF DECEMBER 31, 1981. NONE OF THESE DEFICIENCIES RELATE DIRECTLY TO THE ADEQUACY OF DESIGN OR CONSTRUCTION.

ATTACHMENT B

III. MP&L PARTICIPATION IN BECHTEL AUDITS OF G.E. WILMINGTON
INTERNAL COMPONENTS) 1974-1981

<u>DATES OF AUDIT</u>	<u>NUMBERS OF AUDITORS (MP&L OR MSS)</u>	<u>AUDITOR-DAYS (MP&L OR MSS)</u>	<u>FINDINGS/** NONCONFORMANCES</u>
5/29-31/74	5(2)	15(6)	11
9/10-12/75	4(1)	12(3)	2
7/20-23/76	5(3)	20(12)	5
3/7-11/77	5(2)	25(10)	1
8/16-19/77	4(1)	16(4)	6
3/21-23/78	6(4)	18(12)	4
7/17-20/79	5(3)	20(12)	6
2/19-22/80	5(3)	20(12)	11
7/15-18/80	3(1)	12(4)	3
3/17-18/81	4(2)	8(4)	0

TOTALS:

10 AUDITS/ 8 YEARS	46(22)AUDITORS*/ 10 AUDITS	166(79)AUDITOR-DAYS/ 10 AUDITS	49 NonCONF./ 10 AUDITS
-----------------------	-------------------------------	-----------------------------------	---------------------------

AVG:

1.25 AUDITS/ YEAR	4.6(2.2)AUDITORS/ AUDIT	16.6(7.9)AUDITOR-DAYS/ AUDIT	4.9 NonCONF./ AUDIT
----------------------	----------------------------	---------------------------------	------------------------

NOTES:

* TWENTY-TWO (THIRTEEN) INDIVIDUAL AUDITORS HAVE PARTICIPATED IN BECHTEL AUDITS OF G.E. WILMINGTON. THIRTEEN OF THESE AUDITORS ARE PRESENTLY EMPLOYED BY MP&L (7) MSS(3) OR BY BECHTEL GRAND GULF (3).

** BECHTEL QA IDENTIFIED FINDINGS/NONCONFORMANCES: FORTY-NINE FINDINGS/NONCONFORMANCES WERE IDENTIFIED; ALL BUT ONE (WHICH IS NOT RELATED TO DESIGN OR DESIGN CONTROL) HAVE BEEN RESOLVED.

ATTACHMENT B

IV. MP&L PARTICIPATION IN BECHTEL AUDITS OF G.E. SAN JOSE (NSSS)
1973-1981

<u>DATES OF AUDIT</u>	<u>NUMBERS OF AUDITORS (MP&L OR MSS)</u>	<u>AUDITOR-DAYS (MP&L OR MSS)</u>	<u>FINDINGS/** NONCONFORMANCES</u>
5/9-11/73	5(1)	15(3)	4
2/27-3/1/73	5(2)	15(6)	2
3/5-7/75	4(1)	12(3)	6
4/26-29/76	6(2)	24(8)	6
11/16-19/76	6(4)	24(16)	5
6/21-24/77	5(2)	20(8)	7
11/8-10/77	6(4)	18(12)	7
1/31-2/2/78	6(4)	18(12)	10
1/30-2/2/79	6(5)	24(20)	6
3/13-16/79	7(1)	28(4)	3
7/30-8/3/79	7(4)	35(20)	10
11/26-29/79	7(3)	28(12)	9
9/16-19/80	7(3)	28(12)	0
9/1-3/81	5(3)	15(9)	0
2/3-5/81	5(2)	15(6)	1

TOTALS:

15 AUDITS/ 9 YEARS	87(41) AUDITORS*/ 15 AUDITS	319(151) AUDITOR-DAYS/ 15 AUDITS	76 NonCONF./ 15 AUDITS
-----------------------	--------------------------------	-------------------------------------	---------------------------

AVG:

1.67 AUDITS/ YEAR	5.8(2.7) AUDITORS/ AUDIT	21.3(10.1) AUDITOR-DAYS/ AUDIT	5.1 NonCONF./ AUDIT
----------------------	-----------------------------	-----------------------------------	------------------------

NOTES:

* THIRTY-SIX (SEVENTEEN) INDIVIDUAL AUDITORS HAVE PARTICIPATED IN BECHTEL AUDITS OF G.E. SAN JOSE. FOURTEEN OF THESE AUDITORS ARE PRESENTLY EMPLOYED BY MP&L (8) MSS (2) OR BY BECHTEL GRAND GULF (4)

ATTACHMENT B

** BECHTEL QA IDENTIFIED FINDINGS/NONCONFORMANCES: SEVENTY-SIX FINDINGS/NONCONFORMANCES WERE IDENTIFIED; ALL BUT ONE (INADEQUATE WIRING SEPERATION IN SAFETY-RELATED EQUIPMENT) HAVE BEEN RESOLVED. THE ONE OPEN ITEM WAS DOCUMENTED ON PRD-79/07 AND REPORT TO THE NRC ON MARCH 22, 1979 UNDER THE PROVISIONS OF 10CFR50.55(E); THE NRC CLOSED THAT PRD ON SEPTEMBER 17, 1981.

V. MP&L PARTICIPATION IN MSS, INC. AUDITS OF GE WILMINGTON (FUEL) 1980

<u>DATES OF AUDIT</u>	<u>NUMBERS OF AUDITORS (MP&L)</u>	<u>AUDITOR-DAYS (MP&L)</u>	<u>FINDINGS/** NONCONFORMANCES</u>
4/1-3/80	4(2)	12(6)	2
6/10-12/80	4(2)	12(6)	2
8/26-28/80	6(3)	18(9)	3
10/7-9/80	6(4)	18(12)	1

TOTALS:			
4 AUDITS/ 1 YEARS	20(11) AUDITORS*/ 4 AUDITS	60(33) AUDITOR-DAYS/ 4 AUDITS	8 NonCONF./ 4 AUDITS

AVG:			
4 AUDITS/ YEAR	5 (2.75) AUDITORS/ AUDIT /AUDIT	15 (8.25) AUDITOR-DAYS AUDIT	2 NonCONF./

NOTES: * TEN (FIVE) INDIVIDUAL AUDITORS HAVE PARTICIPATED IN BECHTEL AUDITS OF G.E. WILMINGTON. NINE OF THESE AUDITORS ARE PRESENTLY EMPLOYED BY MP&L (5) OR MSS (4). TWO OF THESE AUDITORS ARE TECHNICAL SPECIALIST.

** MSS, INC. QA IDENTIFIED FINDINGS/NONCONFORMANCES: EIGHT FINDINGS/NONCONFORMANCES WERE IDENTIFIED AND ALL HAVE BEEN CORRECTED.

ATTACHMENT C

MP&L MANAGEMENT & MSS AUDITS OF MP&L QA PROGRAM

I. MP&L MANAGEMENT AUDITS
1973-1982

<u>DATES OF AUDIT</u>	<u>NUMBER OF AUDITORS</u>	<u>AUDITOR-DAYS</u>	<u>FINDINGS/** RECOMMENDATIONS</u>
10/4/73	1*	1	3
2/21/74	2	2	3
8/29-30/74	2	4	1
9/9-12/75	2	8	9
7/12-16/76	3	15	5
2/14-25/77	3	30	8
4/3-10/78	3	18	7
6/25-28/79	3	12	2
2/18-25/80	3	18	8
12/5-11/80	3	15	0
1/26- /82	3	(IN PROGRESS)	
TOTALS: 11 AUDITS/ 10 YEARS	28 AUDITORS/ 11 AUDITS	123 AUDITOR-DAYS/ 10 AUDITS	46 RECOMMENDATIONS/ 10 AUDITS
AVG: 1.1 AUDITS/ YEAR	2.5 AUDITORS/ AUDIT	12.3 AUDITOR-DAYS/ AUDITS	4.6 RECOMMENDATIONS/ AUDIT

NOTE: * AUDIT WAS CONDUCTED BY MR. D. C. LUTKEN.

** MP&L MANAGEMENT IDENTIFIED FINDINGS/RECOMMENDATIONS; FORTY-SIX
FINDINGS/RECOMMENDATIONS WERE IDENTIFIED; NONE REMAIN OPEN.II. MSS, INC. QA AUDITS
1980-1981

<u>DATES OF AUDIT</u>	<u>NUMBER OF AUDITORS</u>	<u>AUDITOR-DAYS</u>	<u>FINDINGS/* NONCONFORMANCES</u>
6/16-20/80	3	15	3
5/19-21/81; 6/2-5/81	3	21	5

ATTACHMENT C

TOTALS:

2 AUDITS/
2 YEARS

6 AUDITORS/
2 AUDITS

36 AUDITOR-DAYS/
2 AUDITS

8 NONCONF./
2 AUDITS

AVG:

1 AUDIT/
YEAR

3 AUDITORS/
AUDIT

16 AUDITOR-DAYS/
AUDIT

4 NONCONF./
AUDIT

NOTE: * MSS, INC. IDENTIFIED NONCONFORMANCE DOCUMENTS: EIGHT FINDINGS/
NONCONFORMANCES WERE IDENTIFIED; ALL ITEMS HAVE BEEN RESOLVED.
CORRECTED.

ATTACHMENT D

MP&L SUPPLIER EVALUATION PROGRAM
(MP&L AUDITOR ACCOMPANIED BECHTEL
SUPPLIER QUALITY AUDIT TEAM)
 1975-1979

<u>DATES ON</u> <u>AUDIT</u>	<u>SUPPLIER</u>	<u>NUMBER OF</u> <u>MP&L AUDITORS</u>	<u>MP&L AUDITOR-DAYS</u> <u>SUPPLIER</u>	<u>FINDINGS/**</u> <u>NONCONFORMANCES</u>
9/16-18/75	TEXAS PIPE BENDING HOUSTON, TX	1	3	2
1/4-7/77	KLOCKNER-MOELLER MARIETTA, GA	1	4	8
3/29-31/77	TURBONETICS, INC. LATHAN, NY	1	3	4
4/25-28/77	TARGET ROCK FARMINGDALE, NY	1	4	4
1/18-20/78	FISHER CONTROLS MARSHALLTOWN, IW	2	6	4
3/15-17/78	YARWAY CORP. BLUEBELL, PA	1	3	8
5/17-19/78	HENRY PRATT AURORA & DIXON, IL	1	3	1
5/23-24/78	FISHER CONTROLS MARSHALLTOWN, IW	2	4	3
8/2-3/78	WILLIAM POWELL CINCINNATI, OH	1	2	4
8/16-18/78	GOULDS PUMPS SENECA FALLS, NY	1	3	7
9/6-8/78	ATWOOD & MORRILL SALEM, MA	1	3	0
1/3-5/79	FISHER CONTROLS MARSHALLTOWN, IW	1	3	0
4/25-27/79	J. E. LONERGAN CO. PHILADELPHIA, PA	1	3	4
5/2-4/79	YARWAY CORP. BLUEBELL, PA	1	3	1

ATTACHMENT D

TOTALS:				
14 AUDITS/ 5 YEARS	14 AUDITS ON 11 DIFFERENT SUPPLIERS	16 AUDITORS FOR 14 AUDITS	47 MP&L AUDITOR-DAYS/ 14 AUDITS	50 FINDINGS/ NONCONF./IN 14 AUDITS
AVG:				
2.8 AUDITS/ YEAR	-	1.14 AUDITORS*/ AUDIT	3.36 MP&L AUDITOR-DAYS/ AUDIT	3.57** NONCONF./ AUDIT

NOTES: * SIX DIFFERENT AUDITORS HAVE PARTICIPATED IN THE MP&L SUPPLIER EVALUATION PROGRAM. FOUR OF THESE AUDITORS ARE PRESENTLY EMPLOYED BY MP&L (3) OR BECHTEL (1).

** BECHTEL SUPPLIER QUALITY IDENTIFIED FINDINGS/NONCONFORMANCES.

LICENSING COMMITMENT TRACKING SYSTEM

- THE LICENSING COMMITMENT TRACKING SYSTEM (LCTS) WAS ESTABLISHED TO ENSURE THAT APPROPRIATE REQUIREMENTS NECESSARY FOR LICENSING ARE RECOGNIZED AND COMPLIANCE ACHIEVED BY INCORPORATION INTO APPROPRIATE DOCUMENTS.
- THE LCTS HAS BEEN IN PLACE IN THE PROJECT ENGINEERING PROCEDURES MANUAL FROM MARCH 1976 TO THE PRESENT.
- THE LCTS IS A COMPUTERIZED CONTROL SYSTEM THAT IDENTIFIED COMMITMENTS AND THE DOCUMENT WHICH ACHIEVES COMPLIANCE.
- NEW COMMITMENTS OR CHANGES TO ESTABLISHED COMMITMENTS ARE FACTORED INTO THE LCTS.
- LCTS CRITERIA FOR IDENTIFICATION OF COMMITMENTS:
 1. DESIGN FEATURES PROVIDED FOR SAFETY
 2. DESIGN/SAFETY EVALUATIONS
 3. CONTROLS AND INSTRUMENTATION WITH SAFETY SIGNIFICANCE
 4. CODES AND STANDARDS
 5. TESTS AND INSPECTIONS
 6. UNFINISHED BUSINESS - E.G. FUTURE ACTIVITY; INFORMATION TO BE PROVIDED; ETC.
- ITEMS REVIEWED IN DETERMINING COMMITMENTS FOR THE LCTS.
 1. PRELIMINARY SAFETY ANALYSIS REPORT
 2. ENVIRONMENTAL REPORT
 3. SAFETY EVALUATION REPORT (WITH SUPPLEMENTS 1 & 2)
 4. FINAL ENVIRONMENTAL STATEMENT
 5. CONSTRUCTION PERMIT
 6. MP&L LETTERS TO AEC/NRC
 7. NRC LETTERS
 8. ENVIRONMENTAL PROTECTION PROGRAM
 9. ACRS HEARING TRANSCRIPTS
 10. ASLB HEARING TRANSCRIPTS
 11. LIMITED WORK AUTHORIZATION
- THE LCTS PROGRAM IDENTIFIES APPROPRIATE COMMITMENTS LISTING THE ITEM (MINIMUM):
 1. MAJOR HEADING TITLE
 2. MINOR HEADING TITLE
 3. COMMITMENT NUMBER AND KEYWORDED
 4. SOURCE OF COMMITMENT
 5. SPECIFIC WORKING DOCUMENT THAT CLOSSES OUT THE COMMITMENT

Fri Feb 5, 1982

PRD Summary Listing

Page 1

PRD Num	Status	Reportability	NRC Number	NRC Closure Ltr Num	NRC Closure Inspection	Number Days					
U1	U2	55(e)	Unit 1	Unit 2	Unit 1	Unit 2					
Description			To Closeout								
74/01	W	W	N	N	Not Assigned	Not Assigned	None	None	None	None	24
Bechtel-#18 Rebar Split											
74/02	N	N	N	N	416/74-05-01	417/74-05-01	MAEC-75/002	MAEC-75/002	75-01	75-01	18
Bethlem Steel-Rebar failed yield/tensile strength tests											
75/01	N	X	Y	N	416/75-03-01	N/A	MAEC-75/28	N/A	75-03	N/A	29
Bechtel-Nonconforming Rebar in Unit 1 Containment Basemat											
75/02	W	W	N	N	Op 416/75-05	Not Assigned	MAEC-75/39	None	75-05	None	0
Bechtel-MSRV Discharge Piping Design											
75/03	N	X	Y	N	416/75-05-01	N/A	MAEC-76/029	N/A	76-03	N/A	272
Bechtel-Voids in Containment Basemat											
75/04	W	W	N	N	Not Assigned	Not Assigned	None	None	None	None	0
Bechtel-Cement Failed Spec. & ASTM C-150/72 Chemical Tests											
75/05	W	X	N	N	416/75-07-03	N/A	MAEC-76/04	N/A	75-09	N/A	20
Bechtel-Forged QA Audit Signature											
75/06	N	X	N	N	416/75-07-04	N/A	MAEC-76/029	N/A	76-03	N/A	86
Bechtel-Unit 1 Control Building Concrete Test Failure											
76/01	N	N	Y	N	416/76-02-02	417/76-02-02	MAEC-76/029	MAEC-76/029	76-03	76-03	102
Bechtel-Document Control Procedures for Specifications											
76/02	W	W	N	N	Not Assigned	Not Assigned	None	None	None	None	25
Texas Pipe-SSW Pipe Coating not to Specification											
76/03	N	N	Y	N	416/76-02-01	417/76-02-01	MAEC-76/040	MAEC-76/040	76-05	76-05	129
Bechtel-CB&I Procedure Approved Without SAR Commitment											
76/04	W	W	N	N	Not Assigned	Not Assigned	None	None	None	None	0
Bechtel-Procurement Shop Inspectors Verify Approved Drawings											
76/05	N	N	N	N	Not Assigned	Not Assigned	None	None	None	None	0
Armco-Flued Heads Machining & Stress Reports											
76/06	N	N	Y	N	416/78-04-01	417/78-04-01	MAEC-79/002	MAEC-79/002	78-21	78-21	118
Bechtel-Containment Design For SRV Loads (New loads)											
76/07	W	W	N	N	Not Assigned	Not Assigned	None	None	None	None	36
Bechtel-Seismic Effect of Using RODOFOAM Between Buildings											

F-1

Fri Feb 5, 1982

PRD Summary Listing

Page 2

PRD Num	Status	Reportability	NRC Number	NRC Closure Ltr Num	NRC Closure Inspection	Number Days					
U1	U2	55(e)	Unit 1	Unit 2	Unit 1	Unit 2					
Description											
76/08	N	X	N	416/76-06-04	N/A	MAEC-77/018	N/A	77-04	N/A	178	
Bechtel-SSW Cooling Tower Basins Missing Rebar											
76/09	W	W	N	N	Not Assigned	Not Assigned	None	None	None	0	
Bechtel-Civil Design Drawings Issued Without Approved Calcs											
76/10	W	W	N	N	Not Assigned	Not Assigned	None	None	None	0	
Bergen Patterson-QA Program Breakdown in Design Control											
76/11	N	N	Y	N	416/76-06-05	417/76-06-05	MAEC-77/047	MAEC-77/047	77-11	77-11	239
GE-Unit 2 RPV Nonconforming Weld Flux											
76/12	N	N	Y	N	416/77-01/01	417/77-01/01	MAEC-77/018	MAEC-77/018	77-04	77-04	139
Bechtel-DCN's Not Incorporated When Drawings Revised											
76/13	W	W	N	N	Not Assigned	Not Assigned	None	None	None	None	0
Bechtel-SDDR Waiver Approval											
77/01	W	W	N	N	Not Assigned	Not Assigned	None	None	None	None	0
Bechtel-No Procedure For Design Info After Work Completion											
77/02	W	W	N	N	Not Assigned	Not Assigned	None	None	None	None	0
Bechtel-Heat Sink Rebar Placement											
77/03	N	N	Y	N	416/77-9U1	417/77-9U1	MAEC-77/047	MAEC-77/047	77-11	77-11	127
Bechtel-Use of Incorrect ASTM Nuts											
77/04	W	W	N	N	Not Assigned	Not Assigned	None	None	None	None	0
GE-CB&I NDE Procedure Violates ASME Section 5											
77/05	N	X	N	N	416/77-4U1	N/A	MAEC-77/047	N/A	77-11	N/A	94
Bechtel-Use of Unapproved Cable Tray Hanger Supports											
77/06	N	X	N	N	416/77-7/U1	N/A	MAEC-77/047	N/A	77-11	N/A	94
Bechtel-"I" Beam Internal Defects											
77/07	W	W	N	N	Not Assigned	Not Assigned	None	None	None	None	28
Bechtel-Methane Gas in Ranney Well System											
77/08	W	W	N	N	Not Assigned	Not Assigned	None	None	None	None	0
Bechtel-Missing Rebar in Steam Tunnel											
77/09	N	N	Y	N	Op 416/77-11	Op 417/77-11	MAEC-77/047	MAEC-77/047	77-11	77-11	50
Bechtel-Starting Voltage for Safeguard Motors not to Spec.											

F-2

Fri Feb 5, 1982

PRD Summary Listing

Page 3

PRD Num	Status	Reportability	NRC Number	NRC Closure Ltr Num	NRC Closure Inspection	Number Days
U1 U2	55(e)	21	Unit 1 Unit 2	Unit 1 Unit 2	Unit 1 Unit 2	To Closeout
Description						
77/10	N X N	N	416/78-01-03 N/A	MAEC-78/008 N/A	78-01	N/A 189
Taylor Forge-Guard Pipe Not Impact Tested						
77/11	N X Y	N	Op 416/77-11 N/A	MAEC-77/047 N/A	77-11	N/A 30
Harnischfeger-Polar Crane Bolt Failure						
77/12	W W N	N	Not Assigned Not Assigned	None None	None None	0
Bechtel-Cumulative cases of missing rebar						
77/13	N C Y	Y	416/78-01-01 -	MAEC-82/019 -	82-04	- 148
GE-SRV Control System						
77/14*	W W N	N	Not Assigned Not Assigned	None None	None None	348
GE-Byron Jackson ECCSpump seals not hydrotested						
77/15	N N Y	N	416/78-01-02 417/78-01-02	MAEC-79/056 MAEC-79/056	79-06	79-06 277
Bechtel-Turbing Building Tornado Design						
78/01	N X Y	N	416/78-02-01 N/A	MAEC-78/067 N/A	78-14	N/A 126
Atwood Morrill-Radiographic Film Incomplete						
78/02	N N N	N	416/78-10-01 417/78-10-01	MAEC-78/087 MAEC-78/087	78-18	78-18 147
Bechtel-Pipe Hanger Fillet Welds Undersized						
78/03	N N N	N	416/78-18-01 417/78-18-01	MAEC-79/056 MAEC-79/056	79/06	79/06 272
Bechtel-Factory Weld Separation of Hanger Material(UNISTRUT)						
78/04	N C Y		416/78-16-01 -	MAEC-79/102 -	79-11	- 29
GE-CR2940 Switches Without Locking Rings						
78/05	N C Y	N	416/78-21-01 -	MAEC-79/002 -	78-21	- 31
Structural Steel Floor Framing						
78/06	W W N	N	Not Assigned Not Assigned	None None	None None	687
GE-I&SE Unit 2 RPV Baseline						
79/01	W W N	N	Not Assigned Not Assigned	None None	None None	790
Bechtel-Use of Incorrect Welding Procedure						
79/02	W W N	N	Not Assigned Not Assigned	None None	None None	0
GE-13.8KV Switchgear Closing Spring						
79/03	N X N	N	416/79-04-01 N/A	MAEC-81/150 N/A	81-21	N/A 828
GE Unapproved QA Manual for FDI/FDDR						

PRD Summary Listing

Fri Feb 5, 1982

Page 4

PRD Num	Status		Reportability		NRC Number		NRC Closure Ltr Num		NRC Closure Inspection		Number Days To Closeout
	U1	U2	55(e)	21	Unit 1	Unit 2	Unit 1	Unit 2	Unit 1	Unit 2	
79/04	N	X	Y	N	416/79-04-02	N/A	MAEC-81/150	N/A	81-21	N/A	728
					GE-Inadequate Crimping in PGCC Cable Pin Connectors						
79/05	N	X	Y	Y	416/79-04-03	N/A	MAEC-81/150	N/A	81-21	N/A	826
					GE "As Built" PGCC Drawings						
79/06	N	X	N	N	416/79-04-04	N/A	MAEC-80/195	N/A	80-22	N/A	363
					ITE-Cracked Switches on Breakers						
79/07	N	N	Y	Y	416/79-06-01	417/79-06-01	MAEC-81/195	MAEC-81/195	81-34	81-14	809
					GE Inadequate PGCC Circuit Separation						
79/08	N	N	Y	Y	416/79-06-02	417/79-06-02	MAEC-80/031	MAEC-80/031	80-01	80-01	224
					ITE-Inadequate/Incomplete Solder Joints on 480V Load Center						
79/09	N	N	Y	N	416/79-09-01	417/79-09-01	MAEC-79/160	MAEC-79/160	79-24	79-24	155
					TubeTurns-Incorrect carbon content in 90 degree elbows						
79/10	N	N	N	N	416/79-13-05	417/79-13-05	MAEC-80/013	MAEC-80/013	79-33	79-33	183
					Rosemount-Gross failure output function						
79/11	N	X	N	N	416/79-14-01	N/A	MAEC-79/137	N/A	79-18	N/A	200
					ITE-Cracked Control Device Assemblies						
79/12	N	N	Y	Y	416/79-20-05	417/79-20-05	MAEC-81/195	MAEC-81/195	81-34	81-14	199
					Rosemount Trip Unit Inadequate Power Supply						
79/13	N	C	Y	Y	416/79-20-04	417/79-20-04	MAEC-81/150	-	81-21	-	332
					Powell Valve Company Computer Code Challenged						
79/14	N	N	N	N	416/79-20-02	417/79-20-02	MAEC-80/031	MAEC-80/031	80-01	80-01	80
					NAMCO-Limit Switch Malfunction Due to Vapor						
79/15	N	N	Y	?	416/79-20-01	417/79-20-01	MAEC-80/031	MAEC-80/031	80-01	80-01	82
					ASCO Solenoid Valve Operability						
79/16	W	W	N	N	416/79-20-03	417/79-20-03	MAEC-79/148	MAEC-79/148	79-20	79-20	6
					Tube Turns-Pipe Fittings of Alloy Grade Steel						
79/17	N	C	Y	Y	416/79-24-02	417/79-24-02	MAEC-81/170	-	81-28	-	649
					GE-Topaz Inverter Failure due to Transients						
79/18	N	N	Y	Y	416/79-30-02	417/79-28-02	MAEC-81/079	MAEC-81/079	81-09	81-09	100
					Rosemount Model 510 Trip Unit Common Mode Failure						

F-4

Fri Feb 5, 1982

PRD Summary Listing

Page 5

PRD Num	Status	Reportability	NRC Number	NRC Closure Ltr Num	NRC Closure Inspection	Number Days
U1 U2	55(e)	21	Unit 1 Unit 2	Unit 1 Unit 2	Unit 1 Unit 2	To Closeout
Description						
79/19	N N	Y Y	416/79-30-01 417/79-28-01	MAEC-80/195 MAEC-80/195	80-22 80-20	18
Westinghouse-Defective Terminal Strips						
79/20	N -	N N	416/80-01-02 -	MAEC-80/213 -	80-23 -	146
GMC-HVAC Duct Work Longitudinal Seams						
79/21	C C	Y Y	416/79-33-02 417/79-29-01			421
GE-BOP PGCC Unqualified Instrumentation						
80/01	N N	N N	416/80-12-03 417/80-08-01	MAEC-81/079 MAEC-81/079	81-09 81-06	235
GE-Failure of CR 2940 Handswitch						
80/02	W W	N N	Not Assigned Not Assigned	None None	None None	30
Control Rod Drive Hydraulic System-Defective Elbow						
80/03	N N	Y N	416/80-20-01 417/80-13-01	MAEC-81/079 MAEC-81/079	81-09 81-06	165
RPV Cable damage						
80/04*	N C	N N	416/80-12-05 417/80-18-03	MAEC-81/150 -	81-21 -	400
GE-Effects of Loss of Offsite Power						
80/05	N N	Y N	416/80-20-02 417/80-13-02	MAEC-81/150 MAEC-81/242	81-21 81-20	432
Cable Damage During Rope Pulling						
80/06	N N	N N	416/80-20-03 417/80-13-03	MAEC-81/79 MAEC-81/79	81-09 81-06	118
Dragon Valves Unapproved Changes to Valve Manifolds						
80/07	N N	N N	416/80-20-04 417/80-13-04	MAEC-81/079 MAEC-81/079	81-09 81-06	144
Fisher Controls-Lack of QA Program for Non-Pressure Parts						
80/08	N N	N N	416/80-27-01 417/80-17-01	MAEC-81/170 MAEC-81/170	81-28 81-12	308
Limitorque-Motor Operators Malfunction						
80/09	C X	Y N	416/80-12-06 N/A	- N/A	- N/A	560
Pipe Hangers Do Not Conform to Specifications						
80/10*	N X	N N	416/80-12-07 N/A	MAEC-82/004 N/A	81-60 N/A	598
Rockbestos Cable Splices Not Qualified to IEEE-383						
80/11	N C	Y Y	416/80-12-08 417/80-08-04	MAEC-82/004 -	81-60 -	209
510-DU Rosemount Trip U/1152 Pressure Transmitters						
80/12	N N	N N	416/80-12-09 417/80-08-05	MAEC-80/243 MAEC-80/243	80-27 80-17	171
ITT-Electro-Hydraulic (EH) Control Actuator Selection						

F-5

PRD Summary Listing

Fri Feb 5, 1982

Page 6

PRD Num	Status	Reportability	NRC Number	NRC Closure Ltr Num	NRC Closure Inspection	Number Days
U1 U2	55(e)	21	Unit 1 Unit 2	Unit 1 Unit 2	Unit 1 Unit 2	To Closeout
Description						
80/13	N X Y	N	416/80-12-10 N/A	MAEC-81/039 N/A	81-05	N/A 239
Rodent damage to electrical equipment						
80/14	N X N	N	416/80-12-11 N/A	MAEC-81/157 N/A	81-20	N/A 340
GE-Feedwater Nozzle N4-A Indications						
80/15	W W N	N	417/80-13-02	MAEC-81/242	81-20	5
Damaged Trigger Assembly for Explosive Valve						
80/16	W W N	N	416/80-12-12 Not Assigned	MAEC-80/213 None	80-23	None 29
Byron Jackson Pumps For HPCS not Torqued Correctly						
80/17	C C Y	Y	416/80-14-10 417/80-14-10	MAEC-80/213 -	-	116
Incorrect Bolt Torquing on HPCS Pump						
80/18	N N Y	N	416/80-12-13 -	MAEC-81/079 -	81-09	- 223
Bechtel-Failure to Correctly Mount HPCS Control Panel						
80/19	N C Y	Y	416/80-12-08 417/80-08-04	MAEC-82/004 -	81-60	- 537
GE-Rosemount Model 1151A Pressure Transmitter Failure						
80/20	N C Y	-	416/80-12-14 -	MAEC-81/079 -	81-09	- 175
Adjustable threading dies damage conduit						
80/21	N C Y	Y	416/80-12-15 417/80-08-06	MAEC-80/195	80-22	64
Diesel Generator Control Panel Defects						
80/22	N N N	N	416/PJ-12-16 417/80-08-07	MAEC-80/243 MAEC-80/243	80-27	80-17 169
Texas Pipe Bending-Incorrect Pipe Schedule						
80/23*	N N N	N	416/80-23-03 417/80-14-03	MAEC-81/143 MAEC-81/143	81-28	81-08 154
NSTL-Calibration Service Deviations						
80/24	N C Y	Y	416/80-12-18 417/80-08-09	MAEC-81/150 -	81-21	- 30
Comsip Inc.-Failure of CGM Pump Diaphragm During Test						
80/25	N X Y	N	416/80-12-19 N/A	MAEC-81/195 N/A	81-34	N/A 376
Parr Co. Deficient Carbon Filters						
80/26	N N Y	Y	416/80-12-20 417/80-08-10	MAEC-81/079 MAEC-81/079	81-09	81-06 59
GE-Defective SB-12 Switches						
80/27	N N N	N	416/80-12-21 417/80-08-11	MAEC-80/243 MAEC-80/243	90-27	80-17 30
Pratt valve pneumatic actuators						

PRD Summary Listing

Fri Feb 5, 1982

Page 7

PRD Num	Status	Reportability	NRC Number	NRC Closure Ltr Num	NRC Closure Inspection	Number Days
U1	U2	55(e)	21	Unit 1	Unit 2	To Closeout
Description						
80/28	N	N	N	N	416/80-13-01 417/80-09-01	MAEC-81/157 MAEC-81/157 81-20 81-10 372
GE-NSSS Radiographs Not To ASME Code						
80/29	N	N	N	N	416/80-20-05 417/80-13-05	MAEC-81/104 MAEC-81/104 81-12 81-07 328
Parker-Hannifan Tee Fitting Failure						
80/30	C	C	N	N	416/80-20-06 417/80-13-06	- - - - 534
Improper Rebar Cutting						
80/31	N	N	Y	Y	416/80-20-07 417/80-13-07	MAEC-81/079 MAEC-81/079 81-09 81-06 103
HPCS Switchgear not seismically qualified						
80/32	N	N	Y	N	416/80-20-08 417/80-13-08	MAEC-81/150 MAEC-81/189 81-21 81-13 536
Debris enters SSW pump basin						
80/33	N	N	Y	N	416/80-20-09 417/80-13-09	MAEC-81/039 MAEC-81/039 81-05 81-02 157
Delaval-Diesel Generator Damaged Stator Coil						
80/34	N	N	Y	N	416/80-20-10 417/80-13-10	MAEC-81/195 MAEC-81/195 81-34 81-14 355
Fillet welds improperly transferred from design to sketch						
80/35	N	C	Y	N	416/80-20-11 417/80-13-11	MAEC-81/150 - 81-21 - 288
Delaval-Diesel Fractured Valve Body Thermostat Control						
80/36*	N	N	N	N	416/80-20-12 417/80-13-12	MAEC-81/039 MAEC-81/039 81-05 81-02 92
Klockner Moeller-480V Load Ctr Screw Sizes Used For Termin.						
80/37	W	W	N	N	Not Assigned Not Assigned	None None None None 0
Bent Shaft on Limitorque Valve Operator						
80/38	N	C	Y	N	416/80-20-13 417/80-13-13	MAEC-81/170 - 81-28 - 413
Electro-Switch Contact & Indication Malfunction						
80/39	N	N	Y	N	416/80-20-14 417/80-13-14	MAEC-81/220 MAEC-81/220 81-39 81-16 439
ITE Improper Crimping in 4.16KV Buses						
80/40	N	N	Y	N	416/80-20-15 417/80-13-15	MAEC-81/089 MAEC-81/089 81-07 81-04 135
Texas Pipe-Feedwater Pipe Bend Wall Thickness Below Design						
80/41	N	N	N	N	416/80-20-16 417/80-13-16	MAEC-81/079 MAEC-81/079 81-09 81-06 132
Defective Impervitran Control Transformer for HPCS Valve.						
80/42	N	N	N	N	416/80-23-04 417/80-14-04	MAEC-81/024 MAEC-81/024 81-02 81-01 64
Fire protection system indicator valves						

F-7

PRD Summary Listing

Fri Feb 5, 1982

Page 8

PRD Num	Status		Reportability 55(e) 21 Description	NRC Number		NRC Closure Ltr Num		NRC Closure Inspection		Number Days To Closeout	
	U1	U2		Unit 1	Unit 2	Unit 1	Unit 2	Unit 1	Unit 2		
80/43	N	N	Y Undersized Socket Welds	N	416/81-02-01	417/81-01-01	MAEC-81/243	MAEC-81/243	81-50	81-22	425
80/44	W	W	N Bechtel-"Desk Top" Prcdrs Used to Control "Red Line" Dwg chg	N	Not Assigned	Not Assigned	None	None	None	None	0
80/45	N	C	Y Pacific Air Fractured Actuator to Damper Coupling	N	416/80-20-17	417/80-13-17	MAEC-82/004	-	81-60	-	475
80/46	N	N	N Expansion Anchor Drilling Without Prior PE Approval	N	416/80-20-18	417/80-13-18	MAEC-81/206	MAEC-81/206	81-37	81-15	395
80/47	N	C	Y Inadequate Control of SDRN Program	N	416/80-20-19	417/80-13-19	MAEC-81/150	-	81-21	-	247
80/48	N	N	Y Reflective Insulation Shearing RPV Lines	N	416/80-20-20	417/80-13-20	MAEC-81/150	MAEC-81/039	81-21	81-02	266
80/49	N	N	N Guyon Alloys Linear Indications in Coupling Bodies	N	416/80-20-21	417/80-13-21	MAEC-81/195	MAEC-81/195	81-34	81-14	372
80/50	N	C	N Anchor Bolt Pullout Strength	N	416/80-19-03	417/80-14-05	MAEC-81/150	-	81-21	-	264
80/51	N	X	N Nonconforming RHR field weld	N	416/80-23-10	N/A	MAEC-80/243	N/A	80-27	N/A	31
80/52	N	N	Y Standby Service Water Basin Fans	N	416/80-23-06	417/80-14-06	MAEC-81/243	MAEC-81/243	81-50	81-22	393
80/53	N	N	Y SSW Oil Indicator Lines Outside Missile Barriers	N	416/80-23-07	417/80-14-07	MAEC-81/170	MAEC-81/170	81-28	81-12	131
80/54	C	X	Y HVAC Seismic Hangers	N	416/80-23-11	N/A	-	N/A	-	N/A	265
80/55	N	N	N GE-PGCC Sunbank Connector Assemblies	N	416/80-23-12	417/81-02-05	MAEC-81/170	MAEC-81/170	81-28	81-12	273
80/56	N	X	Y RCI Pipe Support Installations	N	416/80-23-13	N/A	MAEC-81/195	N/A	81-34	N/A	325
80/57	N	X	Y Pacific Air Tack Weld Failure on Q HVAC Air Damper	N	416/80-23-14	N/A	MAEC-81/243	N/A	81-50	N/A	402

PRD Summary Listing

Pri Feb 5, 1982

Page 9

PRD Num	Status		Reportability 55(e) Description	21	NRC Number		NRC Closure Ltr Num		NRC Closure Inspection		Number Days To Closeout
	U1	U2			Unit 1	Unit 2	Unit 1	Unit 2	Unit 1	Unit 2	
80/58	N	N	Y	N	416/80-23-08	417/80-14-08	MAEC-81/189	MAEC-81/189	81-31	81-13	276
					Incorrectly Ordered Throttling Valves						
80/59	N	N	N	N	416/81-05-06	417/81-02-06	MAEC-81/104	MAEC-81/104	81-12	81-07	206
					Sandvik Instrument Tubing Failure						
80/60	N	N	Y	N	416/80-23-09	417/80-14-09	MAEC-81/195	MAEC-81/195	81-34	81-14	312
					RCI Hanger Design Verification						
80/61*	N	C	N	N	416/81-05-01	417/81-02-01	MAEC-81/195	-	81-34	-	31
					Delaval Standby Diesel Generator Link Rod Assembly						
80/62	N	X	Y	N	416/80-19-02	N/A	MAEC-80/243	N/A	80-27	N/A	29
					Uncertified torque wrench multipliers						
80/63	N	N	Y	N	416/CDR80-63	417/CDR80-63	MAEC-81/243	MAEC-81/243	81-50	81-22	260
					Tuttle & Bailey Model VLK Air Extractors						
80/64	N	N	N	N	416/81-05-09	417/81-02-09	MAEC-81/079	MAEC-81/079	81-09	81-06	31
					Gould-Brown-Boveri-480V Circuit Breakers can Auto-Close						
80/65	N	X	N	N	416/81-07-02	N/A	MAEC-81/089	N/A	81-07	N/A	126
					Recirculation Pump Hanger Components						
80/66*	W	W	N	N	Not Assigned	Not Assigned	None	None	None	None	0
					Response Time of Agastat Relays in Reactor Protection System						
80/67	N	N	Y	N	416/80-25-01	417/80-15-01	MAEC-81/235	MAEC-81/235	81-48	81-20	373
					Installation of Ventilation Fire Dampers						
80/68	O	O	Y	U	416/81-05-02	417/81-02-02					
					GE-Potter & Brumfield AMF Type Relay Terminations						
80/69	C	C	Y	Y	416/81-05-03	417/81-02-03					352
					Klockner-Moeller Power Stab Terminations						
80/70	N	N	Y	Y	416/81-05-04	417/81-02-04	MAEC-81/242	MAEC-81/242	81-47	81-20	313
					GE-Flexible Conduit Grounding						
80/71	N	C	N	N	416/CDR80-71	-	MAEC-81/235	-	81-48	-	275
					Modification of Control Room HVAC Fire Dampers						
80/72	C	C	Y	N	416/81-16-01						287
					Pratt Bettis Spring Return Actuator						

Fri Feb 5, 1982

PRD Summary Listing

Page 10

PRD Num	Status	Reportability	NRC Number	NRC Closure Ltr Num	NRC Closure Inspection	Number Days
U1 U2	55(e)	21	Unit 1 Unit 2	Unit 1 Unit 2	Unit 1 Unit 2	To Closeout
Description						
80/73	N N	Y Y	416/81-16-01 417/CDR80-73	MAEC-81/242 MAEC-81/242	81-47 81-20	308
GE- Instrument Process Tubing						
80/74	N N	N N	416/81-05-10 417/81-02-10	MAEC-81/170 MAEC-81/170	81-28 81-12	202
GE-Damaged Wiring in Henry Pratt Valves						
80/75	N N	N N	416/CDR80-75 417/CDR80-75	MAEC-81/195 MAEC-81/195	81-34 81-14	201
Imperfections in Mills Alloys Nuc. Designated Struct. Steel						
81/01*	C C	Y N	416/81-05-07 417/81-02-07			130
Delaval Turbocharger Lubrication						
81/02	N N	N N	416/81-03-04 417/CDR81-02	MAEC-81/195 MAEC-81/195	81-34 81-14	223
RHR Pump Damage						
81/03	N C	Y N	416/CDR81-03 -	MAEC-82/004 -	81-60 -	295
Valve Motor Cycling						
81/04	N N	Y N	416/81-28-01 417/81-12-01	MAEC-81/170 MAEC-81/170	81-28 81-12	154
Mounting Straps On Tuttle & Bailey Air Diffusers						
81/05	C C	Y Y				259
AWV Fire Damper Fusible Link and Retaining Tab Design						
81/06	N X	Y N	416/81-21-01 N/A	MAEC-81/150 N/A	81-21 N/A	104
Comsip CGM Pump Motor Shaft Failure						
81/07	W W	N N	Not Assigned Not Assigned	None None	None None	7
Lube oil subsystem check valve						
81/08	N C	Y N	416/81-59-02 -	MAEC-82/005 -	81-59 -	201
Installation of SSW Pump						
81/09	N N	N N	416/81-28-02 417/81-12-02	MAEC-81/170 MAEC-81/170	81-28 81-12	98
Unscheduled SIS (Single Insulated Strand) Cable Pull						
81/10	N C	Y N	416/CDR81-10 417/CDR81-10	MAEC-81/243 -	81-50 -	210
MSIV Drain Line Overpressurization						
81/11	W W	N N	416/81-12-04 417/81-07-03	MAEC-81/104 MAEC-81/104	81-12 81-07	63
Suppression pool cleanup system valves						
81/12	W W	N N	Not Assigned Not Assigned	None None	None None	29
Relief Valve not set to Required Tolerances as on Valve Data						

E-10

Fri Feb 5, 1982

PRD Summary Listing

Page 11

PRD Num	Status U1 U2	Reportability 55(e) 21 Description	Unit 1	NRC Number Unit 2	NRC Closure Ltr Num Unit 1 Unit 2	NRC Closure Inspection Unit 1 Unit 2	Number Days To Closeout
81/13	W W	N N Not Assigned Not Assigned None Accuracy of Test Gauges not Greater Than Actual Tolerances			None None	None None	29
81/14	C C	N N 416/81-16-02 417/81-08-01 - ASCO Identified Material Not Environ. Qualified			- -	- -	157
81/15	C C	Y N SSW Pump Corrosion					289
81/16	N X	Y N 416/81-21-02 N/A 24" Starter/Breaker Drawers in Motor Control Center		MAEC-81/150	N/A	81-21 N/A	94
81/17	O O	U U 416/81-16-03 417/81-08-02 ESP Flow Rate					
81/18	W W	N N Not Assigned Not Assigned None Design Deficiencies in ESP Reset Controls			None None	None None	7
81/19*	N N	N N 416/81-16-04 417/81-08-03 GE-Termination Blocks		MAEC-81/195	MAEC-81/195	81-14 81-14	158
81/20	W W	N N 416/81-12-03 417/81-07-02 Incorrect plug welds		MAEC-81/104	MAEC-81/104	81-12 81-07	32
81/21	N X	Y N 416/81-12-01 N/A Standby Gas Treatment Fltr Motor Connection Box		MAEC-81/104	N/A	81-12 N/A	28
81/22	C C	Y N Non-Qualified HVAC Systems					147
81/23	C C	Y N 416/81-12-02 417/81-07-01 - Standby Diesel Generator Motors Not Q in Q Location			- -	- -	30
81/24	N N	Y Y 416/81-16-05 417/CDR81-24 GE-Morrison-Knudsen/GE Damaged Reactor Mounting Channels		MAEC-82/004	MAEC-82/004	81-60 81-25	180
81/25	N N	N N 416/CDR81-25 417/CDR81-25 Construction Damage to Cables in Conduit		MAEC-82/004	MAEC-82/004	81-60 81-25	185
81/26	N C	Y Y 416/CDR81-26 - GE-CR2940 Tandem Block Control Switches loosen w/vibration		MAEC-81/242	-	81-47 -	145
81/27	O O	Y N Henry Pratt Air Operated Valves Not ICW Closure Time Specs					

PRD Summary Listing

Fri Feb 5, 1982

Page 12

PRD Num	Status	Reportability	NRC Number	NRC Closure Ltr Num	NRC Closure Inspection	Number Days
U1 U2	55(e)	21	Unit 1 Unit 2	Unit 1 Unit 2	Unit 1 Unit 2	To Closeout
Description						
81/28	N X	N	N Op 416/81-59 N/A	MAEC-82/005 N/A	81-59	N/A 155
HPCS Test Connection Piping Broken During Testing						
81/29	N N	N	N Op 416/81-50 Op 417/81-22	MAEC-81/243 MAEC-81/243	81-50	81-22 130
Temp Flex Penetration Bellows Assemblies						
81/30	W W	N	N Not Assigned Not Assigned	None None	None	None 0
Failure of Suppression Pool Makeup System Control Transformer						
81/31	W W	N	N Not Assigned Not Assigned	None None	None	None 28
Neon Lights in PGCC						
81/32	N N	N	N 416/CDR81-32 417/CDR81-32	MAEC-81/242 MAEC-81/242	81-47	81-20 85
GE Bulkhead Connectors						
81/33	C C	Y	Y			110
GE-Dikkers safety relief valve solenoid failures						
81/34	N C	Y	Y 416/CDR81-34 -	MAEC-82/019 -	82-04	- 89
GE-Inaccurate reactor water level measuring devices						
81/35	N X	Y	Y 416/CDR81-35 N/A	MAEC-82/004 -	81-60	N/A 77
Failure of CRD Hydraulic System Scram Pilot Valves						
81/36	N C	Y	N 416/CDR81-36 -	MAEC-81/243 -	81-50	- 28
Incorrect supplemental steel beam sizes						
81/37	C C	Y	Y			67
GE - Spare woodward Governor on Diesel Generator						
81/38	C C	Y	N			64
HVAC Air Flow Deficiency						
81/39	O O	Y	U			
Defective Terminations in Remote Shutdown Panels						
81/40	C C	Y	N 416/CDR81-40 -	MAEC-82/019 -	82-04	- 64
Presray inflatable seals						
81/41	C C	Y	N			88
Pressure door No. 1A320						
81/42	O O	Y	U			
NUREG 0588 Unqualified Equipment						

F-12

Fri Feb 5, 1982

PRD Summary Listing

Page 13

PRD Num	Status		Reportability		NRC Number		NRC Closure Ltr Num		NRC Closure Inspection		Number Days To Closeout	
	U1	U2	55(e)	21	Unit 1	Unit 2	Unit 1	Unit 2	Unit 1	Unit 2		
81/43	O	O	Y	N	Turbonetics-Teflon in Drywell Purge Compressor After Coolers							
81/44	O	O	U	U	Bettis-Unqualified Air Actuators in Henry Pratt Valves							
81/45	O	O	U	U	DeLaval-Standby Diesel Generator Spherical Washer Design							
81/46	C	C	Y	N	Bech-Rockbestos Cable Subject to Failure above 230 degrees F							11
81/47	O	O	U	U	Bech-Bergen-Patterson Springs Incorrect Travel Range							
81/48	C	C	N	N	Bech-Unauthorized Work Performed after Pre-ops.							
81/49	O	O	U	N	GE-Thermal cycling of reactor vessel during hot operations							
81/50	W	W	N	N	Not Assigned	Not Assigned	None	None	None	None	0	
81/51	C	C	Y	N	Incorrect SGTS Installation Drawings							51
81/52	W	W	N	N	Lonergan Safety Relief Valves - Nonconforming							52
81/53	O	O	U	U	Delaval SDG Pneumatic Logic							
82/01	C	C	Y	Y	Delaval SDG Governor Lube Oil Cooler							
82/02	W	W	N	N	Delaval Defective Valve Springs							
82/03	W	W	N	N	Cable Tray Support Load Capabilities							
82/04	O	O	Y	U	Delaval SDG Starting Air Compressor							

F-13

Fri Feb 5, 1982

PRD Summary Listing

Page 1

PRD Num	Status	Reportability	NRC Number	NRC Closure Ltr Num	NRC Closure Inspection	Number Days
	U1 U2	55(e) 21	Unit 1 Unit 2	Unit 1 Unit 2	Unit 1 Unit 2	To Closeout
		Description				

82/05	O O U	U				
		Nuts not thrding properly on CRD housing lower support rods				

F-14

SUMMARY OF ATTACHMENT G

INCLOSURE I MP&L Audit of Bechtel Gaithersburg, October 29 - November 1, 1974

- A. Pages 1 and 2 - Summary of Audit Checklists applicable to Design Control or Design Interface.
- B. Pages 3 and 4 - Summary of Nonconformances (Corrective Action Requests No. 9 and No. 15) identified during the audit.
- C. Pages 5 through 27 - Summary of Audit Commitments. Implementation Status, Findings and Recommendations resulting from the Audit.

INCLOSURE II MP&L Audit of Bechtel Gaithersburg, August 30 - September 3, 1976

- A. Page 1 - Summary of Audit Checklists applicable to the Design Process.
- B. Pages 2 through 15 - Summary of Commitments addressed by the Audit. Nonconformances identified - NONE.
- C. Pages 16 through 42
 - 1. Audit Checklist No. 3 (13 Pages) Design Control.
 - 2. Audit Checklist No. 5 (5 Pages) Drawing Control.
 - 3. Audit Checklist No. 7 (9 Pages) Nonconforming Material, Parts and Components.

INCLOSURE III MP&L Audit of Bechtel Gaithersburg, July 19 - 22, 1977

- A. Page 1 - Summary of Audit Checklists applicable to Design Control or Design Interface.
- B. Pages 2 through 9 - Summary of Nonconformance identified during the audit which pertain to Document Control Within Safety-related systems, Procurement and Design Control.
- C. Pages 10 through 64 - Summary of Audit Checklists and supporting documentation pertaining to nonconformances identified and listed on C above.

INCLOSURE IV

MP&L Audit of Bechtel Gaithersburg, July 17 - 21, 1978

- A. Page 1 - Summary of Audit Checklists applicable to Design Control or Design Interface.
- B. Nonconformances - NONE
- C. Pages 2 through 77 - Audit Checklists and supporting documentation resulting from the audit.

INCLOSURE V

MP&L Audit of Bechtel Gaithersburg, June 19 - 22, 1979

- A. Page 1 - Summary of Audit Checklists applicable to Design Control or Design Interface.
- B. Pages 2 through 9 - Summary of Nonconformances (Corrective Action Request [CARs]) identified during the Audit which pertain to Design Document Processing.
- C. Pages 10 through 155 - Audit Checklists and Supporting documentation resulting from the Audit.

INCLOSURE VI

MP&L Audit of Bechtel Gaithersburg, January 5 - 9, 1981

- A. Page 1 - Summary of Audit Checklists applicable to Design Control or Design Interface.
- B. Pages 2 and 3 - Nonconformances (Corrective Action Requests [CARs] 289 and 290) identified during the audit.
- C. Pages 4 through 31 - Audit Checklists ATR-09 and ATR-15 and Supporting documentation resulting from the audit.

INCLOSURE VII

MP&L Audit of Bechtel Gaithersburg, July 13 - 17, 1981

- A. Page 1 - Summary of Audit Checklists applicable to Design Control and Design Interface.
- B. Nonconformances - NONE.
- C. Pages 2 through 182 - Audit Checklists and supporting documentation resulting from the audit.

INCLOSURE VIII

MP&L Audit of Bechtel Gaithersburg, September 28 - October 2, 1981

- A. Page 1 - Summary of Audit Checklist applicable to design control or Design Interface.
- B. Pages 2 and 3 - Summary of Nonconformance (Corrective Action Request [CAR] 412) identified during the audit.
- C. Pages 4 through 7 - Audit Checklist BCGA-81/2708

MP&L AUDIT OF BECHTEL-GAITHERSBURG
October 29-November 1, 1974

SUMMARY OF ATTACHED CHECKLISTS APPLICABLE TO DESIGN CONTROL OR DESIGN INTERFACE

<u>CHECKLIST NUMBER</u>	<u>SUBJECT</u>	<u>NONCONFORMANCE IDENTIFIED</u>
I.A.1/PSAR-1	Design Review & Approval	None
I.A.2/PSAR-2	DCCL & Design Review Notices	None
I.A.3/PSAR-3	Design Change Control	None
I.A.4/PSAR-4	Design Change Control Procurement Documents	None
I.A.5/PSAR-5	Shop Inspector Advisement of Approved Vendor Documents and Drawings	None
I.A.7/PSAR-7	Prompt Issue of Approved Drawings, Specifications, and Procedures	None
I.A.8/PSAR-8	Review & Approval of Changes to Approved Documents	None
I.A.9/PSAR-9	Field Change Requests Review & Approval	None
I.A.10/PSAR-10	Surveillance & Maintenance of Drawing Control Log	None
I.A.22/PSAR-22	Bechtel Review of Contractor, Subcontractor, & Vendor Test Operation procedures for Compliance with Applicable Design Documents	None
I.A.24/PSAR-24	Bechtel Procurement Shop Inspection Review of Test Procedures, Including Changes, for Project Engineering Approval	None
I.A.33/PSAR-33	Documentation of Nonconformances Relating to Procedures, Drawings, Specifications, & Other Quality Related Data	None

MP&L AUDIT OF BECHTEL-GAITHERSBURG
October 29-November 1, 1974

(cont'd)

SUMMARY OF ATTACHED CHECKLISTS APPLICABLE TO DESIGN CONTROL OR DESIGN INTERFACE

<u>CHECKLIST NUMBER</u>	<u>SUBJECT</u>	<u>NONCONFORMANCE IDENTIFIED</u>
I.A.34/PSAR-34	Inclusion in QA Program & Performance of Audit Activities During the Design, Procurement, & Construction Phase	None
I.B.2	Survey & Evaluation of Supplier & QA Program for Capability to Supply a Product Meeting all required Design, Manufacturing & Quality Requirements	CAR-9
I.B.3	Establishment, Maintenance, & Distribution of Master List of Current Instructions, Procedures Drawings, & Procurement Documents	CAR-15
II.A.1/PEPM-1	Protection of Original Drawings	None

NONCONFORMANCES IDENTIFIED DURING
MP&L QA AUDIT OF BECHTEL GAITHERSBURG
OCTOBER 29-NOVEMBER 1, 1974

CAR Number 9

1. COMMITMENT: PSAR in Appendix R, Pages R17.5-4 (Item k.3) and R17.5-6 (Item b.3) states:

"If no previous quality records are available, a survey and evaluation of the supplier's facilities and quality assurance program must be conducted to determine capability to supply a product which meets all required design, manufacturing, and quality requirements. Results of these surveys must be documented and filed at the buyer's facility."
2. FINDING: Contrary to the above, Bechtel has no mechanism to assure subject surveys are performed.
3. CORRECTIVE ACTION:
 - a. Bechtel developed a procedure, titled "Supplier Information System", for inclusion in the governing Purchasing Manual and to thus provide adequate assurance that surveys and evaluations are performed on all suppliers for which there are no previous quality records.
 - b. Verification of corrective action was accomplished on 8/29/75 and this CAR was closed on 10/18/75.

NONCONFORMANCES IDENTIFIED DURING
MP&L QA AUDIT OF BECHTEL GAITHERSBURG
OCTOBER 29-NOVEMBER 1, 1974

CAR Number 15

1. COMMITMENT: The PSAR in Appendix R, Criteria 6, Page R17.5-5 states:

"That a method of providing a master list which identifies the current revision number of instructions, procedures, drawings, and procurement documents be established and implemented. This list should be updated and distributed at least once a month to predetermined responsible personnel."
2. FINDING: Contrary to the above, Bechtel has not established nor implemented a method of providing a master list which identifies the current revision of instructions and procedures (i.e. including all manuals used on the project).
3. CORRECTIVE ACTION:
 - a. Project Procedures Manual, Revision 3, Section 3.1.4.1, dated 6/2/75, incorporated a method of providing a master list which identifies the current revision number of instructions, procedures, drawings, and procurement documents.
 - b. Verification of corrective action was completed on 8/29/75 and this CAR was closed on 10/18/75.

SUMMARY AUDIT RESULTS

1. Listed below are selected PSAR commitments, implementation status, findings (explanation of status), and recommendations arranged by location in the PSAR as follows:

- A. Chapter 17
- B. Appendix R

A. SELECTED CHAPTER 17 (PSAR) COMMITMENTS, IMPLEMENTATION STATUS, FINDINGS, AND RECOMMENDATIONS

A.1 a. Commitment

Page 17 Section 17.1.3.2 (First Paragraph) of Chapter 17 (PSAR)

Several levels of design review and approval are applied to the design aspects of Bechtel work. These standard procedures include:

- (1) Checking and review by design-and-engineering-level personnel within the project engineering team having technical qualifications comparable to those of the engineer or designer who originated the work.
- (2) Review and approval by the originating engineer's group supervisor.
- (3) Review and approval by the Project Engineer.
- (4) Review and/or approval by the appropriate Chief Engineer of design drawings, specifications, and documents identified on the Design Control Check Lists.

B. Implementation Status

Verified for technical specification E-017.0.

C. Findings

Interview with Mr. V. R. Marathe, Senior Engineer. (Electrical) verified item (1). Examination of E-017.0 technical specification coversheet verified appropriate review and approval for items (2) and (3). Item (4) verified by up-to-date copy of DCCL.

D. Recommendations

None.

A.2 a. Commitment

Page 17.1-34, Section 17.1.3.2 (Second Paragraph) of Chapter 17 (PSAR)

✓ When an item identified in the Design Control Check List has been completed, the cognizant Chief Engineer will have a final review performed and execute a design control approval signifying that the necessary initial, periodic, and final review has been performed, that monitoring work has been completed, and that the item is satisfactory from the standpoint of quality assurance requirements.

A.2.b. Implementation Status

Verified for technical specification E-017.0.

2.c. Findings

Examination of DCCL & Design Review Notices for E-017.0 verified implementation.

2.d. Recommendations

None.

A.3.a. Commitment

Page 17.1-34, Section 17.1.3.2 (Fourth Paragraph) of Chapter 17 (PSAR)

Design changes, including field change requests, are subject to design control measure commensurate with those applied to the original design.

3.b. Implementation Status

Verified for technical specifications E-017.0 and C-97.0.

3.c. Findings

Examination of documentation including Field change requests verified implementations for technical specifications E-017.0 and C-97.0.

3.d. Recommendations

None.

A.4.a. Commitment

Page 17.1-42, Section 17.1.4.2 of Chapter 17 (PSAR)

Technical changes in procurement documents are subject to the same degree of design control as was exercised in the preparation of the original document.

b. Implementation Status

Verified for C-101.1 and E-017.0.

c. Findings

Examination of documentation and interviews with responsible personnel for C-101.1 and E-017.0 verified commitment had been implemented.

d. Recommendations

None.

A.5.a. Commitment

Page 17.1-42, Section 17.1.4.2 of Chapter 17 (PSAR)

Shop Inspectors are kept advised of the current status of approved vendor documents and drawings.

b. Implementation Status

Verified for E-017.0 and C-111.0.

c. Findings

The Procurement Inspection Department Manual (PIDM) in Administrative Procedures Section III, Page 5, subsection 3.3 gives the Project Inspection Supervisor direction to keep shop inspectors appropriately advised. Documentation produced by Mr. D. Trapold, Project Inspection Supervisor, indicated appropriate action (by use of copies of vendor transmittals) had been taken for C-111.0.

d. Recommendations

None.

A.6.a. Commitment

Page 17.1-45, Section 17.1.5.1 (Second Paragraph) of Chapter 17 (PSAR)

Bechtel, as the Owner's agent, will provide for the monitoring and auditing of the Owner's contractor/vendor activities in conformance with written instructions, procedures, and drawings.

b. Implementation Status

Verified.

c. Findings

Bechtel Manuals provide for implementation of this commitment. An example is in the Procurement Inspection Department Manual (PIDM) in Administrative Procedures, Section III, Page 6, subsection 3.4.

d. Recommendations

None.

A.7.a. Commitment

Page 17.1-48, Section 17.1.6.2 (First Paragraph) of Chapter 17 (PSAR)

Approved drawings, specifications, and procedures are promptly issued to organizations and individuals performing the work and to those responsible for inspection.

b. Implementation Status

Verified for E-017.0.

c. Findings

Documentation examined for E-017.0 (i.e. Purchase Order transmitted by MPTP-74/1036) was promptly issued to appropriate individuals in accordance with instructions and document distributions in the Project Engineering Procedures Manual (PEPM).

d. Recommendations

None.

A.8.a. Commitment

Page 17.1-48, Section 17.1.6.2 (First Paragraph) of Chapter 17 (PSAR)

Changes made to approved documents by the Project Engineering Team or proposed by Field Engineering are reviewed and approved by the Project Engineering Team in accordance with procedures for review of the initial issue.

b. Implementation Status

Verified for C-097.0.

c. Findings

Documentation for C-097.0 indicated that appropriate review and approval has been verified (for changes made to approved documents by the Project Engineering Team or proposed by Field Engineering) by the Project Engineering Team in accordance with procedures for review of the initial issue.

d. Recommendations

None.

A.9.a. Commitment

Page 17.1-48, Section 17.1.6.2 (Third Paragraph) of Chapter 17 (PSAR)

The Project Quality Assurance Engineer monitors field engineering activities to verify that field change requests are reviewed and approved by the Project Engineering team.

b. Implementation Status

Verified.

c. Findings

The Project Quality Assurance Engineer monitors field engineering activities by reports (dated 3/12/74) and quality audit findings (PFE-1-4 dated 8/8/74) from the Field QA Supervisor.

d. Recommendations

None.

A.10.a. Commitments

Page 17.1-48, Section 17.1.6.2 (Third Paragraph) of Chapter 17 (PSAR)

He (Project Quality Assurance Engineer) also makes spot checks to assure that a drawing control log is being maintained and that only current design documents are in use.

b. Implementation Status

Verified.

c. Findings

Examination of project audit reports (GGEQC-2 dated 9/9-13/74 and GGCC-1 dated 7/1-3/74) indicates these items have been spot checked under the direction of the PQAE in Gaithersburg. Examination of quality audit finding (PFE-1-4 dated 8/8/74) and field report (dated 8/12/74) indicate these items have been spot checked in the field by the Field QA Supervisor.

d. Recommendation

None.

A.11.a Commitments

Page 17.1-50, Sect. 17.1.7.1 (Third Paragraph) of Chapter 17 (PSAR)

The various participating contractors shall perform independent audits of their own performance and that of their vendors and subcontractors. Documentary evidence that such audits were performed, including summary results, will be available for review at intervals to assure that the responsible contractor is implementing his respective Quality Assurance Program.

b. Implementation Status

Verified for two of Bechtel's vendors and their subcontractors.

c. Findings

Examination of documentation of two Bechtel audits (i.e. Audit of Bethlehem Steel in September 1974 for C-111.0; and Audit of General Electric, transmitted to MP&L by copy of GEB-74/34 dated 3/29/74) indicates Bechtel is performing audits and has documentary evidence available for review; and that Bethlehem and General Electric have done the same for their subcontractors.

d. Recommendation

None.

A.12.a Commitment

Page 17.1-50, Sect. 17.1.7.1 (Fourth Paragraph) of Chapter 17 (PSAR)

Purchased material, equipment, and/or services, whether purchased by the Owner's agent (Bechtel) or through contractors, subcontractors, or vendors will be inspected by Bechtel at each plant and upon receipt at the jobsite to assure that it conforms to the applicable purchase document.

b. Implementation Status

Documentation was not produced to indicate commitment had been implemented (i.e. specification C-101.0).

c. Findings

Bechtel has no mechanism to assure inspection at each plant by Bechtel inspectors.

d. Recommendations

Bechtel develop a procedure which will give adequate assurance of compliance with the commitment. (SEE CAR No. 10)

A.13.a Commitment

Page 17.1-50, Sect. 17.1.7.2 of Chap. 17 (PSAR)

The program (Bechtel QA) provides for evaluation of a vendor's Quality Assurance program and preparation of procurement specifications incorporating quality assurance requirements. These quality assurance requirements include an appropriate vendor Quality Assurance program and organization, purchaser surveillance as required, vendor preparation and maintenance of appropriate test and inspection records, certificates and other quality assurance documentation, and vendor submittal of quality control records considered necessary for purchaser retention to verify quality of completed work.

b. Implementation Status

Verified for E-017.0.

c. Findings

Examination of documentation for specification E-017.0 (including Appendices B and C) indicate commitment is being implemented.

d. Recommendations

None.

A.14.a. Commitment

Page 17.1-51, Sect. 17.1.7.2 (Second Paragraph) of Chapter 17 (PSAR)

Bechtel shop inspectors review and verify selected vendor quality assurance records and prepare reports documenting vendor data submitted to the purchaser. Where Bechtel shop inspection is performed, an inspection of the finished item is performed in the vendor's shop prior to the release for shipment.

b. Implementation Status

Verified.

c. Findings

Examination of Surveillance Inspection Reports (and instructions in Volume II of the Procurement Inspection Department Manual); forms BPI-361, GG-10, G-321-C and instructions for the use of these forms indicates commitment is being met.

d. Recommendation

None.

A.15.a. Commitment

Page 17.1-51, Sect. 17.1.7.2 (Second Paragraph) of Chapt. 17 (PSAR)

Bechtel procurement procedures also provide for periodic audits of vendor quality assurance activities as appropriate.

b. Implementation Status

Verified for periodic audits of vendors.

c. Findings

Examination of documentation indicates intent of commitment for periodic audits of vendors has been met.

d. Recommendation

None.

A.16.a. Commitment

Page 17.1-53, Section 17.1.8.2 of Chapter 17 (PSAR)

As it applies to vendors, appropriate requirements for identification and control of materials, parts, and components are established through review of the vendor's Quality Assurance program and procedures.

b. Implementation Status

Verified for C-151.0 and E-017.0.

c. Findings

Examination of documentation for C-151.0 and E-017.0 indicates commitment is being met.

d. Recommendation

None.

A.17.a. Commitment

Page 17.1-55, Section 17.1.9.2 of Chapter 17 (PSAR)

Use of qualified procedures and application thereof, as required by established codes and standards, are rigidly enforced by Bechtel on contractors, subcontractors, and vendors field and shop personnel.

b. Implementation Status

Verified.

c. Findings

Examination of documentation and enforcement by instructions in the Procurement Inspection Department Manual, Section VI and forms and instructions for G-321-C and BPI-361 indicate Bechtel meets the intent of the commitment.

d. Recommendation

None.

A.18.a. Commitment

Page 17.1-55, Section 17.1.9.2 of Chapter 17 (PSAR)

Special processes, including welding, heat treating, and nondestructive examination, will be controlled and accomplished by qualified personnel using qualified procedures in accordance with applicable codes, standards, specifications, criteria, and other special requirements.

b. Implementation Status

Verified for C-151.0.

c. Findings

Examination of documentation for C-151.0 (including transmittals VDT-74/176 dated 7/9/74 and VDT-74/0492 dated 10/24/74) indicates commitment has been met.

d. Recommendation

None.

A.19.a. Commitment

INCLOSURE 1 PAGE 12

Page 17.1-57, Sect. 17.1.10.1 (Second Paragraph) of Chapter 17 (PSAR)

Bechtel, as the Owner's agent, provides inspection surveillance of contractors' in-process field operations in accordance with their Quality Assurance program and approved inspection procedures.

b. Implementation Status

Verified for C-191.0.

c. Findings

Examination of documentation (field QC records) for C-191.0, Materials Testing Services, indicates Bechtel meets the intent of the commitment.

d. Recommendation

None.

A.20.a. Commitment

Page 17.1-57, Sect. 17.1.10.2 (First Paragraph) of Chapt. 17 (PSAR)

Bechtel performs periodic and preshipment inspections of vendor work as described in Subsection 17.1.7.2.

b. Implementation Status

Verified.

c. Findings

Examination of documentation indicates Bechtel meets the intent of the commitment.

d. Recommendation

None.

A.21.a. Commitment

Page 17.1-57, Sect. 17.1.10.2 (First Paragraph) of Chapter 17 (PSAR)

Figure 17.1-7 illustrates the Bechtel inspection function of Q-Listed items and components.

b. Implementation Status

Verified.

c. Findings

Bechtel meets the intent of the commitment.

d. Recommendation

None.

A.22.a. Commitment

Page 17.1-59, Section 17.1.11.1 (Second Paragraph) of Chapt. 17 (PSAR)

Bechtel, as the Owner's agent, will review contractor, subcontractor, and vendor test operation procedures to ensure that they incorporate the requirements and acceptance limits contained in applicable design documents.

b. Implementation Status

Verified for C-151.0

c. Findings

Examination of documentation for C-151.0 indicates Bechtel meets the intent of the commitment.

d. Recommendation

None.

A.23.a. Commitment

Page 17.1-59, Sect. 17.1.11.2 (First Paragraph) of Chapt. 17 (PSAR)

The Bechtel Quality Assurance program requires that contractors, subcontractors, and vendors have a Quality program which includes requirements that the functional testing, including proof testing, acceptance testing, and operational testing be performed under controlled conditions in accordance with written and Bechtel approved test procedures. These test procedures are required to incorporate the requirements and acceptance limits contained in applicable regulatory specifications, codes, and standards.

b. Implementation Status

Verified for E-017.0 and M-242.0

c. Findings

Examination of documentation for E-017.0 and M-242.0 (including VDT-74/0320 dated 9/10/74) indicates commitment is being met.

d. Recommendation

None.

A.24.a. Commitment

Page 17.1-59, Sect. 17.1.11.2 (First Paragraph) of Chapt. 17 (PSAR)

Bechtel Procurement shop inspection review vendor test procedures, including changes thereto, for verification of project engineering approval prior to and during the manufacturing process.

b. Implementation Status

Verified.

c. Findings

Examination of documentation indicates intent of commitment is being met.

d. Recommendations

None.

A.25.a. Commitment

Page 17.1-59, Sect. 17.1.11.2 (First Paragraph) of Chapt. 17 (PSAR)

Bechtel shop inspectors are required to personally witness Vendor shop tests when specified by the purchase order, specifications, or regulatory code.

b. Implementation Status

Verified.

c. Findings

Examination of documentation indicates intent of commitment is being met.

d. Recommendation

None

A.26.a. Commitment

Page 17.1-61, Section 17.1.12.1 of Chapter 17 (PSAR)

Vendor procedures for control of measurement and test equipment are reviewed, as appropriate, in evaluating the vendor Quality Assurance program.

b. Implementation Status

Verified for E-017.0.

c. Findings

Examination of documentation indicates intent of the commitment for E-017.0 has been met.

d. Recommendation

None.

A.27.a. Commitment

Page 17.1-63, Section 17.1.13.2 of Chapter 17 (PSAR)

When project specification requires special procedures for handling, storage, shipping, or preservation, these are approved by the project engineering team.

b. Implementation Status

Verified for M-242.0 and C-151.0.

c. Findings

Examination of documentation for M-242.0 (including Pages 17 and 18 of the technical specification; and GG-10, G-321-C of Appendix B) and C-151.0 (including VDT-74/0098 dated 5/16/74) indicates commitment is being met.

d. Recommendation

None.

A.28.a. Commitment

17.1-65, Section 17.1.14.2 of Chapter 17 (PSAR)

Documentation of inspections, tests, and operating status is provided by inspection reports or other records. This documentation identified the items that conform to inspection and test requirements. Nonconforming items are reported and tagged (see Subsection 17.1.15.2).

b. Implementation Status

Verified for E-017.0.

c. Findings

Examination of documentation indicates intent of the commitment for E-017.0 has been met.

d. Recommendations

None.

A.29.a. Commitment

Page 17.1-67, Section 17.1.15.2 of Chapter 17 (PSAR)

The Bechtel Quality Assurance program provides measures which control materials, parts, or components not conforming to prescribed requirements in order to prevent their inadvertent use or installation. Materials are physically controlled in accordance with procedures described in Subsection 17.1.8.2. For nonconforming items which may be made usable through rework or repair, or that can be used "as is," reports are prepared and submitted to the project engineering team for resolution and approval unless repair or rework can be accomplished by use of prior-approved procedures.

b. Implementation Status

Verified as to measures already being provided.

c. Findings

Measures have been provided which control materials, parts or components not conforming to prescribed requirements in order to prevent their inadvertent use or installation. "Use as is" or "repair" dispositions have not been necessary up to this time.

d. Recommendation

None.

A.30.a. Commitment

Page 17.1-69, Section 17.1.16.2 (First Paragraph) of Chapt. 17 (PSAR)

The Bechtel Quality Assurance program incorporates corrective action procedures for identification, reporting and correction to prevent recurrent of situations which are deemed adverse to quality. These include reports of significant failures, malfunctions, deficiencies, deviations, defective material, etc., that cannot be resolved at the site and/or require management attention and which may necessitate changes in program procedures or practices.

b. Implementation Status

Verified.

c. Findings

Examination of documentation indicates the intent of the commitment has been or is being met.

d. Recommendation

None.

A.31.a Commitment

Page 17.1-69, Section 17.1.16.2 (Second Paragraph) of Chapt. 17 (PSAR)

For work in vendor shops, the Bechtel shop inspector's report will identify situations which may require corrective action. Inspector's reports are reviewed by the project engineering team and by Bechtel procurement personnel.

b. Implementation Status

Verified.

c. Findings

Examination of several Surveillance Inspection Reports (SIR) indicates commitment is being met.

d. Recommendation

None.

A.32.a. Commitment

Page 17.1-71, Section 17.1.17.2 of Chapter 17 (PSAR)

Quality documentation collected during the design, procurement, fabrication, construction, and startup phases of the project, prepared by Bechtel or obtained from contractors, subcontractors, and vendors is identified and files, as appropriate, in Quality Assurance or Quality Control files at the engineering office or at the construction site. The files are prepared based on a master file system and provide for the rapid and orderly retrieval of documents such as inspection reports, test reports, non-conformance reports, significant deficiency reports, audit reports, and other documents verifying project quality evidence.

b. Implementation Status

Verified.

SUMMARY AUDIT RESULTS (continued)c. Findings

Examination of documentation indicates commitment is being met for inspection reports, non-conformance reports, significant deficiency reports and audit reports.

d. Recommendations

None.

A.33.a. Commitment

Page 17.1-71, Section 17.1.17.2

Documentation is selectively reviewed by Quality Assurance for completeness of content prior to filing. This review ascertains that nonconformances including the cause and corrective action with respect to procedures, drawings, specifications, and other quality related data have been documented.

b. Implementation Status

Verified.

c. Findings

Examination of documentation indicates that documentation is selectively reviewed by Quality Assurance; on site documentation is reviewed by the Field QA Supervisor; and in Engineering by the Discipline Quality Engineer.

d. Recommendation

None.

A.34.a. Commitment

Page 17.1-74, Section 17.1.18.2 of Chapter 17 (PSAR)

The Bechtel Quality Assurance program includes four specific audit activities:

Audits of Project Engineering activities and records by, or under the direction of, the Supervisor of Quality Assurance.

Audits of vendor's Quality Assurance program and records by Bechtel shop inspectors.

Informal audits of Project Engineering design and field inspection activities and reporting by the Project Quality Assurance Engineer.

Audits of field Quality Control and inspection activities under the direction of the Supervisor of Quality Assurance.

All these are carried out periodically on a sampling basis during the design, procurement, and construction phases of the project.

b. Implementation Status

Verified.

c. Findings

Verified that all four specific audit activities are included in the QA program, and are carried out periodically during the design, procurement, and construction phases of the project.

d. Recommendation

None.

B. SELECTED APPENDIX R (PSAR) COMMITMENTS, IMPLEMENTATION STATUS, FINDINGS, AND RECOMMENDATIONS

B.1.a. Commitment

Page R 13.9-1, Item 13.9 of Appendix R (PSAR). MP&L Project Manager is responsible for design, procurement, licensing and construction of the project.

1. The Project Manager approves the assignment or transfer of the leading Bechtel personnel to the project.

b. Implementation Status

Verified for project engineering personnel but could not be documented for construction personnel.

c. Findings

Documentation (MPB-74/389, 5/30/74) was presented to verify that for project engineering personnel (F. Ertukel, T. Habermas and K. Jolly) the Project Manager approves the assignment or transfer of Bechtel personnel. Documentation could not be produced; however, for field construction personnel (J. McCarty, F. Bagamary, J. Kime and T. Butcher).

Bechtel does not have a mechanism to assure that the MP&L Project Manager approves the assignment or transfer of leading Bechtel personnel.

d. Recommendations

Bechtel develop a procedure which will give adequate assurance of compliance with the commitment. (See CAR No. 11)

- B.2.a. Page R17.5-4, Criteria 5, Item k.3 of Appendix R (PSAR)
Page R17.5-6, Criteria 7, Item b.3 of Appendix R (PSAR)

If no previous quality records are available, a survey and evaluation of the supplier's facilities and quality assurance program must be conducted to determine capability to supply a product which meets all required design, manufacturing, and quality requirements. Results of these surveys must be documented and filed at the buyer's facility.

b. Implementation Status

Documentation could not be produced to indicate commitment had been implemented.

c. Findings

Bechtel has no mechanism to assure subject surveys are performed.

d. Recommendations

Bechtel develop a procedure which will give adequate assurance that surveys and evaluations will be performed on all suppliers for which there are no previous quality records. (See CAR No. 9)

B.3.a. Commitment

Page R17.5-5, Criteria 6, Item h of Appendix R(PSAR)

That a method of providing a master list which identifies the current revision number of instructions, procedures, drawings, and procurement documents be established and implementd. This list should be updated and distributed at least once a month to predetermined responsible personnel.

b. Implementation Status

Documentation could not be produced to indicate the commitment had been met for instructions and procedures.

c. Findings

Bechtel has not established nor implemented a method of providing a master list which identifies the current revision of instructions and procedures (i.e. including all manuals used on the project).

d. Recommendations

Bechtel develop a procedure to assure compliance with the commitment. (See CAR No. 15)

B.4.a. Commitment

Page R17.5-6, Criteria 7 Items a and b of Appendix R(PSAR)

a. That the evaluation of suppliers be determined by qualified personnel competent in determining the ability of suppliers to provide acceptable quality products. The QA and Engineering organization should participate in the evaluation of these suppliers providing critical components.

b. That the evaluation be based on:

1. The ability of the supplier to comply with those elements of 10 CFR Part 50 Appendix B that are applicable to the type of material, equipment, and services being procured.
2. A review of previous records and performance of suppliers which have supplied similar articles of the type being procured.

b. Implementation Status

Indeterminate.

c. Findings

Vendor QA Program evaluation checklists contain ambiguous questions.

d. Recommendations

→ To assure uniform evaluation of vendors' QA Programs additional written guidance must be given in the use of the evaluation check list. (See CAR No. 19)

B.5.a. Commitment

Page R17.5-14, Criteria 15, Item e. of Appendix R(PSAR)

That nonconformances which are dispositioned "use as is" or "repair" be approved by the Owner's engineering and QA organizations.

b. Implementation Status

Documentation was not produced to indicate commitment had been implemented.

c. Findings

Bechtel does not have a procedure to assure non-conformances which are dispositioned "use as is" or "repair" are submitted for approval to MP&L.

d. Recommendations

→ Bechtel develop a procedure to assure compliance with the commitment. (See CAR No. 16)

B.6.a. Commitment

Page R17.5-15, Criteria 16, Items b and c of Appendix R(PSAR)

That measures be established to determine the cause of the non-conformance and to institute corrective action to preclude the recurrence of those significant conditions adverse to quality.

That measures be established to followup on corrective actions to assure proper implementation and to close out the corrective action documentation.

b. Implementation Status

Documentation was not produced to indicate commitments had been implemented.

c. Findings

Bechtel does not have a formal procedure to advise procurement shop inspectors of non-conforming material found by site receiving inspectors.

SUMMARY AUDIT RESULTS (continued)d. Recommendations

Bechtel develop a procedure for informing procurement shop inspectors of non-conforming material found by site receiving inspectors. (See CAR No. 12)

B.7.a. Commitment

Page R17.5-15, Criteria 16, Item c of Appendix R(PSAR)

That measures be established to followup on corrective actions to assure proper implementation and to close out the corrective action documentation. (i.e. for Project Quality Assurance Engineer's audit of a vendor.)

b. Implementation Status

Documentation was not produced to indicate commitments had been implemented.

c. Findings

Bechtel does not have a formal procedure of mechanism for follow-up on corrective actions requested as a result of a Project Quality Assurance Engineer's audit of a vendor.

d. Recommendations

Bechtel develop a procedure for vendor audit followup. (See CAR No. 17)

B.8.a. Commitment

Page R17.5-17, Criteria 18, Item h (3)

That the following types of audits be performed:

External audits performed by the Owner on major contractors, sub-contractors, and vendors performing activities in the early stages of design and procurement. These audits will include verification and evaluation of their QA Program, procedures, and activities to assure that they are mainingful and are effectively complying with all aspects of the QA Program and procurement requirements.

b. Implementation Status

Indeterminate.

c. Findings

Insufficient guidance is given to Project Engineering concerning items to be audited.

d. Recommendations

Additional written guidance should be given to Project Engineering

as to how to determine which safety related items should receive procurement surveillance inspection which in turn leads to procurement audits. (See CAR No. 18).

II.

Listed below are selected Bechtel Project Engineering Procedures Manual (PEPM) commitments, implementation status, findings (explanation of status), and recommendations.

A. SELECTED BECHTEL PROJECT ENGINEERING PROCEDURES MANUAL (PEPM) COMMITMENTS, IMPLEMENTATION STATUS, FINDINGS, AND RECOMMENDATIONS

A.1.a. Commitment

Page 4.1-47, Section 4.1.11 of the PEPM

The original drawings not in use will be kept under positive protection in a metal cabinet in a vault. Each discipline will maintain a drawing status report in a suitable binder for use as an index of the filed drawings.

b. Implementation Status

Verified.

c. Findings

Inspection of vault and discipline drawing status report binders indicates intent of the commitment is being met.

d. Recommendations

None.

A.2.a. Commitment

Page 4.2-8, Section 4.2.8, Item b of the PEPM

All telephone conversations between MP&L and Bechtel engineering personnel shall be made a matter of record by using the Telephone Call Memo form (Figure 4-2t). Within 24 hours, copies of this memo shall be delivered to the Project Secretary for transmittal to the MP&L party and to Mr. N. L. Stampely, Vice President, Production, MP&L.

b. Implementation Status

Verified.

c. Findings

Examination of documentation on a sampling basis indicates commitment is being met.

d. Recommendation

None.

A.3.a. Commitment

Page 4.2-8, Section 4.2.8, Item C of the PEPM

All telephone memos relating to Nuclear Safety Related Items shall be logged in the Quality Assurance Program, Communication Log (Figure 4-2u) and stamped with the Q symbol in the lower right hand side of all pages of the memo.

b. Implementation Status

Verified.

c. Findings

Examination of documentation on a sampling basis indicates commitment is being met.

d. Recommendations

None.

A.4.a. Commitment

Page 4.2-19, Section 4.2.13.2 of the PEPM

Surveillance Inspection Reports should be reviewed and transmitted to the client within two weeks of their receipt on the Project.

b. Implementation Status

Documentation indicates commitment has not been implemented.

c. Findings

Three Surveillance Inspection Reports transmitted by MPT-74/0535 (10/16/74), MPT-74/0574 (10/16/74) and MPT-74/0558 (10/16/74) all exceeded the two weeks time limit. Adequate control over the review cycle is not being exercised to assure transmittal to the client within the two week period.

d. Recommendations

1. Bechtel develop and enforce adequate followup procedure to assure transmittal to the client within two week time period.
2. Bechtel stamp client copy of the Surveillance Inspection Report with the date received on project. (See CAR No. 14)

A.5.a. Commitment

Page 4.5-4, Section 4.5.2.1 of the PEPM

Approval or comments on specifications submitted to the client should be received within 10 working days from the date of transmittal. Comments may be transmitted by letter, meetings, or

telephone. In the event that comments are not received from the client by the due date, it will be assumed that the specification is approved and Bechtel will advise the client by the telephone that the procurement process for issuing the specification for bids is being initiated, unless the client asks for a delay. Comments or approvals will be confirmed in writing by Bechtel.

b. Implementation Status

Verified.

c. Findings

Examination of documentation on a sampling basis indicates commitment is being met.

d. Recommendation

None.

A.6.a Commitment

Page 6.1-3, Section 6.1 of the PEPM

The Project Q-List shall be revised and/or issued, as a minimum biannually.

b. Implementation Status

Commitment has not been met.

c. Findings

Last Q-List was transmitted by MPB-1134, dated 10/10/73.

d. Recommendation

Bechtel comply with the commitment. (See CAR No. 13)

III. All completed items outstanding from Audit No. 2 of Bechtel Gaithersburg, 10/3-5/73 were verified as to the completion of Bechtel commitment corrective action.

NONCONFORMANCES

1. CAR No. 9

The PSAR in Appendix R, Pages R17.5-4 (Item k.3) and R17.5-6 (Item b.3) states: "If no previous quality records are available, a survey and evaluation of the supplier's facilities and quality assurance program must be conducted to determine capability to supply a product which meets all required design, manufacturing, and quality requirements. Results of these surveys must be documented and filed at the buyer's facility. "Bechtel has no mechanism to assure subject surveys are performed.

MP&L AUDIT OF BECHTEL-GAITHERSBURG
AUGUST 30-SEPTEMBER 3, 1976

SUMMARY OF ATTACHED CHECKLISTS APPLICABLE TO DESIGN CONTROL OR DESIGN INTERFACE

<u>CHECKLIST NUMBER</u>	<u>SUBJECT</u>	<u>NONCONFORMANCE IDENTIFIED</u>
3	Design Control (13 Pages)	NONE
5	Drawing Control (5 Pages)	NONE
7	Nonconforming Material, Parts, and Components (9 Pages)	NONE
	Review of Processing and Control of Nonconformance Reports (NCRs), Supplier Deviation Requests (SDRs), and Supplier Deviation Disposition Requests (SDDRs)	

COMMITMENTS ADDRESSED DURING
MP&L QA AUDIT OF BECHTEL GAITHERSBURG
AUGUST 30-SEPTEMBER 3, 1976

DESIGN CONTROL

1. COMMITMENT: Project Engineering Procedures Manual (PEPM) Paragraph 4.5.1.2.1 requires the following:
 - a. Proper identification of each page, appendix and each page of the appendix is identified with correct revisions.
 - b. Specification Checklist is initiated and signed off by responsible engineer.
 - c. Review and approval of specification by Chief Engineer in accordance with the Design Control Checklist.
 - d. The Project Quality Engineer has reviewed and signed off on the specification checklist.
2. FINDING: NONE
3. CORRECTIVE ACTION:

COMMITMENTS ADDRESSED DURING
MP&L QA AUDIT OF BECHTEL GAITHERSBURG
AUGUST 30-SEPTEMBER 3, 1976

DESIGN CONTROL

1. COMMITMENT: Project Engineering Procedure Manual (PEPM) Paragraph 6.3 requires that:
 - a. Design Review Notices (DRN) have been initiated and completed to record the Chief Engineers' action.
 - b. Project Engineer approve the specifications.
2. FINDING: NONE
3. CORRECTIVE ACTION:

COMMITMENTS ADDRESSED DURING
MP&L QA AUDIT OF BECHTEL GAITHERSBURG
AUGUST 30-SEPTEMBER 3, 1976

DESIGN CONTROL

1. COMMITMENT: Project Engineering Procedures Manual (PEPM) Paragraph 4.5.2.6 requires that:
 - a. The specification checklist is reissued in its entirety with each specification revision and submitted to the PQE for concurrence.
 - b. Specific appendices to specifications (as opposed to standard appendices) go through the same review and approval as the specification.
2. FINDING: NONE
3. CORRECTIVE ACTION:

COMMITMENTS ADDRESSED DURING
MP&L QA AUDIT OF BECHTEL GAITHERSBURG
AUGUST 30-SEPTEMBER 3, 1976

DESIGN CONTROL

1. COMMITMENT: Project Engineering Procedures Manual (PEPM) Paragraph 4.5.1.6.2 requires that:
 - a. Specification Revisions and SCNs are reviewed and approved by Bechtel Engineering as per original specification.
 - b. Specification Change Notice Log is up to date and contains the proper information.
 - c. Transmittal forms are on file and verify receipt of SCN's by intended recipients (particularly Field Construction Manager)
 - d. The SCN is filed in the appropriate Purchase Order/subcontract file; with the applicable specification (master) and the original in the General Subject file.
 - e. That SCNs are incorporated into the specification within 90 days (or after issuance of 5 SCNs against the specification).
2. FINDING: NONE
3. CORRECTIVE ACTION:

COMMITMENTS ADDRESSED DURING
MP&L QA AUDIT OF BECHTEL GAITHERSBURG
AUGUST 30-SEPTEMBER 3, 1976

DESIGN CONTROL

1. COMMITMENT: Project Engineering Procedures Manual (PEPM) Paragraph 4.5.1.4.2 specifies that:
 - a. For performance specifications either the appendix revision or the words "Latest Revision" is specified.
 - b. Revisions to standard attachments to a specification will have a "Standard Attachment to Specification" form is initiated and completed.
 - c. Project Quality Engineer insures implementation of the "Standard Attachments" procedure.
2. FINDING: NONE
3. CORRECTIVE ACTION:

COMMITMENTS ADDRESSED DURING
MP&L QA AUDIT OF BECHTEL GAITHERSBURG
AUGUST 30-SEPTEMBER 3, 1976

DRAWINGS

1. COMMITMENT: Project Engineering Procedures Manual (PEPM) Paragraph 4.3 specifies that:

Engineering sketches are not to be used for fabrication or construction purposes (no sketches used as appendices to specifications)

2. FINDING: NONE
3. CORRECTIVE ACTION:

COMMITMENTS ADDRESSED DURING
MP&L QA AUDIT OF BECHTEL GAITHERSBURG
AUGUST 30-SEPTEMBER 3, 1976

DRAWING CONTROL

1. COMMITMENT: Project Engineering Procedures Manual (PEPM) Paragraph 4.3.1.2.3 specifies that:
 - a. Q List drawings will be submitted to the Chief Engineer for review and approval as required by DCCL, prior to issuing for construction.
 - b. DRNs are properly initiated and completed by the Chief Engineer.
 - c. Drawing Control log is maintained current and updated monthly. (APPA; PEPM)
2. FINDING: NONE
3. CORRECTIVE ACTION:

COMMITMENTS ADDRESSED DURING
MP&L QA AUDIT OF BECHTEL GAITHERSBURG
AUGUST 30-SEPTEMBER 3, 1976

DRAWING CONTROL

1. COMMITMENT: Project Engineering Procedures Manual (PEPM) Paragraph 4.3.1.6.1 specifies that:
 - a. All revisions to drawings will be processed by the same procedure as the original and all outstanding DCNs are incorporated into the drawing within 90 days after issuance of the DCN.
 - b. Transmittal forms will be on file to verify receipt of an approved DCN by the intended reciever.
 - c. DCCL and DRN will include
 - (1) Design Criteria
 - (2) Major Drawings
 - (3) Procurement Specifications
 - (4) Field Construction and inspection specifications and procedures prepared or issued by engineering.
2. FINDING: NONE
3. CORRECTIVE ACTION:

COMMITMENTS ADDRESSED DURING
MP&L QA AUDIT OF BECHTEL GAITHERSBURG
AUGUST 30-SEPTEMBER 3, 1976

DESIGN CONTROL

1. COMMITMENT: Project Engineering Procedures Manual (PEPM) Paragraph 6.2 specifies that:
 - a. The DCCL is revised twice annually and that revisions follow original approval requirements.
2. FINDING: NONE
3. CORRECTIVE ACTION:

COMMITMENTS ADDRESSED DURING
MP&L QA AUDIT OF BECHTEL GAITHERSBURG
AUGUST 30-SEPTEMBER 3, 1976

DOCUMENT CONTROL FIELD CHANGE REQUESTS

1. COMMITMENT: Project Engineering Procedures Manual (PEPM) Paragraph 4.2.1.4.2 specifies that:
 - a. Field Change Requests received from the field are entered in the FCR Log.
 - b. FCR's are reviewed and approved the the Group Supervisor, Project Engineer and Chief Engineer (if required)
2. FINDING: NONE
3. CORRECTIVE ACTION:

COMMITMENTS ADDRESSED DURING
MP&L QA AUDIT OF BECHTEL GAITHERSBURG
AUGUST 30-SEPTEMBER 3, 1976

DOCUMENT CONTROL PROJECT Q-LIST

1. COMMITMENT: Project Engineering Procedures Manual (PEPM) Paragraph 6.1 requires:
 - a. That the Project Q-List be revised and/or issued, as a minimum, biannually.
 - b. Discipline Q-Lists will be maintained and will be approved by the Project Engineer, Discipline Chief Engineer, and Chief Nuclear Engineer.
 - c. Project and Discipline Q-List will follow the original approval requirements.
2. FINDING: NONE
3. CORRECTIVE ACTION:

COMMITMENTS ADDRESSED DURING
MP&L QA AUDIT OF BECHTEL GAITHERSBURG
AUGUST 30-SEPTEMBER 3, 1976

DOCUMENT CONTROL

1. COMMITMENT: Project Procedures Manual (PPM) Paragraph 3.1.3.1 specifies that:
 - a. The Project Administrator is responsible for maintenance of the document identification system.
 - b. Drawings, specifications procedures and instruction Will be controlled by this system.
 - c. Documents will be traceable to an individual, section, group through the register.
2. FINDING: NONE
3. CORRECTIVE ACTION:

COMMITMENTS ADDRESSED DURING
MP&L QA AUDIT OF BECHTEL GAITHERSBURG
AUGUST 30-SEPTEMBER 3, 1976

DOCUMENT CONTROL

1. COMMITMENT: Project Engineering Procedures Manual (PEPM) Paragraph 4.5.1.4 specifies that:
 - a. Each discipline will maintain a specification control log with specified information.
 - b. The specification control log will be up-dated on a monthly basis.
2. FINDING: NONE
3. CORRECTIVE ACTION:

COMMITMENTS ADDRESSED DURING
MP&L QA AUDIT OF BECHTEL GAITHERSBURG
AUGUST 30-SEPTEMBER 3, 1976

DOCUMENT CONTROL

1. COMMITMENT: Project Engineering Procedures Manual (PEPM) Paragraph 4.3 was reviewed for:
 - a. Document changes and revision processing
 - b. Drawing, procedure, specification deletion from system.
 - c. Compliance with review of original document.
 - d. Verify NCR Documentation within the Document Control System.
2. FINDING: NONE
3. CORRECTIVE ACTION:

COMMITMENTS ADDRESSED DURING
MP&L QA AUDIT OF BECHTEL GAITHERSBURG
AUGUST 30-SEPTEMBER 3, 1976

NON CONFORMING MATERIALS, PARTS & COMPONENTS

1. COMMITMENT: Project Engineering Procedures Manual (PEPM) Paragraph 4.2.15 specifies that:
 - a. NCR's be appropriately dispositioned.
 - b. Coordination and concurrence of individual discipline
 - c. The Resident Field Engineer will disposition only those NCRs that are within his authority.
2. FINDING: NONE
3. CORRECTIVE ACTION:

MP&L AUDIT OF BECHTEL-GAITHERSBURG
AUGUST 30-SEPTEMBER 3, 1976

SUMMARY OF ATTACHED CHECKLISTS APPLICABLE TO DESIGN CONTROL OR DESIGN INTERFACE

<u>CHECKLIST NUMBER</u>	<u>SUBJECT</u>	<u>NONCONFORMANCE IDENTIFIED</u>
3	DESIGN CONTROL (13 PAGES)	NONE
5	DRAWING CONTROL (5 PAGES)	NONE
7	NONCONFORMING MATERIAL, PARTS, AND COMPONENTS (9 PAGES)	NONE
	REVIEW OF PROCESSING AND CONTROL OF NONCONFORMANCE REPORTS (NCRs), SUPPLIER DEVIATION REQUESTS (SDRs), AND SUPPLIER DEVIATION DISPOSITION REQUESTS (SDDRs)	

GRAND GULF NUCLEAR PROJECT
BECHTEL GAITHERSBURG AUDIT No. 4

CHECKLIST No. 3 - DESIGN CONTROL

Design Control

I. Specifications

Review a representative sample of Q-List specifications to verify that all design control requirements have been met. Specifications reviewed:

A-015.0; A-054.0; C-062.1; C-097.0; C-101.0; C-151.0; E-021.0; J-203.0;

J-301.0; J-351.0; J-359.0; J-477.0; J-561.0; J-606.0; J-610.0; J-704.0;

J-830.0; M-004.0; M-147.1; M-201.0; M-204.0; M-206.0; M-214.0; M-220.0;

M-242.2; M-251.0; M-312.0; M-312.1; M-316.0; M-318.0; M-611.0; M-619.0;

M-633.0

Verify that:

Each page of the specification, each appendix and each page of the appendices are identified with the correct revisions as listed on the revision index sheets and in the table of contents. (PEPM; Para. 4.5.1.2.2)

Verified for the specifications listed above.

Specs. and appendices in good order.

Note: It is noted that many of the errors documented during earlier

audits remain to be corrected. However, these corrections are not

design related and are documented on sheets attached to the spec.

These corrections will be made at the time of the next spec. revision.

The Specification Checklist has been initiated and signed off by the responsible engineer. (PEPM; 4.5.1.2.2) Verified for specifications

listed on Page 1 of this checklist.

M-214.0 does not contain a spec. checklist, but the P. O. on M-214.0
has been closed out.

Ref: Letter from W. N. Adams to H. P. Marsh (4/9/76); Priorities

Assigned to Correction of Specs. No checklist is required for specs.
on which the P. O. has been closed out.

The cognizant group supervisor has reviewed and approved the specification and signed off the specification checklist. (PEPM; Para. 4.5.1.2.2)

Verified for Specs. listed on Page 1 of this checklist (except M-214.0 -
Justification explained above)

The chief engineer has reviewed and approved the specifications in accordance with the Design Control Checklist (DCCL). (PEPM; Para. 4.5.1.2.2)

Verified Chief Engineer's Review and Approval for Specs. C-121.0; E-032.0;

E-035.0; J-301.0; M-019.2; M-316.0 in accordance with Design Control

Checklists. Reviewed DCCL's maintained by each discipline.

Design Review Notices (DRN) have been initiated and completed to record the Chief Engineer's action. (PEPM; Para. 6.3)

Reviewed Design Review Notices for C-121.0; E-032.0; E-035.0; J-301.0;
M-019.2; M-316.0.

DRN's filed in Gen. Subject File No. 0165. Each Discipline also main-
tains working copy of their DRN's.

The Project Engineer has approved the specifications (PEPM; Para. 6.3)

Verified for Specifications listed on Page 1 of this checklist.

The Project Quality Engineer has reviewed the specifications and signed off the specification checklist. (PEPM; Para. 4.5.1.2.2)

Verified PQE sign-off on Spec. checklist for Specs. reviewed (Page 1
of checklist).

The specification control log is reviewed and updated monthly. (PEPM; Appendix A)

Reviewed Discipline SCL's and verified that they are updated (Redlined) on a regular basis. Verified that SCL's are updated and published monthly (Input from Discipline SCL's).

Revisions and SCN's are reviewed and approved by Bechtel Engineering in the same manner as the original specification (PEPM; Para. 4.5.1.6.2)

By direction of the Project Manager, Bechtel has discontinued use of SCN's (except on an emergency basis). Reviewed Specs. show sign-off (Review & Approval) as required by PEPM.

The Specification Checklist is reissued in its entirety with each specification revision and submitted to the PQE for his concurrence. (PEPM; Para. 4.5.2.6)

Spec. checklist for the Reviewed Specs. list each revision since its inception and show PQE initials.

The specification change notice log is up-to-date and contains the proper information. (PEPM; Para. 4.5.1.6.2)

Since SCN's are no longer in general use, SCN Logs maintained by the Disciplines are obsolete. However, a check of Plant Design showed that they had an SCN Log which was up to date.

Transmittal forms are on file which verify receipt of SCN's by the intended receivers (particularly Field Construction Manager). (PEPM; Para. 4.5.1.6.2)

Since SCN's are no longer in general use and no evidence of outstanding SCN's was found, it was not considered necessary to do an investigation of their distribution.

(Transmittal forms are available on file to verify past distribution and receipt).

A copy of the SCN is filed in the appropriate Purchase Order/Subcontract file; with the applicable specification (master); and the original SCN in the General Subject File. (PEPM; Para. 4.5.1.6.2)

Verified that SCN's are on file in Gen. Subject File 0076.

All SCN's are incorporated into the specification within 90 days (or after the issuance of 5 SCN's against the specification). (PEPM: Para. 4.5.1.6.2) The Spec. Control Log indicated that SCN 05 to M-242.0

and SCN 02 to M-242.1 were outstanding for over six (6) months. Investigation revealed that the Spec. Control Log was in error due to the fact that the Discipline SCL had not been properly updated. The SCN's had actually been incorporated within ninety (90) days. The Discipline SCL's were redlined to correct the error, and this correction will be reflected in the September SCL.

Specific appendices to specifications (as opposed to standard appendices) go through the same review and approval as the specification.

Specific appendices (applicable to a specific spec.) are controlled as part of the spec. Verified in Plant Design by review of specs. with unique attachments and review of Logs.

Appendices to subcontract or purchase order specifications have the applicable revision specified in the table of contents. (PEPM; Para. 4.5.1.4.2)

Verified for Specs. listed on Page 1 of this checklist.

For Performance Specifications, either the appendix revision or the words "Latest Revision" is specified. (PEPM; Para. 4.5.1.4.2)

Verified for Specs. listed on Page 1 of this checklist.

When a revision is made to a standard attachment to a specification, a "Standard Attachment to Specification" form is initiated and completed. (PEPM; Para. 4.5.1.4.2) Verified existence of "Standard Attachment"

Form for Attachments Appendix E; Appendix Q; C-196.0 and E-013.0. Responsible Engineer initiates the Standard Attachment Form and routes to all Disciplines which have specs. containing the Standard Attachment.

The Discipline responsible for the Standard Attachment maintains a file of the Forms. In each reviewed case, the Form was properly initiated and approved.

The Project Quality Engineer performs surveillance to assure that the "Standard Attachments" procedure (PEPM; Para. 4.5.1.4.2) is implemented.

PQE has not performed official surveillance yet due to newness of system. PQE surveillance should be verified during next audit.

II. Drawings

Review a representative sample of Q-List drawings and verify that all design control requirements have been met. Drawings reviewed:

C 0500; C 0504A; C 0514; E 0613 (NQ); E 0667; E 0694; M 0802 (NQ);
M 0810 (NQ).

Verify that:

Engineering sketches are not used for fabrication or construction purposes (no sketches used as appendices to Specifications). (PEPM; Para. 4.3)

None noted During Spec. review. Controls appear to be adequate to prevent
this.

Q-List drawings have been submitted to the Chief Engineer for review and approval as required by the design control checklists, prior to issuing for construction. (PEPM, Para. 4.3.1.2.3)

Reviewed Discipline DCCL's for Q-List Drawings- In each case, Chief
Engineer's Approval was indicated.

Design Review Notices have been properly initiated and completed to document the Chief Engineer's action. (PEPM; Para. 4.3.1.2.3)

(Gen. Subject File 0165) - DRN's on File for Reviewed Q-List Drawings.

The Drawing Control Log is up-to-date and is reviewed and updated monthly. (PEPM; Appendix A) Each Discipline has a Discipline DCL in existence

and there is evidence that they are being maintained on a regular basis.

Master DCL is published monthly (Latest issue - August)

All revisions to drawings are processed by the same procedure as the original and all outstanding DCN's are incorporated into the drawing within 90 days after issuance of the DCN. (PEPM; Para. 4.3.1.6.1)

Reviewed a sample of Drawings from the DCL which appeared to have DCN's outstanding.

C 0500 (02 MR 06)	} Incorporated	*E 0613 (00 JA 01) - Not Incorporated
C 0504 (00 APR 01)		E 0667 (02 JN 03) - Incorporated (August)
C 0514 (00 APR 01)		E 0694 (01 JN 02) - Due Date - September 25

MO0802 (02 MY 03) - Incorporated (August)

M 0810 (01 MY 02) - Incorporated (August)

*E 0613 (NQ) - Grounding Plan for Water Treatment Building has DCN 01 outstanding since January. Explanation was that it is a minor revision and was being held up pending a major revision due next month.

THIS IS A DISCREPANCY

DCN's for Q-List Drawings are submitted with DRN's to the Chief engineer for review and approval. (PEPM; Para. 4.3.1.6.1) _____

Verified for Reviewed Q-List Drawings

Transmittal forms are on file which verify receipt of an approved DCN by the intended receiver. (PEPM; 4.3.1.6.1) _____

Transmittal Forms on File - However, DCN's generated as a result on an FCR do not require a return transmittal form. FCR is now a self contained form.

III. Design Control Checklist (DCCL) and Design Review Notice (DRN)

Review a representative sample of DCCL items for inclusion of the following: (PEPM; Para. 6.2).

- a. Design criteria & PSAR Commitments
- b. Major Drawings
- c. Procurement Specifications
- d. Field construction & inspection specifications and procedures prepared or issued by engineering.

Review a representative sample of Design Review Notices submitted to the Chief Engineer along with completed items from DCCL. Verify approval of Chief Engineer. (PEPM; Para. 6.2) _____

Reviewed C-121.0; E-032.0; E-035.0; M-019.2; M-316.0 - All Satisfactory

Verify that the DCCL is revised at least twice annually and that revisions follow the original approval requirements. (PEPM; Para. 6.2)

Discipline DCCL's are updated on a continuous basis (Working copies).

They are reviewed and revised semi-annually.

There is no single DCCL which combines all the Discipline DCCL's.

IV. Field Change Requests (FCR)

Review a sample of FCR's received from the field and verify their entry in the FCR Log. (PEPM; Para. 4.2.1.4.2)

Reviewed FCR Log of all received FCR's which is maintained by Document Control Section. All satisfactory. Also reviewed Discipline FCR Logs - all appear to be up to date.

Verify review and approval by group supervisor, Project Engineer, and Chief Engineer (if required). (PEPM; Para. 4.2.1.4.2)

Reviewed FCR File (Gen. Subject File 0080). FCR's reviewed had proper approval (or indication of disapproval).

Review FCR, DCN and SCN Logs to assure that information is correct and that discipline Quality Engineer has updated logs. (PEPM; Para. 4.2.1.4.2)

Verified in other sections of this checklist.

V. Project Q-List

Verify that the Project Q-List is revised and/or issued, as a minimum, Bi-annually. (PEPM; Para. 6.1)

Last issue of Q-List was Rev. 5 issued 6/22/76. For last two (2) years, Q-List has been re-issued approx. Bi-Annually. Present procedures indicate good control.

Verify the existence of discipline Q-lists which have been approved by Project Engineer, Discipline Chief Engineer, and Chief Nuclear Engineer. (PEPM; Para. 6.1)

Reviewed and verified existence of Discipline Q-Lists. All indicated proper approval. (Rev. 5)

IOM to Group Supervisor from Engineer responsible for Q-List (Paul Kochis) is issued to request update of Discipline Q-Lists. Master Q-List is compiled from these.

Verify that the Project Q-List is approved by the Project Engineer/ Assistant Project Engineer and Chief Nuclear Engineer. (PEPM; Para. 6.1)

Verified for Rev. 5 (Also approved by PQE).

Verify that all revisions to the Project and Discipline Q-Lists follow the original approval requirements. (PEPM; Para. 6.1)

Verified for Rev. 5.

GRAND GULF NUCLEAR PROJECT
BECHTEL CAITHERSEBURG AUDIT No. 4

Item 4.5.1. CHECKLIST No. 5 - DOCUMENT CONTROL

Document Control (Para. 3.1.3.1 Project Procedures Manual) Who in Bechtel is responsible for maintaining the document identification system? Are all documents (drawings, specifications, procedures, instructions, etc.) controlled by this system? (Document) III

Project Administrator - Tom Elstner

All document identifications are controlled by the document control clerks.

This is accomplished and maintained on a monthly computer printout for drawings and specifications. Procedures and instruction controlled by department initiating them.

Item 4.5.2. Review the Bechtel project communication register for completeness. Can a document be traced to an individual, section, group by using the register? (Document) III

The "Q" Action Report Communication Log is maintained by a document control clerk. All such documents can be traced as indicated on the distribution list.

Item 4.5.3. If documents can be traced using the register select a representative sample of drawing nos. procedure nos. and trace to the assigned individual and/or destination as shown on the register. (Document) III

C 101.0 Rev. 9 13 April 76 traced to PQE

A 022.4 Rev. 2 5 April 76 traced to PQE

E 009.1 Rev. 6 7 May 76 traced to Bruce Stauchfield DQE Control Systems

C 131 Rev. 9 3 June 76 traced to Gene Brown DQE

Item

4.5.4.

PEPM

Para

4.5.1.4

Verify that each discipline is maintaining a specification control log and that the following information as a minimum has been entered into the log in reference to each specification. (Document) (Para 4.5.1.4 Project Engineering Manual)

1. Specification number
2. Revision date of the specification
3. Latest revision number
4. Quality Assurance designation - QA or NQ
5. Date of the latest purchase order forwarded to the Seller
6. Specification revision number contained in that Purchase Order
7. Number of last incorporated SCN
8. Month of oldest (first) unincorporated SCN
9. Number of most recent (last) unincorporated SCN
10. Specification title/description

Each discipline maintains a specification control log for specifications generated by their group. The above information was verified with all disciplines.

Item

4.5.5.

PEPM

Para

4.5.1.4

Verify that the specification control log has been up-dated on a monthly basis and that the log indicates the next 3 months schedule is in evidence. (Document)

The specification control log dated 7-23-76 was reviewed and the log indicated

Item A 5.6. Verify that each discipline is maintaining a drawing control log and that the following information as a minimum has been recorded. (Document) (Para. 4.3.1.4 Project Engineering Manual)

1. Drawing number
2. The revision date of the drawing
3. The latest revision number
4. Quality Assurance designation - QA or NQ
5. Number of last incorporated DCN
6. Month of oldest (first) unincorporated DCN
7. Number of most recent (last) unincorporated DCN
8. Drawing title/description

[Information verified in the document control center.] Other auditor.

Mr. LeGros, verified that each discipline are maintaining logs for their group.

Item 45.7. Verify that the drawing control log has been up-dated on a monthly basis and that the current status of the drawings, initial schedule and the schedule for the next 3 months is in evidence. (Document)

Verified in the document control center Bechtel is in compliance with this requirement. Monthly drawing control log dated 7-7-76 was evaluated.

CHECKLIST No. 5

Item 4.5.8. How are changes and revisions processed? How are they identified in the register? (Document) III

Changes and revisions are processed by each discipline group and are identified on the respective logs maintained in the documents control section.

4.5.9. When a drawing, procedure, specification, etc. has been deleted from the system verify how it is accomplished. (Document) III

Each discipline maintains their own logs and when a document is to be deleted from their log the responsible discipline notifies, by memo, the Project Planner that the document is to be removed. All deletions are processed thru the Project Planner.

4.5.10. Verify that changes to documents were reviewed and/or approved by the same organization or individual that reviewed and/or approved the original document. (Document) III

C-101.0 Rev. 9 A-022.4 Rev. 2 E-009.1 Rev. 6

C-131 Rev. 9 C-101SA Rev. 4 C-1033 Rev. 8

C-1000 Rev. 1 C-153.0 Rev. 7

Review of the above documents indicates that Bechtel is in compliance with this requirement.

1. Verify how NCRs are entered into the document control system and if the document control clerk performs the following functions. ~~(Document)~~ 11

1. Verify release (initials) by Project Quality Engineering
2. Xerox copies as necessary for filing and distribution.
3. Transmit original to the Project Field Quality Control Engineer via transmittal or telecopier as indicated. Note: If telecopied, follow-up by transmittal is required.
4. Distribute additional copies.

Document Control Clerk (Mrs. B. Willson) maintains NCR Log for

NCR's that require Project Engineering review (i. e. use-as-is or repair).

Copies of transmittal sheet for NCR on file. This function recently assigned to the Project Administrator, Document Control Section.

GRAND GULF NUCLEAR PROJECT
BECHTEL GAITHERSBURG AUDIT No. 4

CHECKLIST No. 7 - NONCONFORMING MATERIALS, PARTS & COMPONENTS

Item
Nonconforming Material, Parts, and Components

4.7.1
PEPM
Para.
4.2.15
Rev. 2
(3/31/76)

Check a representative sample of nonconformance reports (NCRs) that require the Project Engineer's signature and assure that the following information is in evidence. (Document) (Para. 4.2.15 Project Engineering Procedures Manual). Rev. 2 dated 3-31-76.

- a. The appropriate disposition.
- b. The coordination and concurrence of the individual responsible for the discipline involved.
- c. The rationale, in detail, used for the disposition.

Fifteen (15) NCRs were reviewed. One (1) was superseded, one (1) was non-Q. The remaining thirteen (13) were made up of eight (8) civil, three (3) mechanical, one (1) electrical, and one (1) plant design. All requirements of this checklist item were in compliance as far as processed with the exception of a few isolated points which were insignificant.

4.7.2
PEPM
Para.
4.2.15

Also check representative sample copies of NCRs dispositioned by the Resident Field Engineer. Verify that they were within his authority or should have been sent to the Project Engineer for dispositioning. (Document)

Same as response in above.

4.7.3
PERM
Para
12.15

Check NCRs sent to the Project Engineer for dispositioning and assure evidence of "Route to Project Engineering for disposition" is on the NCRs. (Document) XV

Same as response in above.

4.7.4
PERM
Para
12.15

Check NCR log maintained by the Project Quality Engineer for status of NCRs listed. By date received and date dispositioned are the NCRs processed in a timely manner? (Document) XV

Same as response in above.

4.7.5
PERM
Para
12.15

On NCRs dispositioned by the Resident Engineer verify how the responsible engineer (Project Engineering office) accomplishes the following: (Document) XV

- a. Review condition and disposition (Block 20).
- b. Confirm disposition provided by the Resident Engineer.
- c. Indicate concurrence by initialing and dating on first line - upper right corner of block 20.
- d. If the disposition is not in accordance with the coordination agreement (see note - paragraph 4.2.15.1), or otherwise not acceptable to Project Engineering, the NCR disposition shall be disapproved (Group Supervisor concurrence must be obtained) and the Project Quality Engineer informed immediately.

Same as response in above.

On NCRs submitted to Project Engineering for dispositioning verify how the following functions are accomplished. (Document)

1. Review the NCR and coordinate with other disciplines or supporting project groups as required.
2. Provide the correct technical disposition and note in detail, the basis/rationale used for disposition.
3. Issue a DCN, SCN, or revision to the affected design document immediately when necessary as response to NCR. Change document or revision shall note a reference to, and accompany, the NCR when returned to the field.
4. Prepare draft transmittal letter, listing thereon the NCR and all accompanying documents and deliver to Document Control for typing.

Same as response in above.

Verify that the Project Quality Engineer performs the following functions in the processing of NCRs. (Document)

1. Review the NCR for disposition and rationale. (If rationale is not provided or not in sufficient detail, return the NCR package to the Group Supervisor.)
2. Make appropriate log entries. (DQE)

3. Signify concurrence of procedure compliance and release by initialing transmittal (adjacent to name - bcc listing) or telecopier request (adjacent to authorization block) and the NCR on the first line, upper right corner of block 20.
4. Remove copy from suspense file and discard. (Document Control not PQE)
5. Route to Project Engineer for approval/signature.

Note: In the event an NCR is disapproved the Project Quality Engineer shall immediately (by telephone) notify the Project Field Quality Control Engineer. The telecon shall be recorded and a copy attached to the NCR.

Same as response in above.

4.7.8
PEPM
D213
4.2.15
Verify that the responsible Discipline Quality Engineer performs the following functions that relate to the processing of NCRs. ~~(Document)~~ X

1. Review NCR, DCN, SCN logs to assure information is correct and provide follow up and close out information as required.
2. Review the NCR package for completeness and enter additional information into discipline log (disposition and change columns) after approval by Group Supervisor Project Engineer/Assistant Project Engineer and Chief Engineer(s), as applicable.

Same as response in above.

4.7.9

Supplier Deviation Request (SDR) (PEPM; Section 4.2.17) Rev. 0 3-31-76

PEPM

The SDR provides the method for Project Engineering action on supplier/subcontractor requests to deviate from the technical requirements contained in approved procurement documents.

section

4.2.17

Rev. 0

(3/31/76)

Review the Project Supplier Deviation Disposition Request log and verify that the PQE has assigned a control number and an SDDR form to the SDR's. (Document SDR's and SDDR's reviewed).

Two Hundred Two (202) SDDR assigned control numbers since March 1976.

Nineteen (19) were reviewed; one (1) architectural, two (2) instrumentation and control, four (4) civil, six (6) plant design, three (3) electrical, and three (3) mechanical. All requirements of this checklist item were in compliance as far as processed with the exception of a few isolated points which were insignificant.

4.7.10

PEPM

section

4.2.17

Rev. 0

(3/31/76)

Verify that the SDDR's are logged into the discipline logs by the responsible engineer and the discipline Quality Engineer. RE doesn't log.

Same as response in above.

Verify that the SDDR's contain the following information:

- a) Appropriate identification (Supplier; Bechtel P.O.; Supplier's Part no. and nomenclature; Applicable revisions)
- b) Appropriate description of the deviation
- c) Appropriate justification for Bechtel Action

This image shows a single sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

Verify that dispositions of "use-as-is" or "repair" have the same level of approval as the original Bechtel document (Responsible Engineer; Group Supervisor; Project Engineer; Chief Engineer, if applicable)

This image shows a single sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There is no handwriting or other markings on the paper.

PEPM/4.2.17.3, Rev. 1 (7/26/76)

4.7.13 Verify that the PQE provides the Project Engineer and Discipline Group Supervisors with SDDR status by monthly distribution of the Project Log showing open items.

Log has been sent out 7/19, 8/19, 1976. Before this not done. QA Mgmt.

Audit Identified that PQE was not doing this in June 1976.

Present Project Log is in compliance with the requirement.

(Stop Work)

4.7.14
PEPM
4.2.17
Review and evaluate a representative sample of stop work notices issued by the Project QA Engineer or the Field QA Supervisor. Was timely corrective actions taken to resolve the problems? (Document)

None issued from engr. office.

4.7.15
PEPM
4.2.17
Did the stop work notices include one or more of the following conditions. (Document)

Continuing work would result in a nonconformance which cannot be corrected to an acceptable condition or would require extensive repair or rework to correct.

Controls are insufficient to assure compliance with applicable regulatory or industry standards.

Work is being performed in violation of drawing, specification, Code or Regulatory requirements, or approved procedures.

Previous history indicates that continuing work will result in a nonconformance that would require excessive retrofit to correct.

Continued work could result in a significant reportable deficiency per 10CFR50.55(e).

Known defective material or equipment which cannot be corrected or has not been approved for conditional release is being used or installed.

Unapproved or inadequate procedures or instructions are being used to perform the work.

Work is continuing in violation of mandatory design changes.

Procedures or instructions authorized to control the work in progress are not available.

Quality verification documentation is insufficient, incorrect, non-existent, or is conforming with applicable procurement or engineering requirements.

Same as response as in above, in 4.7.14

4.7.16 Verify how the Project QA Engineer or the Field QA Supervisor verifies the corrective action resolved the condition(s) that warranted the stop work notice. (Document)

4.7.17 Same as response in above, in 4.7.14

4.7.17 Are the stop work notices sequentially numbered? Is a log maintained and if so, by whom? (Document)

Same as response in above, in 4.7.14

MP&L AUDIT OF BECHTEL-GAITHERSBURG
July 19-22, 1977

SUMMARY OF ATTACHED CHECKLISTS APPLICABLE TO DESIGN CONTROL OR DESIGN INTERFACE

<u>CHECKLIST NUMBER</u>	<u>SUBJECT</u>	<u>NONCONFORMANCE IDENTIFIED</u>
REP 1	Project Q-List	CAR-167
REP 2	Safety Related Systems & Components	CAR 168
REP 3	Codes and Standards	CAR 166
REP 6	Control of Design Interfaces	Discrepancy and Correction Report (D&CR) No. 20
REP 6-1	Design Verification	D&CR No. 26
REP 7,8	Design Change Control	None
REP 14	Requirements for Supplier Quality Assurance Program	None
REP 16	Instructions, Procedures and Drawings	CAR 169
REP 17	Loop Closing NQAM QGG 6.3	CAR No. 175
REP 18	Source Evaluation & Selection	None
REP 19	Source Evaluation & Selection	None
REP 20-1	Document Control	CAR 174

NONCONFORMANCES IDENTIFIED DURING
MP&L QA AUDIT OF BECHTEL GAITHERSBURG
JULY 19-22, 1977

CAR Number 167

1. COMMITMENT: Project Q-List PEPM Page 6.1-3, Rev. 3 and Page 6.1-4, Rev. 4, Paragraph 6.1

Approved Project Q-List shall be submitted to the owner for approval.
2. FINDING: Reference above: No verification documentation of owner approval of Q-List Revisions 3 through 7.
3. CORRECTIVE ACTION:

Revisions 1 through 7 of the Project Summary "Q"-List were submitted to MP&L for approval per MPB-77/0587.

MP&L approval was granted on September 26, 1977, per BMP-77/594.

MP&L letter BMP-77/594 approved revisions 1 through 7 of the Project Summary "Q"-List and is verified as entered in the Project File, 11/9/77.

NONCONFORMANCES IDENTIFIED DURING
MP&L QA AUDIT OF BECHTEL GAITHERSBURG
JULY 19-22, 1977

CAR Number 168

1. COMMITMENT: Safety-Related Systems/Components and Structures NQAM Policy QGG-2.1, Rev. 0, Rev. Paragraph 4.
 1. The Safety Analysis Report (SAR) shall identify one system components and structures that are safety related.
 2. Project Engineering shall prepare a Summary of Q-Items (Q-List)
2. FINDING: Items listed in the PSAR are not identified on the current Q-List, Rev. 7, 6/10/77.
3. CORRECTIVE ACTION:

Per TCI-362, 8/3/77, PEPM 6.1 "Project Q-List" provides for biannual revision of the Project Summary Q-List. This provision is intended to allow for design developments, inadvertant omissions, etc. The Project Summary Q-List was revised per Rev. 8, 2/24/78 and verified on 4/6/78.

NONCONFORMANCES IDENTIFIED DURING
MP&L QA AUDIT OF BECHTEL GAITHERSBURG
JULY 19-22, 1977

D&CR Number 20

1. COMMITMENT: Control of Design Interfaces Bechtel NQAM Policy No. QGG-3.2, Rev. 0, requires that, "Engineering Procedures shall provide for a chart, table or matrix showing overall project division of responsibilities and interfaces between Bechtel, Client, NSSS Supplier and major contractors providing design criteria and performing design work.
2. FINDING: Sections of the Project Engineering Procedures Manual (PEPM) and the Project Procedures Manual (PPM) collectively define overall Project Division of Responsibility and interfaces. However, there are no Engineering Procedures which provide a chart, table or matrix to meet this policy requirement.
3. CORRECTIVE ACTION:

NQAM Policy QGG-3.2 revised and issued on 1/20/78 revising Paragraph 3.2.6 to allow Project Engineering to provide a narrative description, chart, table or matrix describing project division of responsibilities and interfaces.

NONCONFORMANCES IDENTIFIED DURING
MP&L QA AUDIT OF BECHTEL GAITHERSBURG
JULY 19-22, 1977

D&CR Number 26 Design Verification

1. COMMITMENT: Bechtel NQAM Policy No. QGG-3.3, Rev. 0, Paragraph 3.9, states that:

"Design verifications shall be traceable to the reviewer"...
"Evidence of reviews and checks shall be documented"...
2. FINDING: Design verification for drawings are not clearly traceable to the reviewer. Traceability is based on personal knowledge and/or memory of discipline personnel or personnel rosters.
3. CORRECTIVE ACTION:

PEPM Change Notice 23 requires that evidence of verification be documented by signature/initials on the respective design document.

NONCONFORMANCES IDENTIFIED DURING
MP&L QA AUDIT OF BECHTEL GAITHERSBURG
JULY 19-22, 1977

CAR Number 169 Instructions, Procedures and Drawings

1. COMMITMENT: Bechtel NQAM Policy No. 5.1, Rev. 0 requires a list cross referencing the policies of the NQAM with project related procedures.
2. FINDING: No quality assurance procedure exists to assure preparation and maintenance of the list to ensure that it is complete and accurate.
3. CORRECTIVE ACTION:

NONCONFORMANCES IDENTIFIED DURING
MP&L QA AUDIT OF BECHTEL GAITHERSBURG
JULY 19-22, 1977

CAR Number 174

1. COMMITMENT: Document Control, NQAM Polic, QGG-6.2, Rev. 0, 11/76
 - 3.7 Engineering, procurement, and Quality Assurance procedures shall, as a minimum, provide for the following:
 - 3.7.1 Identification of personnel (position titles) responsible for control and distribution of documents.
 - 3.7.2 Specific identification of documents to be controlled.
 - 3.7.3 Identification of individuals or groups on distribution of controlled documents.
 - 3.7.4 Documentation to show transmittal and receipt of controlled documents.
 - 3.7.5 Measures to ensure that controlled documents which are not self closing, have been received by the individuals or groups to whom they are transmitted.
 - 3.7.6 Measures to identify the current status of controlled documents.
 - 3.7.7 Controlling changes to controlled documents
 - 3.7.8 Measures to recall, destroy or identify obsolete or superseded documents.
2. FINDING: There is no evidence that a procurement procedure exists as required by Paragraph 3.7.
3. CORRECTIVE ACTION:

The Project Procurement Procedures Manual, revision 0 concurred with by MP&L (BCQM-78/104) was issued for use on August 23, 1978. Section 1.5 of this manual provides the procurement procedure for Document Control as defined in par. 3.7 of QA Policy QGG 6.2.

NONCONFORMANCES IDENTIFIED DURING
MP&L QA AUDIT OF BECHTEL GAITHERSBURG
JULY 19-22, 1977

CAR Number 175 Loop Closing

1. COMMITMENT: Bechtel NQAM Policy No. QGG-6.3, Paragraph 3.5, Rev. 0, requires that Engineering, Procurement and Project quality assurance procedures provide for
 - a. Identification of documents covered by loop closing procedures.
 - b. Measures for ensuring traceability
 - c. Identification of personnel responsible for closeout action and documentation.
2. FINDING: Engineering procedures were provided QA had draft procedures currently in review. Purchasing had no procedures.
3. CORRECTIVE ACTION:

Project Procurement Procedures Manual (PPPM) Section 4.0, Rev. 0, provides the procurement procedure for Loop Closing per QGG-6.3. This procedure was revised and issued with MP&L concurrence (BCQM-78/104) on August 23, 1978.

NONCONFORMANCES IDENTIFIED DURING
MP&L QA AUDIT OF BECHTEL GAITHERSBURG
JULY 19-22, 1977

CAR Number 166

1. COMMITMENT: Bechtel Nuclear QA Manual (NQAM) Policy Number QGG-2.2, Rev. 1, dated 11/76, Paragraph 4.0 requires Project Engineering to "identify and list the codes and standards-national, state and local - which apply to the Project. Applicable dates, revisions, or addenda shall be identified."
2. FINDING: A list of codes and standards including applicable dates, revisions or addenda was not available. The Design Criteria Manual lists codes and standards used, however, it is incomplete with regard to such items as dates, revisions or addenda.
3. CORRECTIVE ACTION:

The effective applicable design codes and standards - National, State and Local which apply to GGNS were incorporated into the Bechtel Project Design Criteria Manual as Appendix I by revision of 3/1/78. Dates, revisions and addenda were included. This was accomplished by each Bechtel Project Engineering providing a listing of such codes and standards (including dates, revisions and addenda) which an engineer would use to design a new system or perform a major modification to an existing system. The Appendix is then periodically revised to reflect updates.

AUDIT CHECKLIST

J. Reaves

AUDIT-RESULTS (cont'd) (* N)
Appendix B of 10CFR50 Criteria(n) II

Audit Number 5
Bechtel-Gaithersburg
7/19-22/77

Project Q-List
(Subject of Commitment)

Persons Contacted:
PAUL KOCHIS
JOE ARBAIZA
MR. BACINUGHERO QER 7/14/77

A. COMMITMENT: PEPM Page 6.1-3 Rev. 3 &
(Reference) Page 6.1-4 Rev. 4
Par. 6.1

1. The Project Q-List shall be revised and/or issued, as a minimum, Biannually.
2. The Project Nuclear Group Leader shall prepare a Project Q-List incorporating the approved discipline Q-Lists. He shall submit this list to Project Engineer/Asst. Project Engineer & Chief Nuclear Engineer for approval.
3. Approved Project Q-List shall be submitted to the Owner for approval.
4. All revisions to the discipline and project Q-Lists shall follow the original approval requirements.

B. METHOD OF VERIFICATION
Visually check documents and records to verify the above.

C. FINDINGS*(Classification): ALL ITEMS CHECKED CONFORMED
TO REQUIREMENTS WITH ONE EXCEPTION. REFERENCE:
REF ITEM #3 - NO VERIFICATION DOCUMENTATION
OF OWNER APPROVAL OF Q-LIST REVISIONS 34 HRN 7
INITIATED CAR #167

*Classification:

- C- Conformance
- N- Nonconformance
- A- Not Audited

Initials of Originator
-Checklist Number REP - 1

()

7/19/77
JR
Sheet 2 of 2

MATRIX CHECKLIST REP-1

<u>Project</u> <u>Q-List</u> <u>Revision</u> <u>(Since</u> <u>12/16/74)</u>	<u>Date</u>	(1) Prepared By Proj. Nuc. Gr. Ldr.	(1), (2) Submitted For Approval			(3) Rev. Follow Org. Cycle
			Proj. Engr	C. Nuc. Eng.	MP&L	
3	2/12/75	✓	✓	✓	X	X
4	10/30/75	✓	✓	✓	X	X
5	6/22/76	✓	✓	✓	X	X
6	9/10/76	✓	✓	✓	X	X
7	6/10/77	✓	✓	✓	X	X
					SEE COMMENT #1 BELOW	SEE COMMENT #1 BELOW

- NOTES: (1) Assured initials on Project Summary Q-List Title Block are those of authorized individual.
- (2) Letter Number to MP&L submitting for approval.
- (3) Assured revisions have followed original approval requirements.

Comments

- 1) NO VERIFICATION OF IMPLEMENTATION BY OWNER APPROVED Q-LIST FOR REVISIONS 3 THRU 7
- 2) INITIATED CAR 167

AUDIT CHECKLIST

J REAVES

AUDIT-RESULTS (cont'd) (* N)
Appendix B of 10CFR50 Criteria(n) II

Audit Number 5
Bechtel- Gaithersburg
7/19-22/77

Safety Related Systems/ Components
(Subject of Commitment) And Structures

Persons Contacted:
PAUL KOCHIS
WALT HESSELBEIN
MR. BACINOGLU
JOE ARBAIZA

A. COMMITMENT: Policy No. QGG-2.1 Rev. 0
(Reference) Para. 4 NQAM (11/76)

1. The Safety Analysis Report (SAR) shall identify the system components and structures that are safety related.
2. Project Engineering shall prepare a Summary of Q Items (Q-List)

B. METHOD OF VERIFICATION Visually verify the above. Check the Q-List against the SAR to verify that the same systems components and structures are identified.

C. FINDINGS*(Classification):

1) TABLE 3.2.9, SHEETS OF PSAR IDENTIFIES SPECIFIC 480-VOLT MOTOR CONTROL CENTERS AS 15B01, 15B02, 15B03, 15B04, 25B01, 25B02, 25B03 & 25B04. THESE MOTOR CONTROL CENTERS ARE NOT IDENTIFIED ON THE CURRENT Q-LIST, REV. 7, 6/10/77.

2) DURING A POST AUDIT INVESTIGATION TO DETERMINE THE SIGNIFICANCE OF #1 ABOVE, IT WAS ~~NOTED~~ NOTED THAT UNIT 2 480-VOLT MOTOR CONTROL CENTERS, 480-VOLT LOAD CENTERS AND ELECTRICAL PENETRATION ASSEMBLIES ARE NOT ON THE REFERENCED Q-LIST.

FINDING #2 WAS DISCUSSED WITH WALT HESSELBEIN BY J. REAVES, MP/L, ON 7-27-77.

DOCUMENTED ON CAR 168

*Classification:

- C- Conformance
- N- Nonconformance
- A- Not Audited

Initials of Originator
-Checklist Number REP - 2

()

FINDINGS (cont.) CHECK LIST # REP-2

- 3) REF. PSAR TABLE 3.2.9, SHEET 4, LIQUID RADWASTE SYSTEM, "PIPING & VALVES FORMING PARTS OF CONTAINMENT BOUNDARY" — LIQUID RAD WASTE SYSTEM NOT CLEARLY IDENTIFIED ON THE CURRENT Q-LIST, REV 7, 6/10/7

Documented ON CAR 177

2/11/77
3/21/77
JEC

MATRIX CHECKLIST REP-2

PSAR, TABLE 3.2.9

<u>System/Components</u>	<u>Q-List Reference</u>	<u>FSAR Reference</u>
<p>1. <u>Condensate and Feed-water System</u></p> <p>All piping, valves, hangers, and supports from RPV to outermost isolation valves (Sht.2)</p>	<p>PAGE 3, NUCLEAR BOILER SYSTEM (M-1077), MAIN STEAM FLOW ELEMENT (NOOS), P&ID EXAMPLE DWG. # M1077A, REV. 4</p>	<p>TABLE 3.2.1, II - 17 & 18</p>
<p>2. <u>Component Cooling Water System</u></p> <p>Only valves required for containment isolation and integrity. (Sht.3)</p>	<p>PAGE 93, MISCELLANEOUS, #1 COMPONENT COOLING WATER</p>	<p>TABLE 3.2.1, XXV - 1</p>
<p>3. <u>Liquid Radwaste System</u></p> <p>Piping & valves forming parts of containment boundry. (Sht.4)</p>	<p>GER 7/21/77 PAGE 93, MISCELLANEOUS, #1 FLOOR & EQUIPMENT DRAINS - SEE COMMENT #2 REVERSE SIDE</p>	<p>TABLE 3.2.1, XXXIII GER 7/21/77</p>
<p>4. <u>Electrical Power Systems & Equipment</u></p> <p>480-volt motor control centers 15B01, 15B02, 15B03, 15B04, 25B01, 25B02, 25B03, 25B04 (Sht. 5)</p>	<p>SEE COMMENT #1 REVERSE SIDE</p>	<p>NOT CHECKED</p>
<p>✓ 5. <u>Structures</u></p> <p>Control building all seismic Category I equipment supports (Sht. 8)</p>	<p>PAGE 88, CONTROL BLDG SUBSTRUCTURE PAGE 89, CONTROL BLDG SUPERSTRUCTURE</p>	<p>TABLE 3.2.1 XLV. 6</p>
<p>✓ 6. <u>Control & Instrumentation Items</u></p> <p>Combustible gas monitoring system. (Sht.10.)</p>	<p>P 21, COMBUSTIBLE</p>	<p>TABLE 3.2.1</p>

Comments

- 1) REF. PSAR, TABLE 3.2.9, SHEET 5 - 480-VOLT MOTOR CONTROL CENTERS LISTED IN PSAR ARE NOT LISTED IN CURRENT Q-LIST, REV. 7, 6/10/77

INITIATED CAR 168

- 2) REF PSAR, TABLE 3.2.9, SHEET 4, LIQUID RADWASTE SYSTEM (PIPING, VALVES FORMING PARTS OF CONTAINMENT BOUNDARY) - LIQUID RAD WASTE SYSTEM IS NOT CLEARLY IDENTIFIED IN Q-LIST, REV 7, 6/10/77.

INITIATED CAR 177

J. REAVES

AUDIT CHECKLIST

AUDIT-RESULTS (cont'd) (* N)

Appendix B of 10CFR50 Criteria(n) II

Audit Number 5

Bechtel-Gaithersburg

7/19-22/77

Codes and Standards
(Subject of Commitment)

Persons Contacted:

JOE ARBAIZA

M.E. BACINOGLU

JOHN AMARAL

A. COMMITMENT: Policy No. QGG-2.2 Rev. 6/77
(Reference) 11/76 NQAM Para. 4.0 6/77 QEC 2/19/77

1. Project Engineering shall identify and list the Codes and Standards- National, State & Local- which apply to the Project. Applicable dates, revisions, or addenda shall be identified.
2. Project Engineering shall have access to reference copies of codes and standards in the design office. These shall be current with Project requirements.

B. METHOD OF VERIFICATION Visually check for a list for item 1. Take a representative sample from the list and verify available per item 2.

C. FINDINGS*(Classification): NO VERIFICATION DOCUMENTATION OF LIST OF CODES & STANDARDS PER ITEM #1.

THE FOLLOWING CODES, STANDARDS, & GUIDES WERE TAKEN FROM PURCHASE SPECIFICATION NO. 2 9645-E-035.0 & 9645-J-305.0, PARA. 4 (ATTACHED). THESE DOCUMENTS WERE FOUND TO BE AVAILABLE PER ITEM #2.

IEEE 279-1971; IEEE 323-1974; IEEE 344-1975; ASME B31.1, 1974 ED, SUMMER ADDENDA; IPCEA P-32-382 (1969); IPCEA S-19-81 (NEMA INITIATED CAR 1003-1969); IPCEA S-66-524 (NEMA 1007-1971);
ASSE 245.2.2 (1972)

INITIATED CAR 166

*Classification:

C- Conformance

N- Nonconformance

A- Not Audited

Initials of Originator

-Checklist Number REP - 3

()

Sheet 2 of 4
7/14/77
g.R.

MATRIX FOR CHECKLIST REP-3

<u>List of Codes & Stds. National/State/ Local</u>		<u>Applicable Date/Revisions Addenda Identified</u>	<u>Accessible</u>
A. National			
1.	X	X	X
2.	X	X	X
3.	X	X	X
4.	X	X	X
5.	X	X	X
6.	X	X	X
7.	X	X	X
8.	X	X	X
B. State			
1.	X	X	X
2.	X	X	X
C. Local			
1.	X	X	X
2.	X	X	X

Comments

- 1) NO VERIFICATION DOCUMENTATION OF LIST OF CODES & STANDARDS PER ITEM #1 (CHECKLIST # REP-3)
- 2) CODES, STANDARDS & GUIDES LISTED ON AUDIT CHECKLIST # REP-3 WERE FOUND TO BE AVAILABLE PER ITEM # 2 (REP-3)

4.0

4.1

- 5

Fred Lohr
Eng.

3.0 ABBREVIATIONS



ANSI	American National Standards Institute
IEEE	Institute of Electrical and Electronic Engineers
NRC	U.S. Nuclear Regulatory Commission
NEMA	National Electrical Manufacturers Association

4.0 CODES AND STANDARDS

4.1 The Seller is responsible for ensuring that all equipment, materials, designs, tests, inspections, and documentation, purchased or supplied under this Specification will comply with all applicable Federal, State, and Local code requirements.

4.2 The Seller shall further comply with the provisions of:

NRC Regulatory Guide 1.75 Rev. 1	Physical Independence of Electric Systems
-------------------------------------	--

ANSI C37.20-1969	Switchgear Assemblies
------------------	-----------------------

ANSI N45.2.2-1971	Packaging, Shipping, Receiving, Storage and Handling of Items for Nuclear Power Plants
-------------------	--



Deleted

IEEE 279-1971	Criteria for Nuclear Power Generating Station Protection System
---------------	--

IEEE 323-1974	General Guide for Qualifying Class 1 Electric Equipment for Nuclear Power Generating Stations
---------------	---

IEEE 344-1975	Seismic Qualification of Class 1E Electric Equipment for Nuclear Power Generating Stations
---------------	--



AUDIT CHECKLIST

W. E. Edge

AUDIT-RESULTS (cont'd) (* N)
Appendix B of 10CFR50 Criteria(n) III

Audit Number 5
Bechtel-Gaithersburg
7/19-22/77

Control of Design Interfaces
(Subject of Commitment)

Persons Contacted:
Mr. H. C. Nelson, Quality
Engineer
Mr. W. Turner, Project
Quality Engineer

A. COMMITMENT: Policy No. QGG-3.2 Rev. 0
(Reference) 11/76 NQAM

3.2.6 Engineering Procedures shall provide for a Chart, Table or Matrix showing the overall Project Division of responsibilities and Interfaces between Bechtel, Client, NSSS Supplier and Major contractors providing design criteria and performing design work.

B. METHOD OF VERIFICATION Assure that the above is documented.

C. FINDINGS*(Classification): Sections of the Project Engineering
Procedures Manual (2.0, 3.2, 4.0) and the Project
Procedures Manual (1.0 and Appendix H) define
collectively overall Project division of responsibilities
and interfaces. However there are not engineering
procedures which provide for a Chart, Table
or Matrix meeting this policy requirement.
DOCUMENTED UNDER CR No. 20

*Classification:

C- Conformance
N- Nonconformance
A- Not Audited

Initials of Originator
-Checklist Number REP - 6

()

-71-

MATRIX FOR CHECKLISTS REP-6

(Effective 11/16)

W. H. Nelson
Quality Engineer
11/16/16
pcc

I. Paragraph 3.2.6

Engineer
Procedures

Chart, Table, Or Matrix- Project Div. of Response & Interface

Bechtel	Client	NSSS Supplier	Major Contractors
X			

* There are Engineering Procedures (3.2, 2.0, 4.0) which reference the Project Procedures Manual (Section 1.0 and Appendix A). These sections of these two manuals define overall project Division of responsibilities and interface. However there are not engineering procedures which provide the Chart, Table or Matrix meeting this policy requirement.

AUDIT CHECKLIST

AUDIT-RESULTS (cont'd) (* N)
Appendix B of 10CFR50 Criteria(n) III

W.E. EDGE
Audit Number 5
Bechtel-Gaithersburg
7/19-22/77

Design Verification
(Subject of Commitment)

Persons Contacted:
Mr. R. L. Hanks, Gp. Superv. - Civil
Mr. G. Singh, Gp. Supervisor - Arch.
Mr. J. E. Veas, Gp. Superv. - Elect.
Mr. H. C. Nelson, G.E.
Mr. M. E. Bacingh, Dpty. Gp. Superv. - Elect.

A. COMMITMENT: Policy No. QGG-3.3 Rev. 0
(Reference) 11/76 NQAM

- 3.7 Checking or review shall be performed by individuals or groups other than those who performed the original design who have technical capabilities at least comparable to those of the originating engineer or designer.
- 3.8 The chief engineer and his staff shall perform an additional level of review for selected design documents, including design criteria, functional descriptions, P&IDs, electrical single lines, plant layout and arrangement, Seismic Class I structure drawings, and specifications. The specific review approach shall be determined by the chief engineer and his staff and may be performed by the chief or staff personnel (Continued on attached)

B. METHOD OF VERIFICATION 1. Select a representative sample of designs drawings from each discipline and verify reviews.
2. Check that suitable lists, logs or computer sorts identify types of documents and at what stage of completion the chief engineer's review is required.

C. FINDINGS*(Classification): Ten drawings were checked representing all disciplines but Mechanical. Conformance to the policy was verified with the exception of the following: (1) Paragraph 3.8 - The specific review approach was determined by the chief engineer and the scope of chief engineer's review being prescribed by procedures was not audited; (2) Design verifications are not clearly and check traceable to the reviewer nor evidence of the reviewer's initials follow an audit of the verification process for such traceability. Traceability is based on personnel knowledge of discipline individuals or personnel rosters maintained by chief engineers or the project.

See ~~ENCLOSURE~~ PER 26

*Classification:

- C- Conformance
- N- Nonconformance
- A- Not Audited

Initials of Originator
-Checklist Number REP - 6-1

()

-73-

7/19-22/77

*Persons Contacted: Mr. M. Vogel, Engineer, Dept. of Systems - Civil
 Mr. F. Vichy, Control Systems Engineer, Mr. R. A. Ritz, Dept. of Systems - Civil
 Mr. G. M. Fox, Sr. Instrumentation - P. H. R. Co.
 Mr. F. W. Lohnes, Control Systems Engineer, J. H.*

A. COMMITMENT:

who are independent of the project or personnel from another project team. The types of design documents and at what stage of their completion the chief engineers' review is required shall be predetermined by the chief engineer and these shall be identified on suitable lists, logs or computer sorts. The scope of the Chief Engineer's review shall be prescribed by procedure.

- 3.9 Design verifications shall be clearly traceable to the reviewer. The verification methods used and the verification results shall be documented. Evidence of reviews and checks shall be documented in sufficient detail to permit an audit of the verification process.

MATRIX FOR CHECKLIST REP-6-1

I. Paragraph 3.7, 3.8, 3.9

CHIEF ENGR. REVIEW

DESIGN VERIFICATION

Discipline Dwgs/ DRNs	Checking or Rev. Independent of Orig.	Comparable Tech. Capab.	Suitable Lots, Lists Computer Sorts	Start of Comp.	Clearly Traceable to Reviewer	Documented Methods Results
A. Electrical						
1. <u>CO112</u> Rev. 7 Design R/L Rev. 115		V	DECL	11/11/81	11	Yes
2. <u>E1043</u> Rev. 10 Rev. 115		V	DECL	11/11/81	11	Yes
3. _____						
B. Mechanical						
1. _____						
2. _____						
3. _____						
C. Civil						
1. <u>CO633</u> Rev. 9 Design JBF Rev. R/H/EF		Yes	DECL	11/11/81	11	Yes
2. <u>CO74B</u> Rev. 10 Design JBF Rev. 10/11/81		Yes	DECL	11/11/81	11	Yes
3. _____						
D. Control System						
1. <u>JO117PD</u> Rev. 2 Design JBF Rev. 11/11/81		V	No	* 11/11/81	11	Yes
2. <u>JO118L</u> Rev. 2 Design JBF Rev. 11/11/81		V	No	* 11/11/81	11	Yes
3. _____						
E. Architecture						
1. <u>AO750C</u> Rev. 4 Design JBF Rev. 11/11/81		Yes	DECL	11/11/81	No	Yes
2. <u>AO750E</u> Rev. 5 Design JBF Rev. 11/11/81		Yes	DECL	11/11/81	No	Yes
3. _____						
F. Plant Design						
1. <u>HO800F</u> Rev. 8 Design JBF Rev. 11/11/81		Yes	No	11/11/81	No	Yes
2. <u>HO800F</u> Rev. 2 Design JBF Rev. 11/11/81		Yes	No	11/11/81	No	Yes

AUDIT CHECKLIST

W. E. EDGE

AUDIT-RESULTS (cont'd) (* C)
Appendix B of 10CFR50 Criteria(n) III

Audit Number 5

Design Change Control
(Subject of Commitment)

Persons Contacted:

A. COMMITMENT: Policy No. QGG03.5 Rev. 0
(Reference) 11/76 NQAM

Mr. H. C. Nelson, Q.E.
Mr. R. L. Hays, Jr. Superv. - Civil
Mr. M. L. Ruffield, Engr. - Civil
Mr. L. Lushbaugh, M.E. Design Engr.

3.8 Special controls shall be provided to identify the date of effectivity (or applicability) of changes which apply to work already performed. The disposition of items manufactured or installed prior to the change shall be specified.

3.9 Changes which affect SAR or design criteria shall be appropriately and uniquely controlled and recorded on self closing forms or logs to show when the change was incorporated into the criteria documents.

B. METHOD OF VERIFICATION Check to see that controls are documented.
Select a number of changes and assure that they were controlled as required.

C. FINDINGS*(Classification): Paragraph 3.8-
Although there is no one engineering procedure which demonstrates this commitment shall be done, there are several engineering procedures which coupled with good engineering practice are providing the required action (date of effectivity and disposition). Examples reviewed were Revision 1.3 to M 2580 and DCN No. 2 to Drawing C-1074-A Revision 11.
Paragraph 3.9 - The PEPM meets this requirement through the following documents (by reference):
1. SAR Change (6.8, Figure 6-8a, 6-8b), 2. DCN (4.3.1.6.1, Figures 4-36 & 4-3a), 3. SCN (4.5.1.6.2, Figures 4-5a & 4-5d), 4. Divas. Revisions (4.3.1.2.d), 5. Specification Revisions (4.5.1.6.3 Figure 4-5g). Examples reviewed were those listed in under Paragraph 3.8 above, and were conforming.

*Classification:

C- Conformance
N- Nonconformance
A- Not Audited

Initials of Originator

-Checklist Number REP - 7

()

-76-

MATRIX FOR CHECKLIST REP-7

I. Paragraph 3.8 (Special Controls for Work already performed)

CHANGE	Date Of Effectivity (Application)	Disposition of Items Mfg./Installed Prior
1. SAR 15.13	Upon Date of Approval 7-1	
2. SAR 12.13	12-1-10-4 Rev. 11	
3. SAR 12.13	12-1-10-4 Rev. 11	No - Should be kept
4. SAR 12.13	11	

II. Paragraph 3.9 (Affecting SAR or design Criteria)

CHANGE	Appropriately & Controlled	Uniquely Recorded	Self Closing Forms	Logs
1. SAR 12.13	6-1-10	✓	Figure 4-2b	Figure 4-2b
2. SAR 12.13	4.3.1.6.1	✓	Figure 4-2b	Figure 4-2b
3. SAR 12.13	4.5.1.6.2	✓	Figure 4-5	Figure 4-5d
4. SAR 12.13	4.3.1.2.3.1	Sperry 12-1-10	No	No
5. SAR 12.13	4.5.1.6	✓	Figure 4-5	Figure 4-5d
6. No. 12.13 for revision				

* P.O. is date of F.O. revision.
 Performance Specs. date of revision is date of Engineer.
 Field P.O.'s will be action date.
 Subcontractor's date of F.O. revision.
 * (2) Not a procedure / recommendation about a part
 Also long term practice.
 For major changes, will be 2114, 12-1-10
 12-1-10-4 Rev. 11

AUDIT CHECKLIST

W. E. Edge

AUDIT-RESULTS (cont'd) (* C)

Appendix B of 10CFR50 Criteria(n) III

Audit Number 5

Bechtel-Gaithersburg

7/19-22/77

Design Change Control
(Subject of Commitment)

Persons Contacted:

Mr. H. C. Nelson, QE

A. COMMITMENT: Policy QGG-3.5 Rev. 0
(Reference) 11/76 NQAM

3.10 Documented controls shall be provided for design changes that impact completed field work and shall provide for:

- 3.10.1 Identifying the need for and method of performing the rework.
- 3.10.2 Development necessary work plans/procedures and reinspection instructions.
- 3.10.3 Documenting the completion of the work and recording the results of the reinspection.

B. METHOD OF VERIFICATION Check to see that controls are documented. Select a number of changes of this type and verify that they were controlled as required.

C. FINDINGS*(Classification): Paragraph 3.10.1 - Controls are documented through DCNs, Drawing and Specification Revisions. No changes other than those in checklist REP-7 were reviewed.
Paragraph 3.10.2 and 3.10.3 were not reviewed for engineering conformance.

*Classification:

- C- Conformance
- N- Nonconformance
- A- Not Audited

Initials of Originator
-Checklist Number REP - 8

()

- 78 -

(Effective 11/76)

CHANGE	Identify Need For & Method of Perf. Rework	Develop.Neces.WP/P & Reinsp. Instr.	Docum.Compl. of Work & Record. Result of Reinsp.
1.	Per DCA, Drawing	Construction Not	
2.	Revisions or Spec. Rev	Engineering	
3.			
4.			
5.			
6.			

AUDIT CHECKLIST

R.E. PENO

AUDIT-RESULTS (cont'd) (* C)
Appendix B of 10CFR50 Criteria(n) IV

Audit Number 5
Bechtel-Gaithersburg
7/19-22/77

Requirements For Supplier
Quality Assurance Program
(Subject of Commitment)

Persons Contacted:
M. MAJORAS

A. COMMITMENT: Policy NO. QGG-4.2 Rev.0
(Reference) 11/76 NQAM

3.2 The following guidelines shall be considered when a quality program is a requirement:

3.2.1 Major Contractors- This term applies to suppliers of engineered systems such as the nuclear steam supply system, suppliers furnishing major components such as the reactor containment vessel or liner, and major or principle contractors. All of the requirements of ANSI N45.2-1971 should be required.
(Continued on attached)

B. METHOD OF VERIFICATION Select three (3) procurement documents from each discipline and verify compliance to the above.

C. FINDINGS*(Classification): CONFORMANCE, SEE ATTACHED MATRIX FOR DETAILS.

*Classification:

C- Conformance
N- Nonconformance
A- Not Audited

Initials of Originator
-Checklist Number REP - 14

()

A. COMMITMENT:

- 3.2.2 Suppliers of engineered items- This category includes suppliers of pumps, heat exchangers, vessels, tanks, switch gear and valves. Applicable requirements of the governing Codes should be applied to Code covered work. Applicable requirements of ANSI N45.2-1971, which apply to the suppliers' work, should be invoked for items and activities not covered by ASME Boiler and Pressure Vessels Code.
- 3.2.3 Fabricators and contractors- Suppliers such as piping and structural steel fabricators and subcontractors for structures, field erection, heating and ventilating, and protective coating should be required to comply with the quality control requirements of applicable industry standards supplemented by portions of ANSI N45.2-1971, appropriate to the work.
- 3.2.4 Material suppliers - If the quality of the material can be verified by suitable qualification or acceptance testing, shop surveillance inspection survey, or receipt inspection, suppliers of such materials or catalog items need not have a formal QA/QC program unless required by Code. Suppliers of these items are required to meet applicable Code requirements and shall be able to provide quality verification documents traceable to the items when required by Code and/or procurement documents. Such suppliers should be required to conduct their activities, including testing in a controlled manner, and should be in a position to provide satisfactory evidence that these controls are in place in the event Bechtel elects to inspect or audit their activities.

MIKE MAJORAS

On Bechtel-Gaithersburg Audit No. 5
Check Lists Nos. REP-9-15 and REP-18
& 19 The Following Numbers will be Utilized
on the Matrices to Indicate the Applicable Purchase Order

- | | | | |
|------|--|-------|--|
| → 1. | A-021.0
Air Tight Doors
Overly | → 9. | F-035.4
Penetration Protection Cabinets
ITE Rowan |
| → 2. | A-022.0 ³
Expl. Proof Doors
Overly Mfg. | → 10. | J-202.0
Instrument Racks
Magnetics |
| → 3. | A-022.4
Air Tight Doors
Sonic Bar | → 11. | J-516.0
Pressure Switches
Mercoild Corp. |
| → 4. | C-153.0
Locks, Hatches
Wooley | → 12. | J-704.0
Instrument Valves
Dragon Valves |
| → 5. | C-153.1
Drywell Hatches
Ind. Eng | → 13. | M-062.0
Cask Cranes
Whiting |
| → 6. | C-154.0
RPV Shield
Southern Boiler & Tank | → 14. | M-101.0
Quenchers
RE Co |
| → 7. | E-020.0
D. C. Panel Boards
Delta | → 15. | M-187.0
Compression Pool Strainers
Newark Wire Cloth |
| → 8. | E-029.0
9 KV Power Cable
Kerite | | |

P.O. #	MAJOR CONTRACTOR ALL 45.2-71 REQ.	EXEMPTED ITEMS - MATERIALS COVERED BY CODE	FABRICATORS A MAJORABLE SUPPLIERS SUPPLEMENTED BY PARTIAL 45.2-71	MATERIAL SUPPLIERS
1	N/A	✓	N/A	N/A
2	N/A	✓	N/A	N/A
3	N/A	✓	N/A	N/A
4	✓	✓	N/A	N/A
5	✓	✓	N/A	N/A
6	✓	✓	N/A	N/A
7	✓	✓	N/A	N/A
8	✓	✓	N/A	N/A
9	✓	✓	N/A	N/A
10	N/A (NONQ)	✓	N/A	N/A
11	N/A (NONQ)	✓	N/A	N/A
12	✓	✓	N/A	N/A
13	✓	✓	N/A	N/A
14	✓	✓	N/A	N/A
15	✓	✓	N/A	N/A
Comments:				

AUDIT CHECKLIST

R.E. PENO

AUDIT-RESULTS (cont'd) (* N)
Appendix B of 10CFR50 Criteria(n) IV

Audit Number 5
Bechtel-Gaithersburg
7/19-22/77

Requirements For Supplier
Quality Assurance Program
(Subject of Commitment)

Persons Contacted:
MIKE MAJORAS
BILL TURNER
WALT HESSELOEIN

A. COMMITMENT: Policy No. QGG-4.2 Rev. 0
(Reference) 11/76 NQAM

3.3 In addition, procurement documents shall include the following general requirements, as appropriate to the material, equipment or service provided:

- 3.3.1 Identification of documents required for engineering review and/or quality verification.
 - 3.3.2 Provisions for access by Bechtel and Client personnel to conduct inspections and audits.
 - 3.3.3 Identification of hold and witness points required by engineering, if any.
 - 3.3.4 Provisions for the supplier to formally certify to the correctness and completeness of his work.
- (Continued on attached)

B. METHOD OF VERIFICATION Select three (3) Procurement Documents from each discipline and verify compliance to the above.

C. FINDINGS*(Classification): 1. CONTRARY TO THE REQUIREMENTS OF PAR. 3.3.2 PROCUREMENT DOCUMENTS DO NOT PROVIDE FOR ACCESS BY THE CLIENT. DOCUMENTED ON D&CR No. 17.
2. CONTRARY TO PAR. 3.3.8 PROCUREMENT DOCUMENTS DO NOT HAVE PROVISIONS FOR THE SUPPLIER TO COMPLY WITH INT-TC-1A. DOCUMENTED ON D&CR No. 18.

*Classification:

C- Conformance
N- Nonconformance
A- Not Audited

Initials of Originator
-Checklist Number REP - 15

()

A. COMMITMENT:

- 3.3.5 Provisions for supplier submittal of appropriate quality program descriptions with his bid (when requested).
- 3.3.6 Provisions to allow Bechtel to require revisions to approved supplier programs at any time over the life of the contract if the supplier's program is found to be incomplete or inadequate.
- 3.3.7 Provisions for the supplier to retain quality records not required to be submitted to Bechtel pending final disposition of such records by Bechtel.
- 3.3.8 Provisions for the supplier to comply with applicable personnel qualification requirements of SNT-TC-1A.

MIKE MAJORA S

On Bechtel-Gaithersburg Audit No. 5
Check Lists Nos. REP-9-15 and REP-18
& 19 The Following Numbers will be Utilized
on the Matrices to Indicate the Applicable Purchase Order

- | | | | |
|------|--|-------|--|
| → 1. | A-021.0
Air Tight Doors
Overly | → 9. | E-035.4
Penetration Protection Cabinets
ITE Rowan |
| → 2. | A-022.0 ³
Expl. Proof Doors
Overly Mfg. | → 10. | J-202.0
Instrument Racks
Magnetics |
| → 3. | A-022.4
Air Tight Doors
Sonic Bar | → 11. | J-516.0
Pressure Switches
Mercoild Corp. |
| → 4. | C-153.0
Locks, Hatches
Wocley | → 12. | J-704.0
Instrument Valves
Dragon Valves |
| → 5. | C-153.1
Drywell Hatches
Ind. Eng | → 13. | M-062.0
Cask Cranes
Whiting |
| → 6. | C-154.0
RPV Shield
Southern Boiler & Tank | → 14. | M-101.0
Quenchers
RE Co |
| → 7. | E-020.0
D. C. Panel Boards
Delta | → 15. | M-187.0
Compression Pool Strainers
Newark Wire Cloth |
| → 8. | E-029.0
9 KV Power Cable
Kerite | | |

BECHTEL-GAITHERSBURG AUDIT NO. 2
CHECKLIST REP-15
7/19-22/77

CONTACTS: MIKE MAYORAS
BILL TURNER
WALT HESSELEBEN

NO.	HA Doc Req For Eng Review Approval or Verif.	Access By Bechtel Client	ID Hold Witness Prints (if any)	Supplier formally certified to work & contract signed	Documents submitted Program unreviewed	Bechtel Rev to Program	Supplier Rev to Program	Supplier Rev to Program
1	✓	1	N/A	✓	✓	✓	✓	1
2	✓	1	N/A	✓	✓	✓	✓	2
3	✓	1	N/A	✓	✓	✓	✓	2
4	✓	1	N/A	✓	✓	✓	✓	2
5	✓	1	N/A	✓	✓	✓	✓	2
6	✓	1	N/A	✓	✓	✓	✓	2
7	✓	1	N/A	✓	✓	✓	✓	2
8	✓	1	N/A	✓	✓	✓	✓	2
9	✓	1	N/A	✓	✓	✓	✓	2
10	✓	1	N/A	✓	✓	✓	✓	2
11	✓	1	N/A	✓	✓	✓	✓	2
12	✓	1	N/A	✓	✓	✓	✓	2
13	✓	1	N/A	✓	✓	✓	✓	2
14	✓	1	N/A	✓	✓	✓	✓	2
15	✓	1	N/A	✓	✓	✓	✓	2

COMMENTS:

- 1 NO REQUIREMENT FOR ACCESS BY CLIENT (OR PRIME CONTRACT)
- 2 CRITERIA IX, CONTROL OF SPECIAL PROCESSES DELETED
- 3 NO

AUDIT CHECKLIST

J. Le Gros

AUDIT-RESULTS (cont'd) (* N)
Appendix B of 10CFR50 Criteria(n)V

Audit Number 5
Bechtel-Gaithersburg
7/19-22/77

Instructions, Procedures and Drawings
(Subject of Commitment)

Persons Contacted:
W. HESSELBEIN - PQAE
R. SIPE - QA ENG.
O.D. MORAN - QUALITY ENG.

A. COMMITMENT: Policy No. 5.1 Rev.0
(Reference) 11/76 NQAM

3.8 The PQAE shall be responsible for preparation of a list cross referencing the policies of this manual with the project related procedures implementing the policies. The list will be used to ensure that all procedures required to implement the policy requirements have been prepared. Quality Assurance procedures shall provide for preparation of the list.

B. METHOD OF VERIFICATION Verify documentation of the list. Check 10 cross references for accuracy.

C. FINDINGS*(Classification): N - THE REQUIRED LIST EXISTS; HOWEVER, THERE IS NO QUALITY ASSURANCE PROCEDURE WHICH PROVIDES FOR PREPARATION OF THE LIST. (THE LIST IS IDENTIFIED AS CAR 106 MATRIX.) A QUALITY ASSURANCE PROCEDURE SHOULD BE PREPARED TO PROVIDE DIRECTION FOR THE PREPARATION AND MAINTENANCE OF THE LIST, INCLUDING PROVISIONS FOR ASSURING THAT THE LIST IS COMPLETE AND ACCURATE.

REFERENCE: CAR 169

*Classification:

C- Conformance
N- Nonconformance
A- Not Audited

Initials of Originator
-Checklist Number REP - 16

A) DOCUMENTATION OF LIST VERIFIED: YES ☒ NO ☐

QA PROCEDURE WHICH PROVIDES FOR PREPARATION OF THE LIST:

THERE IS NO QAP WHICH PROVIDES FOR PREPARATION OF THE LIST (QAP 106 MATRIX).

COMMENTS: QAP 106 MATRIX IS A RED-LINED WORKING COPY.

INPUT IS SUPPLIED BY THE ORGANIZATIONS RESPONSIBLE FOR THE PROCEDURES. THERE ARE NO PROVISIONS FOR VERIFYING THE ACCURACY OF THE INPUT BY QA. QGG 5.1 REQUIREMENTS WERE INADVERTENTLY LEFT OUT OF THE MATRIX. PROCEDURAL REQUIREMENTS FOR QGG-5.1 WERE NOT PICKED UP.

B) 10 CROSS-REFERENCES CHECKED:

<u>POLICY</u>	<u>PROCEDURES</u>	<u>COMMENTS</u>
QGG-2.1; PARA. 4.5.2	*	* PERM CHANGE NOTICE 01 COVERS THIS
QGG-3.1; PARA. 3.6.4	PEPM-2.2	UNDER REVIEW; ISSUE 10/7/77
QGG-3.4; PARA. 3.6.1	PEPM-2.1	REFERENCE TO SPECIFIC PARAGRAPH OF PERM WOULD BE PREFERABLE.
QGG-4.1; PARA. 3.12.1	PEPM-4.5; APP. E, F)
QGG-4.1; PARA. 3.15.3	PROCUREMENT SUPPLIER QUALITY	OK

CHARACTERISTICS - P-11 (cont.)

<u>POLICY</u>	<u>PROCEDURES</u>	<u>COMMENTS</u>
QGG-6.1; PARA. 4.6.1	PEPM-3.3 CPM 4.1 WP/PI-4.2, 4.3 NQAM 2.18	OK
QGG-7.1; PARA. 3.10	PURCHASING MANUAL	ADDRESSES REQUIREMENTS IN GENERAL TERMS.
QGG-9.1; PARA. 3.8	PEPM-4.5	PEPM CHANGE NOTICE 07
QGG-15.1; PARA. 3.10.1	PEPM-4.2.15	OK
QGG-18.1; PARA. 3.12.1	NQAM 2.12 PSQDM - SEC. VIII; PARA. 4.13	OK

PERSONS CONTACTED: (1) W. HESSELBEIN - PQAE
(2) R. SIPE - QAE
(3) O.D. MORAN - QE

2
ok

AUDIT CHECKLIST

J. L E G R O S

AUDIT-RESULTS (cont'd) (* N)
Appendix B of 10CFR50 Criteria(n) VI

Audit Number 5
Bechtel -Gaithersburg
7/19-22/77

Policy, Manual and Procedure Control

(Subject of Commitment)

Persons Contacted:

T. ELSTNER - Proj. Admin.
G. SIMMONS - Proj. Procurement MGR.
D. TRAPOLD - Procurement Supplier Qual. MGR.
O. D. MORAN - QE
T. ARBAIZA - QE

A. COMMITMENT: Policy No. QGG-^{6.1} Rev. 0
(Reference) 11/76 NQAM

4.4 The originator (See Table 1) shall retain one record copy of quality related manuals and procedures including superseded portions thereof. In all other cases, the revised portions shall be removed and destroyed or identified as superseded.

4.6 The originators of documents identified in Table 1 shall prepare procedures in sufficient detail to conform to the requirements of this policy. The procedures shall provide for the following:
(Continued on attached)

B. METHOD OF VERIFICATION Select 2 Manuals from Table 1 (Attached)
and verify compliance to the above requirements. Verify Documentation
of Review for QA Policy compliance for all manuals.

C. FINDINGS*(Classification): N - Two nonconformances are identified.

(1) THERE IS NO PROCEDURE FOR CONTROL OF THE PROJECT
PROCUREMENT PROCEDURES MANUAL IN ACCORDANCE WITH
THE REQUIREMENTS OF PARA. 4.6. A PROCEDURE SHOULD
BE PREPARED TO ADDRESS THE REQUIREMENTS OF
PARA. 4.6 RELATIVE TO THE PROJECT PROCUREMENT
PROCEDURES MANUAL.

(2) THE PROJECT PROCEDURES MANUAL LATEST REVISION
DOES NOT SHOW EVIDENCE OF REVIEW FOR QA
POLICY COMPLIANCE BY THE DIVISION QA MANAGER
AS REQUIRED IN TABLE 1. ACTION SHOULD BE TAKEN
TO ASSURE COMPLIANCE WITH REVIEW REQUIREMENTS.

REFERENCE: (1) CAR 170 (2) CAR 171

*Classification:

C- Conformance
N- Nonconformance
A- Not Audited

Initials of Originator
-Checklist Number REP - 16-1

()

A. COMMITMENT:

- 4.6.1 Identification of the individuals (position title) responsible for preparation, review, approval, issue, control and distribution of the documents.
- 4.6.2 Evidence to show review and approval of the original document and changes thereto.
- 4.6.3 Maintenance of current distribution lists.
- 4.6.4 Method of identifying the documents to the holder of the document.
- 4.6.5 Records showing acknowledgement of receipt of the original document and subsequent changes.
- 4.6.6 Method of identifying changes.
- 4.6.7 Review of the acknowledgement receipts to ensure that material transmitted has been received.
- 4.6.8 Identification of the individuals (position title) responsible for retention of a record copy of the document including superseded portions of the document.
- 4.6.9 Identifying the effectivity date of the new or revised procedure or policy.

GRAND GULF NUCLEAR STATION
NUCLEAR QUALITY ASSURANCE MANUAL

POLICY QGG-6.1
TABLE I

GGNS QUALITY PROGRAM DOCUMENTS

DOCUMENT	ORIGINATING AUTHORITY	REVIEW FOR QA POLICY COMPLIANCE	AUTHORIZING APPROVAL	CONTENTS
PROCUREMENT INSPECTION DEPARTMENT MANUAL	MANAGER PROCUREMENT INSPECTION	MANAGER QA - TPO**	MANAGER PROCUREMENT INSPECTION	PROCUREMENT INSPECTION PROCEDURES
BECHTEL QUALITY ASSURANCE MANUAL - ASME NUCLEAR COMPONENTS (BQAM-ASME III)	MANAGER M&QS	MANAGER QA - TPO**	GENERAL MANAGER - TPO AND APPROPRIATE AUTHORIZED CODE INSPECTION AGENCY	POLICIES AND PROCEDURES FOR OVERALL BECHTEL PROGRAM APPLICABLE TO ASME WORK
BQAM-ASME III PROJECT AMENDMENTS	SUPERVISOR M&QS, GPD	DIVISION QA MANAGER	PROJECT MANAGER	AMMENDMENTS TO BQAM-ASME III SPECIFICALLY APPLICABLE TO THE GGNS
PROJECT NOAM	PROJECT QA ENGINEER	DIVISION QA MANAGER	PROJECT MANAGER	GGNS QUALITY POLICIES AND QA DEPARTMENT PROCEDURES
PROJECT ENGINEERING PROCEDURES MANUAL	PROJECT ENGINEER	DIVISION QA MANAGER	PROJECT MANAGER	RESPONSIBILITIES AND PROCEDURES FOR ACTIVITIES CONDUCTED BY PROJECT ENGINEERING PERSONNEL
M&QS POLICY AND PROCEDURE GUIDE	MANAGER M&QS	MANAGER QA - TPO** (QUALITY PROGRAM RELATED PORTIONS)	MANAGER M&QS	POLICIES AND PROCEDURES FOR PERFORMING M&QS FUNCTIONS

** INCLUDES REVIEW BY DIVISION QA MANAGER

NOTE - REVISIONS TO THESE DOCUMENTS REQUIRE THE SAME REVIEW AND APPROVAL AS THE ORIGINAL

GRAND GULF NUCLEAR STATION
NUCLEAR QUALITY ASSURANCE MANUAL

POLICY QGG-6.1
TABLE I

GGNS QUALITY PROGRAM DOCUMENTS

DOCUMENT	ORIGINATING AUTHORITY	REVIEW FOR QA POLICY COMPLIANCE	AUTHORIZING APPROVAL	CONTENTS
CONSTRUCTION WORK PLAN/PROCEDURES	DIVISION CHIEF CONSTRUCTION ENGINEER	DIVISION QA MANAGER (GENERAL WORK PLAN/PROCEDURES)	MANAGER DIVISION CONSTRUCTION	RESPONSIBILITIES AND PROCESS CONTROL PROCEDURES FOR CONSTRUCTION SITE ACTIVITIES
PROJECT PROCUREMENT PROCEDURES MANUAL	PROJECT PROCUREMENT MANAGER	DIVISION QA MANAGER	PROJECT MANAGER	PROCUREMENT PROCEDURES APPLICABLE TO THE GGNS
FIELD PROCUREMENT MANUAL	MANAGER OF FIELD PROCUREMENT	MANAGER QA TPO** (QUALITY PROGRAM RELATED PORTIONS)	MANAGER OF FIELD PROCUREMENT	PROCEDURES FOR FIELD PROCUREMENT
PROJECT PROCEDURES MANUAL	PROJECT MANAGER	DIV. QA MANAGER	PROJECT MANAGER	PROCEDURES FOR MEETING CONTRACTURAL COMMITMENTS
CONSTRUCTION PROCEDURES MANUAL	FIELD CONSTRUCTION MANAGER	DIV. QA MANAGER	PROJECT MANAGER	ADMINISTRATIVE CONTROL PROCEDURES FOR JOBSITE ACTIVITIES
PROJECT QUALITY CONTROL MANUAL	CHIEF FIELD QC ENGINEER	DIV. QA MANAGER	PROJECT MANAGER	RESPONSIBILITIES AND PROCEDURES FOR CONSTRUCTION QUALITY CONTROL ACTIVITIES
PROJECT QUALITY CONTROL INSTRUCTION MANUAL	PROJECT FIELD QC ENGINEER	FIELD QA SUPERVISOR	PROJECT FIELD QC ENGINEER	INSTRUCTIONS FOR IMPLEMENTING QC MANUAL REQUIREMENTS

** INCLUDES REVIEW BY DIVISION QA MANAGER

NOTE - REVISIONS TO THESE DOCUMENTS REQUIRE THE SAME REVIEW AND APPROVAL AS THE ORIGINAL

Policy, Manual & Procedure Control

CHECKLIST-REP-16-1

POLICY No. 6.1-REV. 0-11/76-NQAM

A) 1. ORIGINATOR HAS RECORDED COPY OF MANUAL, INCLUDING SUPERSEDED PORTIONS

2. ORIGINATOR HAS PROCEDURES FOR THE FOLLOWING:

a) IDENTIFICATION OF INDIVIDUALS RESPONSIBLE FOR PREPARATION, REVIEW, APPROVAL, ISSUE & CONTROL

b) REVIEW & APPROVAL EVIDENCE FOR ORIGINAL & CHANGES

c) CURRENT DISTRIBUTION LISTS

d) IDENTIFYING DOCUMENT TO HOLDER OF DOCUMENT

e) ACKNOWLEDGEMENT OF RECEIPT RECORDS

f) METHOD OF IDENTIFYING CHANGES

g) REVIEW OF ACKNOWLEDGEMENT OF RECEIPTS

h) IDENTIFICATION OF INDIVIDUAL RESPONSIBLE FOR RETENTION OF RECORDED COPY OF DOCUMENT

i) IDENTIFICATION OF EFFECTIVITY DATES

PROJECT ENG. PROCEDURES MANUAL

PROJECT PROCEDURES MANUAL

YES ☒ NO ☐

YES ☒ NO ☐

YES ☒ NO ☐

YES ☐ NO ☒

YES ☒ NO ☐

YES ☐ NO ☒

YES ☒ NO ☐

YES ☐ NO ☒

YES ☒ NO ☐

YES ☐ NO ☒

YES ☒ NO ☐

YES ☐ NO ☒

YES ☒ NO ☐

YES ☐ NO ☒

YES ☒ NO ☐

YES ☐ NO ☒

YES ☒ NO ☐

YES ☐ NO ☒

YES ☒ NO ☐

YES ☐ NO ☒

IDENTIFICATION OF PROCEDURES:

PEPM 3.3, REV. 0, 5/24/77

NO PROCUREMENT PROCEDURE IN EXISTENCE TO COVER PARA. 4.1.

- 112 -

CHECKLIST - REP 16-1 (CON'T)

13) DOCUMENT

	REVIEW FOR QA POLICY COMPLIANCE	DOCUMENTED
Procurement Inspection Dept Manual	MGR QA-TED	X Yes X No <input type="checkbox"/>
Boothel QAM - ASME III	MGR QA-TED	Yes X No <input type="checkbox"/>
BQA/CI-ASME III Project Amendments	Dir. QA MGR	Yes X No <input type="checkbox"/>
Project NOAM	Dir. QA MGR	Yes X No <input type="checkbox"/>
Project Eng. Procedures Manual *	Dir. QA MGR	Yes <input type="checkbox"/> No <input type="checkbox"/>
M&QS Policy & Procedures Guide	MGR QA-TED	Yes X No <input type="checkbox"/>
Construction Work Plan/Procedures	Dir. QA MGR	Yes X No <input type="checkbox"/>
Project Procurement Procedures Manual	Dir. QA MGR	Yes <input type="checkbox"/> No X Rev. 5
Field Procurement Manual	MGR QA-TED	Yes X No <input type="checkbox"/>
Project Procedures Manual	Dir. QA MGR	Yes <input type="checkbox"/> No X Rev. 5
Construction Procedures Manual	Dir. QA MGR	Yes X No <input type="checkbox"/>
Project Quality Control Manual	Dir. QA MGR	Yes X No <input type="checkbox"/>
Project QCI Manual	Dir. QA MGR	Yes X No <input type="checkbox"/>

EACH INDIVIDUAL INSTRUCTION

Comments: RECORD COPY OF PERM MAINTAINED BY T. ELSTNETZ
Project Procurement MGR is NOT ABLE TO SHOW EVIDENCE OF A
PROCEDURE ADDRESSING THE REQUIREMENTS OF PARA. 4.6 ALTHOUGH
THEY CAN SHOW THAT THEY ARE MEETING THE REQUIREMENTS.

Persons Contacted: T. ELSTNETZ - Proj. Admin.
O.D. MORAN - QE
J. ARBAIZA - QE
G.C. SIMMONS - Project Procurement MGR.
W. HESSELBEIN - PQAE
D.E. TRAPOLD - Proc. Supplier Quality MGR

(13)

AUDIT CHECKLIST

R. E. FENO

AUDIT-RESULTS (cont'd) (* N)
Appendix B of 10CFR50 Criteria(n)VI

Audit Number 5
Bechtel-Gaithersburg
7/19-22/77

Loop Closing
(Subject of Commitment)

Persons Contacted:
G. SIMMONS
R. ANDERSON
W. TURNER
W. HESSELBEIN

A. COMMITMENT: Policy No. QGG-6.3 Rev. 0
(Reference) 11/76 NQAM

- 3.5 Engineering, procurement and project quality assurance procedures shall provide for the following:
- 3.5.1 Identification of the documents covered by the loop closing procedure.
 - 3.5.2 Identification of the personnel (position title) responsible for ensuring proper close out of identified items.
 - 3.5.3 Measures to ensure traceability from the originating document to the close-out action.
 - 3.5.4 Identification of the personnel responsible for retention of documentation to show close-out action.
 - 3.5.5 Identification of scheduled and actual completion dates.
 - 3.5.6 Instruction of personnel involved in implementing the loop closing procedure.

B. METHOD OF VERIFICATION
Verify that Engineering, Procurement and Quality Assurance
Procedures include the above requirements.

C. FINDINGS*(Classification): ENGINEERING HAS PROCEDURES.
QA HAS A DRAFT PROCEDURE CURRENTLY
IN REVIEW; PURCHASING HAS NO PROCEDURES.
SEE ATTACHED MATRIX.
DOCUMENTED ON CAR NO. 175

*Classification:

C- Conformance
N- Nonconformance
A- Not Audited

Initials of Originator
-Checklist Number REP - 17

()

- 114 -

LOOP CLOSING

CHU-INT-PEP-PI

Policy No. 6.3 - Rev. 0 - 11/70 - NQA

ENGINEERING, PROCUREMENT & PERMIT
QA PROCEDURES SHALL CONTAIN PROVISIONS
FOR THE FOLLOWING:

- a) ID OF DOCUMENTS COVERED BY THE
LOOP CLOSING PROCEDURE
- b) ID OF PERSONNEL RESPONSIBLE FOR
ASSURING PROPER CLOSE OUT OF
IDENTIFIED ITEMS
- c) MEASURES TO ENSURE TRACEABILITY
FROM THE ORIGINATING DOCUMENT
TO THE CLOSE-OUT ACTION
- d) ID OF PERSONNEL RESPONSIBLE FOR
RETENTION OF DOCUMENTATION TO SHOW
CLOSE-OUT ACTION
- e) ID OF SCHEDULED & ACTUAL
COMPLETION DATES
- f) INSTRUCTION OF PERSONNEL INVOLVED
IN IMPLEMENTING THE LOOP-CLOSING
PROCEDURE.

PROCEDURES	COMMENTS	
PROCUREMENT	ENG PEPM 4.2.11.2	QA DRAFT QA DEPT. PROC. 2.28 * (ATTACHED)
YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	YES <input checked="" type="checkbox"/> NO <input type="checkbox"/>	YES <input type="checkbox"/> NO <input type="checkbox"/>
YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	YES <input checked="" type="checkbox"/> NO <input type="checkbox"/>	YES <input type="checkbox"/> NO <input type="checkbox"/>
YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	YES <input checked="" type="checkbox"/> NO <input type="checkbox"/>	YES <input type="checkbox"/> NO <input type="checkbox"/>
YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	YES <input checked="" type="checkbox"/> NO <input type="checkbox"/>	YES <input type="checkbox"/> NO <input type="checkbox"/>
YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	YES <input checked="" type="checkbox"/> NO <input type="checkbox"/>	YES <input type="checkbox"/> NO <input type="checkbox"/>
YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	YES <input checked="" type="checkbox"/> NO <input type="checkbox"/>	YES <input type="checkbox"/> NO <input type="checkbox"/>

* QA DEPT PROCEDURE 2.28 CURRENTLY BEING
REVIEWED BY JOHN AMARAL, QA MANAGER

GRAND GULF NUCLEAR STATION
NUCLEAR QUALITY ASSURANCE MANUAL

LOOP CLOSING

QA Department Procedures
NO. 2.28 REV. 0
DATE March 1977
PAGE 1 OF 2

GAITHERSBURG
POWER DIVISION

1.0 PURPOSE

To provide a method for documenting and closing out quality related records that do not provide self-closing features.

2.0 GENERAL

Audits, MP&L CARs, NCRs/CRs, MCARs, etc. are considered self-closing because the applicable form provides verification and close out processes and signatures.

The responsibility for loop-closing rests with the originator of request for action.

3.0 PROCEDURE

3.1 The Quality Action Request (QAR), Figure 2.28-1, a three part form shall be used by personnel in Quality Assurance to request action to prevent, evaluate, identify, or resolve quality items.

3.2 The QAR may be used to request:

- a) Information concerning a quality item
- b) Investigation or evaluation of a potential or existing quality problem
- c) Remedial action to correct a procedural nonconformance
- d) Etc.

3.3 The QAR shall not be used as a substitute for any existing self-closing document.

3.4 The QAR shall be:

- a) Prepared by the QAE (see instructions on QAR) and addressed to (white copy + canary copy) to the person(s) responsible for the response
- b) Entered into the QAR Log, Figure 2.28-2, to provide status

GRAND GULF NUCLEAR STATION
NUCLEAR QUALITY ASSURANCE MANUAL



GAITHERSBURG
POWER DIVISION

LOOP CLOSING

QA Department Procedures
NO. 2.28 REV. 0
DATE March 1977
PAGE 2 OF 2

- c) Filed (pink copy) in a tickler file for follow up
- d) Responded to by the person(s) responsible for the action recording the response on the applicable portion of the QAR, retaining the canary copy, and returning the white copy to the QAE
- e) Verified and signed off by the QAE
- f) Closed out on the QAR Log
- g) Filed (remove pink copy from tickler file) in QA files with supporting documentation until completion of the project.

4.0 ATTACHMENTS

Figure 2.28-1 Quality Action Request

Figure 2.28-2 QAR Log

QUALITY ACTION REQUEST

From: ①		
To: ②	Control Document ref.: ③	QAR Ident. No.: ④
Action Requested: ⑤		
Signature: ⑥	Date: ⑦	Reply Requested by: ⑧
Reply: ⑨		
Signature: ⑩	Date: ⑪	
Action Verified: ⑫	Date: ⑬	

8/2/74

WHITE — Return to sender

CANARY — Addressee's file

PINK — Sender's file

REC'D March 1977

INCLOSURE III PAGE 50

INSTRUCTIONS

Block

Required Information

1. The name of the person and organization (Project name and number if applicable) who is issuing the QAR.
2. The name of the person to whom the QAR is being directed for action.
3. The identification numbers of applicable documents which are affected by or which affect the action requested.
4. A unique serial number for quick reference to the QAR itself.
5. A brief, concise, clear explanation of the requested action. Include a justification when appropriate. Continuation pages should be attached when necessary.
6. The signature of the initiator of the QAR.
7. The issue date.
8. The date that action is to be completed or the date by which the addressee is to answer the QAR.
9. The reply statement from the addressee.
10. The signature of the addressee or person with authority to comment to the reply in response to the requested action.
11. The date which the QAR is returned to the initiator of the QAR.
12. The signature of the initiator of the QAR, or his designated representative, which verifies that the QAR has been properly closed out.
13. The date that the QAR was verified as having been properly closed out.

Rev. 0 March 1977

(Reverse Side of QAR)

- 119 -

QUALITY ACTION REQUEST LOG

Page

[illegible]

QUALITY ACTION REQUEST

From: ①		
To: ②	Control Document ref.: ③	QAR Ident. No.: ④
Action Requested: ⑤		
Signature: ⑥	Date: ⑦	Reply Requested by: ⑧
Reply: ⑨		
Signature: ⑩	Date: ⑪	
Action Verified: ⑫	Date: ⑬	

8/2/74

WHITE — Return to sender

CANARY — Addressee's file

PINK — Sender's file

Sheet 183

AUDIT CHECKLIST

J. E. REAVES

AUDIT-RESULTS (cont'd) (* a)
Appendix B of 10CFR50 Criteria(n) VII

Audit Number 5
Bechtel-Gaithersburg
7/19-22/77

Source Evaluation and Selection
(Subject of Commitment)

Persons Contacted:
Rich Anderson
Joe Arpaia

A. COMMITMENT: Policy No. QGG-7.1 Rev. 0
(Reference) 11/76 NQAM

3.2 Suppliers of engineered items or technical services shall have satisfactorily been surveyed or audited in accordance with Bechtel Procurement Inspection Department procedures within 1 year prior to award of purchase order or subcontract. These suppliers shall also have submitted with the bid evidence that they can provide quality material, equipment and services and adequate and accurate documentation.

3.3 Suppliers of materials including ASME Section III materials except for weld filler metal Suppliers shall have been satisfactorily surveyed or audited in accordance with Bechtel Procurement Inspection Department procedures within 1 year prior to award of purchase order. Suppliers of weld filler metal shall have been satisfactorily surveyed within 5 years prior to award of the purchase order in accordance with M&QA procedures.

B. METHOD OF VERIFICATION

Check 2 Purchase Orders of each discipline and verify documentation of the above requirements.

C. FINDINGS*(Classification):

NON CONFORMANCES NOTED ON ATTACHED MATRIX
OCCURRED PRIOR TO 11/76 DATE OF QGG-7.1

*Classification:

C- Conformance
N- Nonconformance
A- Not Audited

Initials of Originator
-Checklist Number REP - 18

()

On Bechtel-Gaithersburg Audit No. 5
Check Lists Nos. REP-9-15 and REP-18
& 19 The Following Numbers will be Utilized
on the Matrices to Indicate the Applicable Purchase Order

- | | | | |
|---------------|--|-----|--|
| 1. | A-021.0
Air Tight Doors
Overly | 9. | E-035.4
Penetration Protection Cabinets
ITE Rowan |
| 2. | A-022.0 ³
Expl. Proof Doors
Overly Mfg. | 10. | J-202.0
Instrument Racks
Magnetics |
| 3. | A-022.4
Air Tight Doors
Sonic Bar | 11. | J-516.0
Pressure Switches
Mercoide Corp. |
| 4. | C-153.0
Locks, Hatches
Wooley | 12. | J-704.0
Instrument Valves
Dragon Valves |
| 5. | C-153.1
Drywell Hatches
Ind. Eng | 13. | M-062.0
Cask Cranes
Whiting |
| 6. | C-154.0
RPV Shield
Southern Boiler & Tank | 14. | M-101.0
Quenchers
RE Co |
| 7. | E-020.0
D. C. Panel Boards
Delta | 15. | M-187.0
Compression Pool Strainers
(Newark Wire Cloth) |
| 8. | E-029.0
9 KV Power Cable
Kerite | | <i>South. Dist. Co.</i>
<i>for dist. 1, 4, 5</i> |

BECHTEL - GAITHERSBURG AUDIT NO. 3
CHECKLIST REP- 18
7/19-22/77

CONTACTS: K. ANDERSON
J. AREBAIZA

P.O. #	SUPPLIER SURVEYED W/IN 1 YEAR PRIOR TO P.O. AWARD (SANSFACRACY)	Also Have Submitted W/B. EVIDENCE CAN PROVIDE QUALITY	FILER METAL SUPPLIERS SATISFACTORILY SURVEYED W/IN 5 YRS PRIOR TO P.O. AWARD
1	Audit 8/75, Award 12/75	X N	N/A
2	A	A	
3	Audit 1/76, Award 3/76	C	
4	NO AUDIT/SURVEY PRIOR TO AWARD 10/74	N	
5	Audit 2/75, Survey 3/75, Award 3/75	A	
6	A	N	
7	SURVEY 6/74, NO AUDIT, AWARD 12/74	A	
8	NO SURVEY, 1/75, AWARD 8/75	C	
9	Audit 1/74, 12/75, AWARD 3/76	EXCEL A	
10	A	SPRIDE A	
11	A	C	
12	A	N	
13	A	C	
14	A	A	
15	A	C	

COMMENTS: ALL SUPPLIERS CHECKED WERE AWARDED CONTRACTS PRIOR TO 11/76 DATE OF GGG-

1. NO DOCUMENTATION TO VERIFY AUDIT OR SURVEY CONDUCTED PRIOR TO AWARD OF P.O. 10/74.
2. NO DOCUMENTATION TO VERIFY AUDIT/SURVEY WITHIN 1 YEAR PRIOR TO P.O. AWARD 12/74
3. FULL SCOPE AUDIT 11/74, LIMITED AUDIT 12/75 (ENGINEERING, PROCUREMENT, DOCUMENT CENTRE), P.O. AWARD 8/76
4. NO SURVEY/AUDITS DOCUMENTED PRIOR TO P.O. AWARD 1/75. WITHIN 1 YEAR
5. NO SURVEY/AUDIT DOCUMENTED PRIOR TO P.O. AWARD 3/75. WITHIN 1 YEAR
6. NO SURVEY/AUDIT DOCUMENTED WITHIN 1 YEAR PRIOR TO P.O. AWARD 7/74.
7. SURVEY 1/76, DISAPPROVED DUE TO INABILITY TO FABRICATE ASME SECTION III CLASS 2 STRAINERS. P.O. AWARDED 2/76. AUDIT 2/77 FOUND ONE DISCREPANCY IN INTERNAL AUDIT REQUIREMENTS.

AUDIT CHECKLIST

J. E. REAVES

AUDIT-RESULTS (cont'd) (* C)
Appendix B of 10CFR50 Criteria(n) VII

Audit Number 5
Bechtel-Gaithersburg
7/19-22/77

Source Evaluation and Selection
(Subject of Commitment)

Persons Contacted:

P.R. LERIOS
E.T. ELSTNER
JEFF JHAGEN
DICK WILLIAMS, JEE ARBAIZA

A. COMMITMENT: Policy No. QGG-7.1 Rev. 0
(Reference) 11/76 NQAM

3.8 For home office or field procurement, requiring submittal of
of a quality program project engineering shall be responsible for
evaluating the bidder's program and (recommending preferred suppliers.
Project quality engineering shall participate in the evaluation of
the recommended supplier's quality assurance program. In performing
their evaluation, engineering shall also obtain concurrence from M&QS
for suppliers a) performing ASME Boiler and pressure Vessel Code
work, b) fabricating metal structures, c) supplying protective
coating and weld filler materials, d) applying protective coatings
and e) performing nondestructive examinations.

B. METHOD OF VERIFICATION Select 2 Purchase Orders from each discipline
and verify project engineering and Quality Engineering Evaluation
as above. Select 5 purchase orders of a), b) or c) above and verify
M&Q S concurrence being obtained.

C. FINDINGS*(Classification):

ALL ITEMS CHECKED WERE FOUND TO BE IN
CONFORMANCE WITH NQAM QGG 7.1, 3.8 11/76

*Classification:

C- Conformance
N- Nonconformance
A- Not Audited

Initials of Originator
-Checklist Number REP - 19.

()

On Bechtel-Gaithersburg Audit No. 5
Check Lists Nos. REP-9-15 and REP-18
& 19 The Following Numbers will be Utilized
on the Matrices to Indicate the Applicable Purchase Order

- | | | | |
|----|--|-----|--|
| 1. | A-021.0
Air Tight Doors
Overly | 9. | E-035.4
Penetration Protection Cabinets
ITE Rowan |
| 2. | A-022.0 ³
Expl. Proof Doors
Overly Mfg. | 10. | J-202.0
Instrument Racks
Magnetics |
| 3. | A-022.4
Air Tight Doors
Sonic Bar | 11. | J-516.0
Pressure Switches
Mercoird Corp. |
| 4. | C-153.0
Locks, Hatches
Wooley | 12. | J-704.0
Instrument Valves
Dragon Valves |
| 5. | C-153.1
Drywell Hatches
Ind. Eng | 13. | M-062.0
Cask Cranes
Whiting |
| 6. | C-154.0
RPV Shield
Southern Boiler & Tank | 14. | M-101.0
Quenchers
RE Co |
| 7. | E-020.0
D. C. Panel Boards
Delta | 15. | M-187.0
Compression Pool Strainers
Newark Wire Cloth |
| 8. | E-029.0
9 KV Power Cable
Kerite | | |

BECHTEL-GATHERSBURG AUG 20 5
CHECK LIST REP-19
7/19-22/77

CONTACTS: BR- LERICKS
ET. ELSTNER
JEFF JIMSON
DICK WIELAND
DRE 438,724

Sheet 3 of 3

[illegible]

ALL ITEMS CHECKED
RETURNED TO
CONFORMATION

- 127 -

AUDIT CHECKLIST

J. LEGROS

AUDIT-RESULTS (cont'd) (* N)
Appendix B of 10CFR50 Criteria(n) VI

Audit Number 5
Bechtel-Gaithersburg
7/19-22/77

Document Control
(Subject of Commitment)

Persons Contacted:
W. HESSELBEIN
G. SIMMONS
J. ARBAIZA

A. COMMITMENT: Policy No. QGG-6.2 Rev. 0
(Reference) 11/76 NQAM

- 3.7 Engineering procurement, and Quality Assurance procedures shall, as a minimum, provide for the following:
- 3.7.1 Identification of personnel (position titles) responsible for control and distribution of documents.
 - 3.7.2 Specific identification of documents to be controlled.
 - 3.7.3 Identification of individuals or groups on distribution of controlled documents
 - 3.7.4 Documentation to show transmittal and receipt of controlled documents.
 - 3.7.5 Measures to ensure that controlled documents which are not self closing, have been received by the individuals or groups to whom they are transmitted. (Continued on attached)

B. METHOD OF VERIFICATION

Verify the above requirements are covered in Engineering
Procurement and Quality Assurance Procedures.

C. FINDINGS*(Classification): ENGINEERING AND QUALITY ASSURANCE
PROCEDURES ADEQUATELY ADDRESS THE REQUIREMENTS OF
PARAGRAPHS 3.7.1 THRU 3.7.8.

THERE IS NO EVIDENCE THAT PROCUREMENT PROCEDURES EXIST
WHICH PROVIDE FOR THE CONTROL OF DOCUMENTS IN
ACCORDANCE WITH THE REQUIREMENTS OF PARAGRAPHS 3.7.1
THRU 3.7.8.

REFERENCE: CAR 174

*Classification:

C- Conformance
N- Nonconformance
A- Not Audited

Initials of Originator
-Checklist Number REP - 20-1

()

- 132 -

Checklist No. REP - 20-1
(Continued)
Audit No. 5
Bechtel-Gaithersburg
7/19-22/77

A. COMMITMENT:

- 3.7.6 Measures to identify the current status of controlled documents.
- 3.7.7 Controlling changes to controlled documents.
- 3.7.8 Measures to recall, destroy or identify obsolete or superseded documents.

DOCUMENT CONTROL

REF-20-1

Policy No. 6.2-Rev 0-1/76-NORM

	PROCEDURES	COMPLIANCE
ENGINEERING PROCUREMENT & QA PROCEDURES CONTAIN PROVISIONS FOR:	SEE COMMENTS COLUMN	PROCUREMENT HAS NO PROCEDURES TO COVER THESE REQUIREMENTS*
a) ID OF PERSONNEL RESPONSIBLE FOR CONTROL & DISTRIBUTION OF DOCUMENTS	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	PERM 4.3; 4.4; 4.5 QAP 2.8 & 2.12
b) SPECIFIC ID OF DOCUMENTS TO BE CONTROLLED	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	PERM 4.1; 4.3; 4.4; 4.5; 4.8; 5.1 QAP 2.8 & 2.12
c) ID OF INDIVIDUALS OR GROUPS ON DISTRIBUTION FOR DOCUMENTS	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	PERM FIG. 4-2A-B QAP 2.8 & 2.12
d) DOCUMENTATION TO SHOW TRANSMISSION & RECEIPT OF DOCUMENTS	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	PERM 4.2.10; Fig. 4.2m-n-o-p QAP 2.8 & 2.12
e) MEASURES TO PROVE THAT DOCUMENTS HAVE BEEN RECEIVED BY TIME TO WHOM TRANSMITTED.	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	PERM 4.2.10b QAP 2.8 & 2.12
f) MEASURES TO IDENTIFY THE CURRENT STATUS OF DOCUMENTS.	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	PERM-APP.A & 4.3; 4.4; 4.5 QAP 2.8 & 2.12
g) CONTROLLING CHANGES	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	PERM 4.3; 4.4; 4.5 QAP 2.8 & 2.12
h) MEASURES TO RECALL, DESTROY OR IDENTIFY OBSOLETE OR SUPERSEDED DOCUMENTS.	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	PERM 4.3.1.6; 4.4.1; 4.5.1.6 QAP 2.8 & 2.12

* NONCONFORMANCE
PROCUREMENT - Documented on CAR 174

PERSONS CONTACTED: W. HESSELBEIN
G.C. SIMMONS
J. ARBAIZA

-134-

(4)
ck

AUDIT CHECKLIST

J. LEGRON

AUDIT-RESULTS (cont'd) (* A)
Appendix B of 10CFR50 Criteria(n) XVII

Audit Number 5
Bechtel-Gaithersburg
7/19-22/77

Design Office Records
(Subject of Commitment)

Persons Contacted:
J. STRACH
W. HESSELEIN

A. COMMITMENT: Policy No. QGG-17.1 Rev. 0
(Reference) 11/76 NQAM

- 3.9 Engineering procedures shall provide for the following:
- 3.9.1 Retention records to be retained and identification of personnel (position title) responsible for identification, storage and retrievability of records.
 - 3.9.3 Identifying and storing records including measures to ensure retrievability and identification of personnel (position title) responsible for identification, storage and retrievability of records.
 - 3.9.4 An Index System for home office quality assurance records including identification of personnel (position title) responsible for providing or approving the index. (Continue on attached)
- B. METHOD OF VERIFICATION
Verify that Engineering Procedures contain the above requirements.

- C. FINDINGS*(Classification): PRESENT ENGINEERING PROCEDURES DO NOT ADEQUATELY ADDRESS THE REQUIREMENTS OF PARAGRAPH 3.9. CAR'S 107 THROUGH 112 HAVE BEEN GENERATED PREVIOUSLY TO DOCUMENT DEFICIENCIES IN THE RECORDS SYSTEM. A TOTAL PROJECT RECORDS PROGRAM IS UNDER DEVELOPMENT, AND CAR 111 IS BEING USED TO TRACK THIS EFFORT. IN THE INTERIM, EACH PROJECT GROUP WILL CONTINUE TO CONTROL AND MAINTAIN THEIR RECORDS PER THEIR CURRENT EXISTING PRACTICES AND PROCEDURES.

*Classification:

- C- Conformance
- N- Nonconformance
- A- Not Audited

Initials of Originator
-Checklist Number REP - 21.

()

A. COMMENTS:

- 3.9.5 List of records to be turned over to the Client (MP&L) including provisions to ensure that the list is maintained current, including identification of personnel (position title) responsible for preparation of the list and turning the records over to the Client (MP&L).
- 3.9.6 Specifying to field engineering retention and turnover requirements for design records when any design responsibility has been delegated to field engineering.

MP&L AUDIT OF BECHTEL-GAITHERSBURG
July 17-21, 1978

SUMMARY OF ATTACHED CHECKLISTS APPLICABLE TO DESIGN CONTROL OR DESIGN INTERFACE

<u>CHECKLIST NUMBER</u>	<u>SUBJECT</u>	<u>NONCONFORMANCE IDENTIFIED</u>
WEE-12	Design Criteria & Change Control	None
WEE-13	Design Verification & Change Control	None
WEE-20	Supplier Document Review & Nonconformance	None
WEE-24	Design & Procurement Document Discrepancies	None
WEE-26	Design Office & Supplier Records	None
WEE-48	Bechtel Project Engineering	None
WEE-51	Material Assignment; Specifications Drawing Control	None
WEE-63	Drawing Coordinations, Review, Approval, Issuance, & Microfilming	None
WEE-65	Calculations	None

MISSISSIPPI POWER & LIGHT COMPANY

AUDIT CHECKLIST

AUDIT-RESULTS (cont'd) (* C)
Appendix B of 10CFR50 Criteria(n) III

Audit Number 6
Bechtel Gaithersburg

Design Criteria & Change Control
(Subject of Commitment)

Persons Contacted:
A. Zaccaria, Project Engineer
T. Elstner, Proj. Admin.

- A. COMMITMENT Bechtel NOAM OGG-3.1, Rev. 0
(Reference) 11/76, QGG-3.5, Rev. 3,
2/78

See attached page of OGG-3.1 and QGG-3.5

- B. METHOD OF VERIFICATION Examine documented evidence to assure
compliance with paragraphs 3.1, 3.2, 3.3 and 3.5; and 3.8, respect-
ively.

- C. FINDINGS*(Classification): Compliance verified, see attached matrix.

*Classification:

C- Conformance
N- Nonconformance
A- Not Audited
NC- Nonconformance Corrected
During Audit

Initials of Originator
-Checklist Number WEE - 12

GRAND GULF NUCLEAR STATION
NUCLEAR QUALITY ASSURANCE MANUAL



GAITHERSBURG
POWER DIVISION

DESIGN CRITERIA

POLICY

NO. QGG-3.1 REV. 0

DATE November 1976

PAGE 1 OF 2

1.0 PURPOSE

To define the requirements for the preparation, review, approval and control of design criteria.

2.0 APPLICABILITY

This policy applies to design criteria which provide the design bases for the Grand Gulf Nuclear Station.

3.0 POLICY

- 3.1 Project engineering shall be responsible for identifying the codes, standards, regulations, Client (MP&L) requirements and other information which constitutes the design criteria for the nuclear power plant. Design criteria shall be developed, documented and controlled from inception through completion of the project. These criteria shall include criteria contained in the safety analysis report and other documents.
- 3.2 The criteria may reference entire codes, standards or regulatory requirements and avoid repeating the contents of the entire document. However, reference to specific sections of the document is preferred and exceptions to any of the requirements shall be delineated.
- 3.3 Cognizant chief engineers and/or appropriate staff specialists shall review and approve all design criteria and changes to design criteria for Q-List structures or systems.
- 3.4 Completed design criteria for the project is not required at the start of the design process or when the PSAR is submitted. However, design criteria shall be available and approved consistent with the progress of the design process. A review of the final design shall include a verification that the criteria for the affected design is complete and has been subjected to the appropriate approval process.
- 3.5 A record copy of all revisions of the design criteria shall be retained.

ATTACHMENT TO C/L WEE-12
PAGE 1 OF 73 W.E. Edg
7/25/78

GRAND GULF NUCLEAR STATION
NUCLEAR QUALITY ASSURANCE MANUAL



GAITHERSBURG
POWER DIVISION

DESIGN CHANGE CONTROL

POLICY

NO. QGG-3.5 REV. 3

DATE February 1978

PAGE 2 OF 3

- 3.7 Special controls shall be provided to identify the date of effectivity (or applicability) of changes which apply to work already performed. The disposition of items manufactured or installed prior to the changes shall be specified.
- 3.8 Changes which affect SAR or design criteria shall be controlled and recorded on self-closing forms or logs to show when the change was incorporated.
- 3.9 Documented controls shall be provided for design changes or other changes that impact completed field work and shall include:
 - 3.9.1 Identifying the need for and method of performing the rework
 - 3.9.2 Necessary work plans/procedures and reinspection instructions
 - 3.9.3 Documenting the rework and recording the results of reinspection.
- 3.10 Engineering procedures shall, as a minimum, provide for the following:
 - 3.10.1 Identification of documents utilized to process changes to design documents
 - 3.10.2 Identification of personnel (position, title) responsible for preparation, review, approval, control, and distribution of documents including interim approval used to process changes. The procedures shall specify time limitations within which changes must be dispositioned and incorporated in affected documents
 - 3.10.3 Documentation showing that changes have been reviewed and approved by cognizant personnel prior to issuance and objective evidence to show incorporation of changes in appropriate documents
 - 3.10.4 Control and distribution of specifications or other instructions utilized to authorize field engineering to make changes, including the extent of such changes
 - 3.10.5 Documented controls identifying the extent of rework and reinspection acceptance criteria for previously completed work
 - 3.10.6 Controlling processing of changes which affect SAR or design criteria including objective evidence to show incorporation of the changes in the SAR or design criteria.

ATTACHMENT TO C/L WEE-12
PAGE 20 OF 23 W.E. [signature]
7/25/78

W. E. Edge
7/25/78

QGG-3.1, Rev. 0 11/76

QGG-3.5 Rev. 3, 2/78

Compliance
VerifiedRef. Docum.
Evidence

	Yes		No		Yes		No		Yes		No	
	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No
3.1 Project engineering shall be responsible for identifying the codes, standards, regulations, Client (MP&L) requirements and other information which constitutes the design criteria for the nuclear power plant. Design criteria shall be developed, documented and controlled from inception through completion of the project. These criteria shall include criteria contained in the safety analysis report and other documents.	✓		✓		✓				✓			
3.2 The criteria may reference entire codes, standards or regulatory requirements and avoid repeating the contents of the entire document. However, reference to specific sections of the document is preferred and exceptions to any of the requirements shall be delineated.					✓							
3.3 Cognizant chief engineers and/or appropriate staff specialists shall review and approve all design criteria and changes to design criteria for Q-List structures or systems.									✓			
3.5 A record copy of all revisions of the design criteria shall be retained.									✓			

	Yes		No	
	Yes	No	Yes	No
3.8 Changes which affect SAR or design criteria shall be controlled and recorded on self-closing forms or logs to show when the change was incorporated.	✓			

MISSISSIPPI POWER & LIGHT COMPANY

AUDIT CHECKLIST

AUDIT-RESULTS (cont'd) (* C)
Appendix B of 10CFR50 Criteria(n) III

Audit Number 6
Bechtel Gaithersburg

Design Verification & Change Control
(Subject of Commitment)

Persons Contacted:
A. Zaccaria, Proj. Engr.
H. Nelson, QE
D. Dennison, Dept Gp. Superv.
Mech.

A. COMMITMENT: Bechtel NQAM QGG-3.3
(Reference) Rev. 0, 11/76; QGG-3.5
Rev. 3, 2/78

See attached pages of QGG-3.3 and QGG-3.5

B. METHOD OF VERIFICATION Examine documented evidence to assure
compliance with paragraphs 3.1, 3.2, 3.3 and 3.5; 3.7 and 3.8,
respectively.

C. FINDINGS*(Classification): Compliance verified as per attached matrix.

*Classification:

C- Conformance
N- Nonconformance
A- Not Audited
NC-Nonconformance Corrected
During Audit

Initials of Originator
-Checklist Number WEE - 13



GAITHERSBURG
POWER DIVISION

GRAND GULF NUCLEAR STATION
NUCLEAR QUALITY ASSURANCE MANUAL

DESIGN VERIFICATION

POLICY
NO. QGG-3.3 REV. 0
DATE November 1976
PAGE 1 OF 3

1.0 PURPOSE

To define the responsibilities and requirements for the verification of Bechtel designs.

2.0 APPLICABILITY

This policy applies to the verification of engineering design documents and calculations produced for Project Q-List items. This includes design documents produced by project engineering, field engineering and technical support groups within Bechtel.

3.0 POLICY

- 3.1 Design verification shall be achieved through checking and review to provide adequate assurance that design documents such as drawings, specifications, calculations and analyses are correct and satisfactory. The type and depth of the verification shall be dependent upon the nature of the item, the importance of the specific attribute to safety, and its similarity with previous proven designs.
- 3.2 Design verification shall be accomplished by performing detailed checks, design reviews, alternate or simplified calculations, or performance testing. Simplified or alternate calculations need not exactly reflect the original calculations or analysis, however, the results must be consistent with the original conclusions. Testing may be used to confirm the adequacy of the overall design or a specific design feature. When only a specific design feature is tested, the remaining design features shall be verified by other tests or design verification methods.
- 3.3 Testing shall be performed to written test procedures which incorporate or reference acceptance limits, requirements for documenting the test results, and provisions for sufficient test controls to assure that the test results are complete.
- 3.4 Project originated design documents related to Q-List items shall be checked or reviewed on the project by appropriate project personnel.
- 3.5 The use of the supervisor of those who performed the original design for design verification shall be restricted to special situations where the supervisor is the only individual within the design organizations competent to perform the verification. Justification for such use shall be documented along with the extent of the supervisor's input into the design aspect being verified. The supervisor may perform on project verification for documents which also receive off project review.

ATTACHMENT TO C/L WEE-13
PAGE 10 OF 35 W.E. Ege
7/25/78



GAITHERSBURG
POWER DIVISION

GRAND GULF NUCLEAR STATION
NUCLEAR QUALITY ASSURANCE MANUAL

DESIGN VERIFICATION

POLICY
NO. QGG-3.3 REV. 0
DATE November 1976
PAGE 2 OF 3

- 3.6 Design work of specialists external to the project shall be checked and reviewed by project personnel or by members of the Specialist group with acceptance by responsible project personnel in accordance with the design interface procedures.
- 3.7 Checking or review shall be performed by individuals or groups other than those who performed the original design who have technical capabilities at least comparable to those of the originating engineer or designer.
- 3.8 The chief engineer and his staff shall perform an additional level of review for selected design documents, including design criteria, functional descriptions, P&IDs, electrical single lines, plant layout and arrangement, Seismic Class I structure drawings, and specifications. The specific review approach shall be determined by the chief engineer and his staff and may be performed by the chief or staff personnel who are independent of the project or personnel from another project team. The types of design documents and at what stage of their completion the chief engineers' review is required shall be predetermined by the chief engineer and these shall be identified on suitable lists, logs or computer sorts. The scope of the Chief Engineer's review shall be prescribed by procedures.
- 3.9 Design verifications shall be clearly traceable to the reviewer. The verification methods used and the verification results shall be documented. Evidence of reviews and checks shall be documented in sufficient detail to permit an audit of the verification process.
- 3.10 For design documents prepared within a group, the group supervisor shall be responsible for the technical adequacy, compliance with commitments contained in the Safety Analysis Report, correct and adequate application of appropriate design criteria, design interfaces, concurrence with design assumptions, correctness of the design process used, materials selected and analytical results.
- 3.11 The design verification process need not be repeated for identical designs that have been previously verified and have no problem history. The original design and associated verification measures shall be documented and referenced for each subsequent application of the design, and shall be reviewed for applicability in each case. A verification and evaluation of the effects of design changes on the overall design shall be performed for changes to previously verified designs.

ATTACHMENT TO C/L WEE-13
PAGE 20 OF 35 W. E. Edge
7/25/78

GRAND GULF NUCLEAR STATION
NUCLEAR QUALITY ASSURANCE MANUAL



GAITHERSBURG
POWER DIVISION

DESIGN CHANGE CONTROL

POLICY

NO. QGG-3.5 REV. 3

DATE February 1978

PAGE 2 OF 3

- 3.7 Special controls shall be provided to identify the date of effectivity (or applicability) of changes which apply to work already performed. The disposition of items manufactured or installed prior to the changes shall be specified.
- 3.8 Changes which affect SAR or design criteria shall be controlled and recorded on self-closing forms or logs to show when the change was incorporated.
- 3.9 Documented controls shall be provided for design changes or other changes that impact completed field work and shall include:
 - 3.9.1 Identifying the need for and method of performing the rework
 - 3.9.2 Necessary work plans/procedures and reinspection instructions
 - 3.9.3 Documenting the rework and recording the results of reinspection.
- 3.10 Engineering procedures shall, as a minimum, provide for the following:
 - 3.10.1 Identification of documents utilized to process changes to design documents
 - 3.10.2 Identification of personnel (position, title) responsible for preparation, review, approval, control, and distribution of documents including interim approval used to process changes. The procedures shall specify time limitations within which changes must be dispositioned and incorporated in affected documents
 - 3.10.3 Documentation showing that changes have been reviewed and approved by cognizant personnel prior to issuance and objective evidence to show incorporation of changes in appropriate documents
 - 3.10.4 Control and distribution of specifications or other instructions utilized to authorize field engineering to make changes, including the extent of such changes
 - 3.10.5 Documented controls identifying the extent of rework and reinspection acceptance criteria for previously completed work
 - 3.10.6 Controlling processing of changes which affect SAR or design criteria including objective evidence to show incorporation of the changes in the SAR or design criteria.

ATTACHMENT TO C/L WEE-13
PAGE 30F 3 10. E. Edge
5 7/25/78

WEE
7/25/78

Q66-3.3

Rev. 0, 11/76

Compliance
Verified

Reference

	YES	NO	YES	NO	YES	NO	YES	NO
	YES 7/18/78 ✓		✓		✓		✓	
	DCL, PERM				Spec. M-018.0 App. By Rec Calc. 26.9 Test Proced. No. 6.00-70		PERM Change Letter No. 55-1- Section 4.3.1.2	
3.1	Design verification shall be achieved through checking and review to provide adequate assurance that design documents such as drawings, specifications, calculations and analyses are correct and satisfactory. The type and depth of the verification shall be dependent upon the nature of the item, the importance of the specific attribute to safety, and its similarity with previous proven designs.							
3.2	Design verification shall be accomplished by performing detailed checks, design reviews, alternate or simplified calculations, or performance testing. Simplified or alternate calculations need not exactly reflect the original calculations or analysis, however, the results must be consistent with the original conclusions. Testing may be used to confirm the adequacy of the overall design or a specific design feature. When only a specific design feature is tested, the remaining design features shall be verified by other tests or design verification methods.							
3.3	Testing shall be performed to written test procedures which incorporate or reference acceptance limits, requirements for documenting the test results, and provisions for sufficient test controls to assure that the test results are complete.							
3.5	The use of the supervisor of those who performed the original design for design verification shall be restricted to special situations where the supervisor is the only individual within the design organizations competent to perform the verification. Justification for such use shall be documented along with the extent of the supervisor's input into the design aspect being verified. The supervisor may perform on project verification for documents which also receive off project review.							

NOTE (1):
QIPBEEC/A -24.0

ATTACHMENT TO BAA#6 CHUUE-13
 PAGE 4 OF 5
 W. E. Edge
 7/31/78

Q66-3.5,
 Rev. 3, 2/78

Compliance
 Verified

Reference

	YES	NO	YES	NO
3.7	✓		✓	
3.8				

None	None	None	None
None	None	None	None

Checking or review shall be performed by individuals or groups other than those who performed the original design who have technical capabilities at least comparable to those of the originating engineer or designer.

The chief engineer and his staff shall perform an additional level of review for selected design documents, including design criteria, functional descriptions, P&IDs, electrical single lines, plant layout and arrangement, Seismic Class I structure drawings, and specifications. The specific review approach shall be determined by the chief engineer and his staff and may be performed by the chief or staff personnel who are independent of the project or personnel from another project team. The types of design documents and at what stage of their completion the chief engineers' review is required shall be predetermined by the chief engineer and these shall be identified on suitable lists, logs or computer sorts. The scope of the Chief Engineer's review shall be prescribed by procedures.

MISSISSIPPI POWER & LIGHT COMPANY

AUDIT CHECKLIST

AUDIT-RESULTS (cont'd) (*C,A)
Appendix B of 10CFR50 Criteria(n) VII

Audit Number 6
Bechtel Gaithersburg

Supplier Document Review & Nonconformance
(Subject of Commitment) Control

Persons Contacted:
A. Zaccaria, Project Engineer
W. Cole, PSOS

A. COMMITMENT: Bechtel NQAM QGG-7.3, Rev. 0
(Reference) 11/76; QGG-7.4, Rev. 1,6/77

J. Arbaiza, OE

See attached pages of QGG-7.3 and QGG-7.4

B. METHOD OF VERIFICATION Review documentation to assure compliance
for paragraphs as follows: 3.3 (JER); 3.4 (1st and 2nd sentences
WEE); 3.5 (WEE). QGG-7.4: 3.2, 3.3 and 3.4 (WEE); 4.1.3 (JTL);
4.1.4, 4.2 and 4.3 (JER).

C. FINDINGS*(Classification): Compliance verified for QGG-7.3 paragraphs
3.4 and 3.5; QGG-7.4 paragraphs 3.2, 3.3 and 3.4 (WEE-See attached Matrix).
Compliance verified for paragraphs 3.3 for QGG-7.3 and 4.1 for QGG-7.4
paragraphs 4.2.1 and 4.3.1 not audited for QGG-7.4 (JER- see attached
Matrix).

Verified compliance for QGG-7.4 paragraph 4.1.3 (JTL-See attached Matrix).

*Classification:

C- Conformance
N- Nonconformance
A- Not Audited
NJ-Nonconformance Corrected
During Audit

Initials of Originator
-Checklist Number WEE - 20



GAITHERSBURG
POWER DIVISION

GRAND GULF NUCLEAR STATION
NUCLEAR QUALITY ASSURANCE MANUAL

REVIEW OF SUPPLIER'S DOCUMENTS

POLICY
NO. QGG-7.3 REV. 0
DATE November 1976
PAGE 1 OF 3

1.0 PURPOSE

To define the requirements of and responsibilities for the review and approval of Supplier documentation specified by the procurement documents.

2.0 APPLICABILITY

This policy applies to quality related supplier documentation for Bechtel procured Q-List items.

3.0 POLICY

- 3.1 Supplier's document review shall be performed either by the Bechtel procurement inspector, engineering or jobsite quality control personnel. The documents shall be reviewed for accuracy, completeness and conformance to the procurement documents.
- 3.2 Supplier documents are categorized as engineering documents or quality verification documents. Engineering documents are comprised of procedures, drawings, specifications, QA programs, and other similar documents that require review or approval prior to use of the document in the design, fabrication, installation or other work processes. Quality verification documents are comprised of material test reports, inspection reports and other documents which demonstrate or certify conformance to the technical or inspection requirements of the procurement documents.
- 3.3 For purchase orders requiring source inspection, the Bechtel procurement inspector shall review the supplier's quality verification records and acknowledge his review on the document or on a record traceable to the document. Construction quality control shall be responsible for the review of supplier quality verification documentation for items which have not been source inspected.
- 3.4 Project engineering may elect to review selected quality verification records. Evidence of engineering review of these records shall be available in accordance with procurement document requirements (prior to shipment) unless engineering authorizes shipment prior to completion of their evaluation. Items and materials for which the evidence of required engineering review and evaluation of quality verification records has not been received by appropriate jobsite personnel shall be identified, controlled and not released for installation unless a "Conditional release" is approved by project quality control and project quality assurance.

ATTACHMENT TO C/L WQE-20
PAGE 10 OF 570 W.E. Edge
7/25/78



GAITHERSBURG
POWER DIVISION

GRAND GULF NUCLEAR STATION
NUCLEAR QUALITY ASSURANCE MANUAL

REVIEW OF SUPPLIER'S DOCUMENTS

POLICY

NO. QGG-7.3 REV. 0
DATE November 1976
PAGE 2 OF 3

- 3.5 Supplier engineering documents such as vendor drawings, performance test data unique test results, specifications, procedures and similar documents specified in the purchase documents shall be reviewed by project engineering. Project engineering may assign certain review responsibilities to field engineering and may request assistance from chief engineers, M&QS or other Specialist groups. Review by others shall be documented by project engineering.
- 3.6 The Supplier shall be directed by the procurement documents to send engineering documents to project engineering, quality verification records requested by engineering for their review to engineering and all other quality verification records directly to the jobsite.
- 3.7 Procurement Inspectors may release items prior to completion of engineering records review if written authorization is received from project engineering and so noted in the G-321-C form. The project engineers written authorization shall accompany the G-321-C form for that shipment.
- 3.8 Construction quality control shall be responsible for accepting the completed document package, and assuring that it is stored and protected.
- 3.9 Quality assurance personnel shall audit selected supplier's documentation for compliance with procurement requirements, evidence of review and completeness.
- 3.10 Engineering procedures shall provide for the following:
- 3.10.1 Identification of supplier's documents to be reviewed and approved
 - 3.10.2 Assigning groups or personnel (position title) responsible for review and approval of supplier documents
 - 3.10.3 Documentation to show evidence of review and approval of supplier documents
 - 3.10.4 Responsibility for delineating, in the procurement documents, the distribution of supplier documents for review and approval by Bechtel personnel
 - 3.10.5 Identification, in procurement documents, of the suppliers documents which require review and approval prior to certain activities such as fabrication or shipment

ATTACHMENT TO C/L WEE-20
PAGE 2 OF 510 O.E. Ede
7/25/78

911



GAITHERSBURG
POWER DIVISION

GRAND GULF NUCLEAR STATION
NUCLEAR QUALITY ASSURANCE MANUAL

CONTROL OF SUPPLIER AND
SUBCONTRACTOR NONCONFORMANCES

POLICY
NO. QGG-7.4 REV. 1
DATE June 1977
PAGE 1 OF 6

1.0 PURPOSE

To establish the requirement for and responsibilities of Bechtel and supplier personnel in reporting and dispositioning supplier nonconformances.

2.0 APPLICABILITY

This policy applies to supplier and subcontractor nonconformances which are departure from Bechtel specifications, Bechtel procurement document requirements, Bechtel or approved supplier details and which are dispositioned "repair" or "use as is." Reject or rework dispositions may be made by the supplier without prior Bechtel approval.

3.0 POLICY

- 3.1 The definitions of "rework", "repair", and "use-as-is" contained in Appendix 3.1 of this manual, shall be used in the application of this policy.
- 3.2 Nonconformances to procurement requirements dispositioned by suppliers as "repair" shall be reviewed and approved by Bechtel project engineering prior to commencement of repair. The repair shall be made in accordance with supplier's procedures approved by Bechtel project engineering. However, nonconformances which can be repaired using supplier's standard repair procedures which have been previously approved by Bechtel project engineering may be dispositioned by the supplier.
- 3.3 Nonconformances to procurement documents dispositioned by the supplier as "use as is" shall be reviewed and approved by Bechtel project engineering prior to shipment of the nonconforming item or in the case of subcontractors acceptance of the item by Bechtel Quality Control.
- 3.4 In the case of nonconformances dispositioned "repair" or "use as is", the supplier shall obtain review and approval from Bechtel project engineering, using either forms supplied by Bechtel or supplier's report prepared by him and acceptable to Bechtel.

Note: "Use-as-is" dispositions can only be approved for Code items if the nonconforming condition does not affect Code requirements for that item. If the nonconforming condition is unacceptable for the specified Code class but meets the requirements of another Code class, it may be accepted for the Code class it meets.

ATTACHMENT TO C/L WEE-20
PAGE 30 OF \$10 W.E.C.
7/25/78

- 95 -



GAITHERSBURG
POWER DIVISION

GRAND GULF NUCLEAR STATION
NUCLEAR QUALITY ASSURANCE MANUAL

CONTROL OF SUPPLIER AND
SUBCONTRACTOR NONCONFORMANCES

POLICY

NO. QGG-7.4 REV. 1

DATE June 1977

PAGE 2 OF 6

4.0 RESPONSIBILITIES

4.1 Project Engineering shall be responsible for:

4.1.1 Specifying the following requirements in procurement documents:

- (a) The suppliers shall report "repair" and "use as is" nonconforming conditions to Bechtel project engineering, on a form supplied by Bechtel or the suppliers report approved by Bechtel, when departures from Bechtel specifications, procurement document requirements and Bechtel approved supplier details are involved.
- (b) The supplier shall, where possible, provide documentation to support the technical justification of the recommended disposition to Bechtel project engineering for nonconformances dispositioned "repair" and "use as is".
- (c) The supplier shall forward deviation requests for approval by Bechtel project engineering only after such requests have been completed, reviewed and approved by authorized supplier personnel, in accordance with the suppliers procedures.
- (d) For source inspected items the supplier shall make copies of the deviation requests available to the Bechtel inspector for review and concurrence of the nonconformance description.
- (e) The suppliers shall include a copy of the completed request in his quality verification document package.

4.1.2 Reviewing the reported nonconformances and signifying acceptance or rejection of the supplier's recommended dispositions, including appropriate rationale for "use-as-is" dispositions.

4.1.3 Consulting with project quality assurance when the nonconformance is considered significant (Reference Policy QGG-16.1).

ATTACHMENT TO C/L WEB-20
PAGE 4 OF 810 W.E. Edge
7/25/78

-96-



GAITHERSBURG
POWER DIVISION

GRAND GULF NUCLEAR STATION
NUCLEAR QUALITY ASSURANCE MANUAL

CONTROL OF SUPPLIER AND
SUBCONTRACTOR NONCONFORMANCES

POLICY
NO. QGG-7.4 REV. 1
DATE June 1977
PAGE 3 OF 6

- 4.1.4 For source inspected items, notifying the project procurement inspection supervisor and the supplier (through the project procurement inspection supervisor) of their concurrence for repair and/or authorization for release of the nonconforming material for shipment.
- 4.1.5 Notifying the PFQCE of their concurrence and authorization for repair and/or acceptance of subcontractor's nonconforming items.
- 4.1.6 Consulting with the M&QS personnel for supplier nonconformances involving their specialized services and the ASME Code items.
- 4.2 Project Procurement Inspection Supervisor
- 4.2.1 The Project Procurement Inspection Supervisor shall be responsible for assuring that project and field correspondence to the suppliers concerning nonconformances is distributed to the assigned shop inspector. | 1
- 4.3 Procurement Inspector
- 4.3.1 The procurement inspector shall be responsible for:
- (a) Reviewing and confirming the validity of the suppliers deviation request and acknowledging the completeness and accuracy of the description of the nonconformance.
 - (b) Assuring that supplier deviations have been corrected as approved by project engineering.
 - (c) Reporting all approved supplier deviation requests at the time of shipment on the G-321-C form.
- 4.4 Supplier
- 4.4.1 Suppliers are responsible for the following:
- (a) Reporting "repair" and "use-as-is" nonconforming conditions to Bechtel project engineering.
 - (b) Describing and, where possible, providing the documentation for the technical justification of the recommended disposition.
 - (c) Assuring that the deviation request has been completed and accepted by authorized supplier personnel.

ATTACHMENT TO C/L WEE-20
PAGE 5 OF 10
W.E. Edge
7/25/78

Compliance
Verified
Ref. Docum.

Note: (1)
See attached

	YES	NO	YES	NO	YES	NO	YES	NO	YES	NO	YES	NO
3.4 Project engineering may elect to review selected quality verification records. Evidence of engineering review of these records shall be available in accordance with procurement document requirements (prior to shipment) unless engineering authorizes shipment prior to completion of their evaluation.	YES ✓	NO	YES ✓	NO	YES ✓	NO	YES ✓	NO	YES ✓	NO	YES ✓	NO
3.5 Supplier engineering documents such as vendor drawings, performance test data unique test results, specifications, procedures and similar documents specified in the purchase documents shall be reviewed by project engineering. Project engineering may assign certain review responsibilities to field engineering and may request assistance from chief engineers, M&QS or other Specialist groups. Review by others shall be documented by project engineering.			Note (1)									
3.2 Nonconformances to procurement requirements dispositioned by suppliers as "repair" shall be reviewed and approved by Bechtel project engineering prior to commencement of repair. The repair shall be made in accordance with supplier's procedures approved by Bechtel project engineering. However, nonconformances which can be repaired using supplier's standard repair procedures which have been previously approved by Bechtel project engineering may be dispositioned by the supplier.												
3.3 Nonconformances to procurement documents dispositioned by the supplier as "use as is" shall be reviewed and approved by Bechtel project engineering prior to shipment of the nonconforming item or in the case of subcontractors acceptance of the item by Bechtel Quality Control.												
3.4 In the case of nonconformances dispositioned "repair" or "use as is", the supplier shall obtain review and approval from Bechtel project engineering, using either forms supplied by Bechtel or supplier's report prepared by him and acceptable to Bechtel.												
Note: "Use-as-is" dispositions can only be approved for Code items if the nonconforming condition does not affect Code requirements for that item. If the nonconforming condition is unacceptable for the specified Code class but meets the requirements of another												

Log No. 2711

ATTACHMENT TO

CL 1000-20
Page 10 of 10
Letter File No. WFS-078-11

FOR DISTRIBUTION WITHIN BECHTEL ONLY

DOCUMENT REVIEW FORM
MATERIALS & QUALITY SERVICES

To L. S. Raphael

Review Date 7-10-78

Supplier & Div. Bergen Patterson

Sub-Supplier Int'l Nuclear
Safeguards Corp.

Job No. 9645-001 Code ASM#III Class NF

Copies to

Code Effective Date/Addenda 1974 / -

R. C. Bertossa

Reviewer R. D. W. Reed Ext. 2384

R. D. W. Reed

Reference Memo to Haberman & M. Stuckfield 6-29-78

File

Spec. No./Rev. No. 9645-M-300.0 / Rev 18

Application Supports & Hangers

Document Title Penetrant Examination Procedure

Returned ☒ Filed ☒

Supplier Document No./Revision/Date ENSP-1016/6/5-27-78

Bechtel Document No. 9645-M-300.0-AS-22-0-3-2 Type PT

Recommendation: 1 - Accept

*4 - Do not accept, see comments

3 - Accept, subject to comments below 5 - Other, see comments

STANDARD COMMENTS

--	--	--	--	--	--

COMMENTS:

*NOTE: Those items identified with an asterisk are the basis for a "4" recommendation.

Bechtel Power Corporation

Interface Memorandum

To M. Stuchfield

Date

June 29, 1978

Subject

Nuclear QA Is Not Applicable

From

T. W. Habermas

Middle South Energy, Inc.

Bechtel Job No. 9645

Of

Engineering

File 0294/14300.0 (Specification)

Review of Documents

At

Gaithersburg

Copies

R. Trickovic, w/o

(APE), w/o

J. Parikh

(GS), w/o

L. Raphael

(RE), w/o

AS-35-23

Please review the enclosed documents and return your comments to L.S. Trick (RE) by 7/14/78 (DATE).
You are hereby authorized to expend manhours for this review. When submitting Activity Description (white) Cards for time charges, you are requested to indicate the RE and date of request on those cards for ready reference.

L.S. Trick (PE/APE)

JP
EW
Typed

Enclosure(s):

BPPC PROCEDURE INSP-1016

M&QS Control	
Job/Sub.# <u>9645-01</u>	Div. <u>GPD</u>
Doc. Type <u>DT</u>	
Log# <u>2711</u>	Qty. <u>1</u>
Assigned to: <u>L.D. Weed</u>	
Task# <u>54</u>	Due Date: <u>7/14/78</u>

992

J. E. Reeves

QGG-7.3 - REVIEW OF SUPPLIERS DOCUMENTS

- 3.3 For purchase orders requiring source inspection, the Bechtel procurement inspector shall review the supplier's quality verification records and acknowledge his review on the document or on a record traceable to the document.

/ G-321C

Documentation of review is submitted via G-321C to JOB SITE QC. G-321-C NOT ON RECORD IN GAITHERSBURG

QGG-7.4 - CONTROL OF SUPPLIER NONCONFORMANCES

- 4.1 Project Engineering shall be responsible for:

- 4.1.4 For source inspected items, notifying the project procurement inspection supervisor and the supplier (through the project procurement inspection supervisor) of their concurrence for repair and/or authorization for release of the nonconforming material for shipment.

PEPM - SECTION 4.2.17.6 "SDDR DISTRIBUTION STATES "A. The R.E. shall prepare the SDDR TRANSMITTAL letter for typing ~~and~~ subsequent distribution by Document Control. TRANSMITTAL is from Project Engineering to Supplier & not thru Project Procurement Inspection Supervisor.

Project Procurement Inspection Supervisor

- 4.2.1 The Project Procurement Inspection Supervisor shall be responsible for assuring that project and field correspondence to the suppliers concerning nonconformances is distributed to the assigned shop inspector.

That
REPS NOT Audited

- 4.3 Procurement Inspector

- 4.3.1 The procurement inspector shall be responsible for:

how documented

- (a) Reviewing and confirming the validity of the suppliers deviation request and acknowledging the completeness and accuracy of the description of the nonconformance.
- (b) Assuring that supplier deviations have been corrected as approved by project engineering.
- (c) Reporting all approved supplier deviation requests at the time of

SQR
- UNABLE to verify - SDDR's included IN PKG to JOB SITE

INCLOSURE IV PAGE 21

- 100 -

MATRIX FOR CIL WEE-20

SUPPLIER DOCUMENT REVIEW & NONCONFORMANCE

AUDITOR: J. LEGROS

NDAM QGG-7.4, REV. 0 - CONTROL OF SUPPLIER & SUBCONTRACTOR NONCONFORMANCES

PARA. 4.1.3

REQUIREMENT OF PARA. 4.1.3 THAT PROJECT ENGINEERING "CONSULT WITH PROJECT QUALITY ASSURANCE WHEN THE NONCONFORMANCE (IN THIS CASE SDDR) IS CONSIDERED SIGNIFICANT" IS SATISFIED BY IMPLEMENTATION OF PARA. 6.15.2 OF THE PERM (PAGE 6.1-28, REV. 2, 4-17-78) WHICH REQUIRES THAT ENGINEERING REPORT SITUATIONS WARRANTING CORRECTIVE ACTION TO THE PQAM.

-101-

MISSISSIPPI POWER & LIGHT COMPANY

AUDIT CHECKLIST

AUDIT-RESULTS (cont'd) (* C)
Appendix B of 10CFR50 Criteria(n) XV

Audit Number 6
Bechtel Gaithersburg

Design & Procurement Document Discrepancies Persons Contacted:
(Subject of Commitment)

M. Archdeacon, Assistant Proj. Engr.
J. Love, Group Supervisor
Electrical

A. COMMITMENT: Bechtel NQAM QCG-15.2
(Reference) Rev. 0, 11/76

- 3.1 Design and procurement documents found to be in nonconformance to the SAR, applicable design criteria, codes, standards or specifications shall be corrected. Those detected during the normal review process and prior to release may be corrected in a routine manner and need not be formally recorded. However, errors and discrepancies which could result in conditions adverse to safety or quality and which are detected after the review, approval and release of the documents shall be documented and appropriate corrective action shall be taken.

B. METHOD OF VERIFICATION Review selected documents to assure compliance to paragraph 3.1 (REP, WEE).

C. FINDINGS*(Classification)Verified compliance for design documents as follows:

1. Calculations - PEPM Section 4.4.7
2. Drawings - PEPM Section 4.3.1.6
3. Specifications - PEPM Section 4.5.1.6

Chief Engineer, may send out problem alert memos to the Projects for action. (See attached example)

See also checklists WEE-15, WEE-21, WEE-27, WEE-33, WEE-43, WEE-45, WEE-46, WEE-47, WEE-50, WEE-58, WEE-63 and WEE-65.

*Classification:

C- Conformance
N- Nonconformance
A- Not Audited
NC- Nonconformance Corrected
During Audit

Initials of Originator
-Checklist Number WEE - 24

Page 1

MISSISSIPPI POWER & LIGHT COMPANY

AUDIT CHECKLIST

AUDIT-RESULTS (cont'd) (* C)
Appendix B of 10CFR50 Criteria(n) XVII

Audit Number 6
Bechtel Gaithersburg

Design Office & Supplier Records
(Subject of Commitment)

Persons Contacted:
L. Bonn, Supervisor of Audits
Div. QA

A. COMMITMENT: Bechtel NOAM QGG-17.1, Rev.0 R. Sipe, OAE
(Reference) 11/76; QGG-17.2, Rev.0, 11/76

See attached pages of QGG-17.1 and QGG-17.2

B. METHOD OF VERIFICATION Review selected records and records locations
to assure compliance to paragraphs as follows:
QGG-17.1: 3.1 (WEE, JTL); 3.2, 3.3, 3.4, 3.5, 3.6 & 3.7 (WEE); 3.8 (WEE,
JTL); QGG-17.2: 3.1, 3.2 (WEE); 3.6 (JER, JTL)

C. FINDINGS*(Classification): Verified compliance for paragraph 3.6
for QGG-17.2 for QAM-9645-II Checklist 9645-14. (WEE)
Verified compliance for paragraph 3.8 for QGG-17.1, for POAE#49
audit and master audit schedule Revision 11. See attached matrix
(JTL).
Verified compliance for paragraphs 3.1, 3.2, 3.3, 3.4, 3.5 and 3.6
for QGG-17.1 and paragraphs 3.1 and 3.2 for QGG-17.2. See attached
matrix. (WEE)

*Classification:

C- Conformance

N- Nonconformance

A- Not Audited

NC-Nonconformance Corrected
During Audit

Initials of Originator

-Checklist Number WEE - 26

Page 1

Quality



GAITHERSBURG
POWER DIVISION

GRAND GULF NUCLEAR STATION NUCLEAR QUALITY ASSURANCE MANUAL

DESIGN OFFICE RECORDS

POLICY
NO. OGG-17.1 REV. 0
DATE November 1976
PAGE 1 OF 2

1.0 PURPOSE

To define the requirements for controlling and maintaining design office records and turn-over of design office records to the Client (MP&L).

2.0 APPLICABILITY

This policy applies to design activities on Q-List items.

3.0 POLICY

- 3.1 Design documentation and records which provide objective evidence of the design and review process performed in accordance with applicable requirements and quality assurance records dealing with home office procurement shall be collected, stored, and maintained in accordance with written procedures. Engineering shall be responsible for providing these procedures for the records they retain. Environmental protection requirements shall be applied to the maintenance and control of completed lifetime or nonpermanent design documents and records. The records shall be available for Bechtel and MP&L audits. If completed copies of such records are retained in job site quality record files, requirements for environmental protection need not be applied to those copies retained by engineering. If engineering delegates any design responsibilities, including preparation of any design or installation documents, to field engineering, engineering shall specify the retention and turnover requirements to field engineering.
- 3.2 Design output documents such as drawings, specifications, revisions thereto and associated documents, including process flow diagrams, system descriptions and design calculations, shall be identifiable and retrievable. Where computer calculations are employed, records shall include computer code inputs and results and the identification of the computer code used.
- 3.3 Records of commentaries made during the initial design review process and before final issue need not be maintained after final approval has been documented. However, evidence of final approvals including minutes of review meetings, where applicable, shall be maintained.
- 3.4 Original records which have been microfilmed and stored separately from the microfilm need not be stored in accordance with the environmental protection requirements for a single records storage facility. Other requirements, i.e., receipt control, preservation, and retrievability shall be complied with at both locations.

ATTACHMENT TO G/L WEE-26
PAGE 1 OF 5 W. E. Edge
7/25/78



GAITHERSBURG
POWER DIVISION

GRAND GULF NUCLEAR STATION
NUCLEAR QUALITY ASSURANCE MANUAL

DESIGN OFFICE RECORDS

POLICY
NO. OGG-17.1 REV. 0
DATE November 1976
PAGE 2 OF 2

- 3.5 Project engineering shall provide or approve the index system employed for home office retention of quality assurance records. The index shall be sufficient to identify the records for each system, structure, or component in accordance with the identification system adopted for the project.
- 3.6 Design calculations shall be retained by Bechtel.
- 3.7 Project engineering shall establish early in the project, a list of other records to be turned over, to the Client (MP&L), at the completion of the project.
- 3.8 Quality Assurance shall audit records on a timely basis.
- 3.9 Engineering procedures shall provide for the following:
- 3.9.1 Retention of records in accordance with written procedures including identification of personnel (position title) responsible for providing the procedures.
 - 3.9.2 Identifying records to be retained and identification of personnel (position title) responsible for identification, storage and retrievability of records.
 - 3.9.3 Identifying and storing records including measures to ensure retrievability and identification of personnel (position title) responsible for identification, storage and retrievability of records.
 - 3.9.4 An Index System for home office quality assurance records including identification of personnel (position title) responsible for providing or approving the index.
 - 3.9.5 List of records to be turned over to the Client (MP&L) including provisions to ensure that the list is maintained current, including identification of personnel (position title) responsible for preparation of the list and turning the records over to the Client (MP&L).
 - 3.9.6 Specifying to field engineering retention and turnover requirements for design records when any design responsibility has been delegated to field engineering.
- 3.10 Quality assurance procedures shall provide for auditing records on a timely basis.

ATTACHMENT TO C/L WEE-26
PAGE 20 OF 35 W.E. Edge
7/25/76



GAITHERSBURG
POWER DIVISION

GRAND GULF NUCLEAR STATION
NUCLEAR QUALITY ASSURANCE MANUAL

SUPPLIER AND SUBCONTRACTOR RECORDS

POLICY
NO. QGG-17.2 REV. 0
DATE November 1976
PAGE 1 OF 2

1.0 PURPOSE

To delineate responsibilities for retention or turnover of quality related records by suppliers or subcontractors.

2.0 APPLICABILITY

This policy applies to records prepared by suppliers or subcontractors in response to documentation requirements specified in procurement documents.

3.0 POLICY

- 3.1 Project engineering shall specify, in procurement documents, engineering and quality verification documents that suppliers or the subcontractors are required to furnish as evidence that items meet requirements of the procurement documents.
- 3.2 Engineering and Construction Quality Control shall be responsible for retaining and turning over to MP&L those supplier and subcontractor records sent to them in accordance with procurement document requirements. Retention and turnover requirements shall be the same as those for records generated by Engineering and Construction. The records shall be available for Bechtel and MP&L audit.
- 3.3 Subcontractor records identified in procurement documents required to be turned over to Bechtel shall be turned over by the subcontractor to the Project Field Quality Control Engineer prior to contract close out. Records which are complete and are no longer needed by the subcontractor may be turned over to Bechtel PFQCE, by mutual agreement, while the subcontractor is continuing work at the jobsite.
- 3.4 Construction Quality Control personnel shall be responsible to ensure that subcontractor's quality verification records required to be turned over by procurement documents are turned over to Bechtel QC personnel prior to contract closeout.
- 3.5 Construction Quality Control shall review subcontractor records turned over for retention by Bechtel, to ensure completeness, prior to filing or subsequent turnover of such records to the Client (MP&L).
- 3.6 Quality Assurance shall audit Supplier and Subcontractor records on a timely basis.
- 3.7 Engineering procedures shall provide for the following :

ATTACHMENT TO C/L WEE-26
PAGE 30P \$5 W.E. Edge
7/25/78

BECHTEL GAITHERSBURG AUDIT NO. 6

PAGE 4 OF 15

MATRIX FOR C/L WEE - 26

W. E. Edge
7/25/78

DESIGN OFFICE & SUPPLIER RECORDS

AUDITOR: J. LEGROS

NQAM QGG-17.1, REV. 0 - DESIGN OFFICE RECORDS

PARA. 3.8

LAST RECORDS AUDIT - PQAE #49 - 1/16/78 - RETENTION OF QUALITY RECORDS
NEXT RECORDS AUDIT SCHEDULED 4TH QUARTER OF 1978 - REF. MASTER
AUDIT SCHEDULE REV. 11.

NO PREVIOUS RECORDS AUDITS ON RECORD.

QGG-17.1, Rev. 0, 11/76

COMPLIANCE VERIFIED

	YES	NO	RECORDS
3.1 Design documentation and records which provide objective evidence of the design and review process performed in accordance with applicable requirements and quality assurance records dealing with home office procurement shall be collected, stored, and maintained in accordance with written procedures. Engineering shall be responsible for providing these procedures for the records they retain. Environmental protection requirements shall be applied to the maintenance and control of completed lifetime or nonpermanent design documents and records. The records shall be available for Bechtel and MP&L audits. If completed copies of such records are retained in job site quality record files, requirements for environmental protection need not be applied to those copies retained by engineering. If engineering delegates any design responsibilities, including preparation of any design or installation documents, to field engineering, engineering shall specify the retention and turnover requirements to field engineering.	✓		Note
3.2 Design output documents such as drawings, specifications, revisions thereto and associated documents, including process flow diagrams, system descriptions and design calculations, shall be identifiable and retrievable. Where computer calculations are employed, records shall include computer code inputs and results and the identification of the computer code used.	✓		See C/L WEE-26
3.3 Records of commentaries made during the initial design review process and before final issue need not be maintained after final approval has been documented. However, evidence of final approvals including minutes of review meetings, where applicable, shall be maintained.	✓		Documented by letter to MP&L 11/18/76 date 3/5/78
3.4 Original records which have been microfilmed and stored separately from the microfilm need not be stored in accordance with the environmental protection requirements for a single records storage facility. Other requirements, i.e., receipt control, preservation, and retrievability shall be complied with at both locations.	✓		See C/L WEE-26
3.5 Project engineering shall provide or approve the index system employed for home office retention of quality assurance records. The index shall be sufficient to identify the records for each system, structure, or component in accordance with the identification system adopted for the project.	NA	N/A	With 12,920 index development
3.6 Design calculations shall be retained by Bechtel.	✓		Retained
3.7 Project engineering shall establish early in the project, a list of other records to be turned over, to the Client (MP&L), at the completion of the project.		✓	List is under discussion

QGG-17.2, Rev. 0, 11/76

3.1 Project engineering shall specify, in procurement documents, engineering and quality verification documents that suppliers or the subcontractors are required to furnish as evidence that items meet requirements of the procurement documents.	✓		App. B to Spec. G-221-C form
3.2 Engineering and Construction Quality Control shall be responsible for retaining and turning over to MP&L those supplier and subcontractor records sent to them in accordance with procurement document requirements. Retention and turnover requirements shall be the same as those for records generated by Engineering and Construction. The records shall be available for Bechtel and MP&L audit.	✓		In Project Files

MISSISSIPPI POWER & LIGHT COMPANY

AUDIT CHECKLIST

AUDIT-RESULTS (cont'd) (* C) Audit Number 6
Appendix B of 10CFR50 Criteria(n) II,III Bechtel Gaithersburg

Bechtel Project Engineering
(Subject of Commitment)

Persons Contacted:
M. Archdeacon, Assistant Proj.
Engineer

A. COMMITMENT: Bechtel PPM Section 2.3.1, H. Nelson, Quality Engineer
(Reference) Rev.0, 1/11/74; Section 2.3.2,
Rev.2, 1/1/75; Sec. 2.3.5, Rev.0, 1/11/74

See attached pages of PPM Section 2.3

B. METHOD OF VERIFICATION Review selected documentation and interview
personnel to assure compliance with paragraphs 2.3.1, 2.3.2,
2.3.5.1, and 2.3.5.4.

C. FINDINGS*(Classification): Verified compliance for organizations as
follows:

Engineering (Paragraph 2.3.1)

QE (Paragraph 2.3.2) as indicated.

QA (Paragraph 2.3.5.4) as indicated.

Procurement (Paragraph 2.3.5.1) as indicated.

*Classification:

C- Conformance

N- Nonconformance

A- Not Audited

NC-Nonconformance Corrected
During Audit

Initials of Originator

-Checklist Number WEE - 48 .

2.3 ENGINEERING

2.3.1 Function and Organization

2.3.1.1 Function

Basic project functions performed by the engineering department under the direction of the project engineer are: design; quality engineering; planning, schedule, and cost control of the engineering function; design cost trending; and support to procurement, construction, startup, quality assurance, project management, and MP&L. Details of these basic project engineering activities are presented in Sections 2.3.2 through 2.3.5.

2.3.1.2 Organization and Responsibilities

The project engineer is the focal point of Bechtel's engineering effort for the project. Figure 2.3-1 represents the organization of the project engineering team. The project engineer reports to the cognizant engineering manager, who reports to the manager of division engineering. As a member of the project team, the project engineer reports to the project manager on all matters affecting overall project performance, cost and schedule, and quality assurance.

The project engineer has assigned assistant project engineers, and a project administrator who directs the project engineering clerical staff in all administrative functions.

As shown in Figure 1.3-3, the engineering technical staff organization consists of chief engineers, one for each discipline, and a supervisor of quality engineering. The chiefs, with their staff of specialists, are responsible for developing engineering standards and approving departures from standards, project staffing, and personnel technical development. They provide technical guidance in resolving project design problems and obtain consultant services both in-house and outside as required for specific project problems. The supervisor of quality engineering is responsible for defining quality standards for the division and providing technical and administrative guidance to the project quality engineer.

Reporting to the project engineer are the technical group supervisors, one for each discipline, each of whom is responsible for coordinating and directing design of the project as it relates to his discipline. He supervises or participates in all general group functions from initial project planning to completion of as-built drawings. He is responsible to the chief engineer of his discipline for technical adequacy and compliance with standards, and for management and administration of personnel within his group. He is responsible to the project engineer for meeting his group's commitments to project production schedules and budgets and for coordinating his work with the other design disciplines.

ATTACHMENT TO C/L WEE-48

A number of specialist groups exist within the division and other corporation engineering departments to advise and assist the project engineering group in specific technical areas. These areas include pipe stress, water treatment, heat balance, mechanical building services, civil/structural materials, etc.

2.3.2 Engineering Quality Control

The project engineer and each member of his engineering team are responsible for ensuring that the drawings, material specifications, procedures, and instructions produced by his project group conform to MP&L requirements, Bechtel and applicable industry standards, regulatory agency criteria, and the design base stated in the preliminary and/or final safety analysis reports. The project quality engineer performs the following functions:

1. Assuring that specifications contain clear and appropriate requirements for quality program procedures and documentation
2. Verifying that the engineering team follows its required QA related procedures
3. Evaluating seller and subcontractor QA/QC programs in a timely manner
4. Coordinating and participating (as appropriate) with procurement in the scheduling, planning, performance, and documentation of seller and subcontractor QA program audits
5. Assisting field engineers and QC engineers in the resolution of field quality problems
6. Reviewing selected seller and subcontractor quality documents and transmitting them to the jobsite for MP&L retention
7. Resolving of tracking discrepancies which relate to design activities that are noted during audits
8. Serving as liaison with QA engineers assigned to the project
9. Maintaining an efficient (easily retrievable) quality documentation filing system
10. Assisting auditors during MP&L, AEC, and Bechtel QA audits

2.3.3 Planning, Progress, and Cost Control

The project engineer is responsible for planning, scheduling, and budgeting the home office engineering effort, in accordance with requirements imposed by the overall project schedule. Included typically are the following tasks:

1. Detailing the scope of engineering services required for accomplishment of the work
2. Establishing the engineering design schedules and budgets
3. Monitoring and reporting on progress, scope, and costs within his range of responsibility

2.3.4 Design Cost Trending

The design cost trend program provides a means of formal and continuous monitoring of costs as influenced by decisions and developments, primarily during the formative design phase of the project. Broadly, the program addresses itself to (1) capital cost savings, and (2) early warning of cost trends. As deviations from the original scope are identified by the engineers, a rough evaluation of the cost impact to these deviations is made by the cost trend engineer and brought to the attention of the project engineer and the project team. This allows the project team to take action as appropriate. MP&L is formally advised of these developments on a monthly basis. The cost trend program is generally phased out when design engineering is in advanced stages.

2.3.5 Relationship with Other Project Activities

2.3.5.1 Procurement

Project engineering provides drawings and specifications to define the scope and technical requirements of subcontract and purchase orders. The drawings and specifications are forwarded to procurement under cover of the Material Requisition which lists the project requirements stipulated by engineering for the procurement of equipment material and services (see Figure 2.3-2 for a sample Material Requisition Form). Project engineering then performs the following additional functions:

1. Reviews and approves for technical completeness the bid package
2. Analyzes bids received in response to subcontract and purchase order bid request for technical completeness and conformance with project requirements, drawings, specifications, and required delivery schedule
3. Prepares recommendation to MP&L on the basis of the technical assessment of the bids, recommends the bidder to whom the work should be awarded, and participates in review with MP&L
4. Reviews and approves manufacturer's specifications and drawings for conformity to specifications and integration to plant requirements
5. Reviews and comments as necessary on the technical performance of sellers and subcontractors

6. Witnesses specified shop tests

2.3.5.2 Construction

Project engineering furnishes design drawings and other technical specifications, data, and consultation as required for construction.

2.3.5.3 Startup

Project engineering provides technical criteria for preoperational test and acceptance test procedures and provides review and consultation as required.

| 2

2.3.5.4 Quality Assurance

Project engineering provides documentation access, assistance for audit, and formal reports on audit correction action; it identifies and requests project engineering deviations from the standard QA program.

2.3.5.5 Cost and Schedule

Information covering the plant definition, including specification and bases for quantities and schedule of design is supplied by project engineering at project inception and periodically updated as a key component of overall project control. Information on design changes is furnished continuously. Engineering reviews quantity takeoffs, estimates, and schedules prepared by the cost and schedule group to ensure they are consistent with the information shown on the drawings and in the specifications.

2.3.5.6 MP&L

Typical items of Bechtel engineering support of MP&L activities are:

1. Preparation of the drawings and drafts of written material for portions of the preliminary and final safety analysis report assigned to Bechtel; preparation of PSAR, FSAR, and environmental report for final printing as requested by MP&L; coordination with the NSSS supplier and MP&L on their portions of the safety analysis reports
2. Assistance in interpretation of local codes, government regulations and standards
3. Assistance in NSSS and T/G evaluations
4. Assistance in preparation of NSSS and T/G detailed specifications and division of responsibilities
5. Assistance in obtaining approvals of drawings and/or specifications from outside agencies, governmental bodies, and other regulatory agencies

ATTACHMENT TO C/L WEE-48
PAGE 4 OF 4

MISSISSIPPI POWER & LIGHT COMPANY

AUDIT CHECKLIST

AUDIT-RESULTS (cont'd) (* C, A) Audit Number 6
Appendix B of 10CFR50 Criteria(n) III, VI Bechtel Gaithersburg

Material Assignment; Spec. Drawing Control Persons Contacted:
(Subject of Commitment) M. Archdeacon, Assitant Proj. Engr.

A. COMMITMENT: Bechtel PPM Sections 3.3, Rev. 0,
(Reference) 1/11/74; Sec. 3.4, Rev. 0, 1/11/74;
App. G-1, Rev. 6, 11/22/77

See attached pages of PPM Section 3 and Appendix G-1

B. METHOD OF VERIFICATION Review selected documentation to assure
compliance to paragraphs: 3.3.1, 3.4.1, 3.4.3, 3.4.4.1 (1, 3 & 4),
3.4.4.3, 3.4.5.1, 3.4.5.2, 3.4.5.3, 3.4.7 and Appendix G-1

C. FINDINGS*(Classification): See Attached Matrix.

*Classification:

C- Conformance
N- Nonconformance
A- Not Audited
NC- Nonconformance Corrected
During Audit

Initials of Originator
-Checklist Number WEE - 51

3.3 MATERIAL ASSIGNMENT SCHEDULE

3.3.1 Purpose and Scope

The material assignment schedule is a key document in the mobilization of Bechtel's project effort. It is prepared by the project engineer for review by the project team before its transmittal by the project manager to MP&L for review and approval. The MAS performs the following:

1. Lists the several specific tasks required to construct the plant and indicates whether the respective tasks are to be carried out by Bechtel, MP&L, a subcontractor, or a vendor.
2. Lists the several equipment and material items which must be provided for plant construction and indicates whether they are obtained through Bechtel or MP&L.
3. Indicates with respect to Bechtel's portion of the above noted assignments which corporate or division department performs the various steps and whether they are carried out in the home or field office.

The Material Assignment Schedule for the project is appended as Appendix H.

ATTACHMENT TO C/L WEE-51
PAGE 1 OF 12

3.4 DRAWING AND SPECIFICATION CONTROL PROCEDURE

3.4.1 Purpose and Scope

This section describes the system used by Bechtel to identify all drawings and specifications handled by Bechtel for the project including those prepared by Bechtel, either in the division or field office, those prepared by the NSSS and turbine generator supplier, and those prepared by other vendors and subcontractors. This section also describes the procedure for issuing, approving, transmitting, and revising drawings and specifications and the requirements for final record documents.

3.4.2 Bechtel Drawing Format

3.4.2.1 Title Block and Sizes

All principal construction drawings are prepared on Bechtel E-size (34" x 44") sheets of mylar film with a standard Bechtel title block. The title block includes MP&L's name, project title, Bechtel's name, drawing title (per drawing control), drawing number, date, provision for approval signatures, and the Bechtel job number. Other Bechtel standard drawing sizes used as appropriate are:

8 1/2" x 11" (overall dimension)
11" x 17"
17" x 22"
22" x 34"

3.4.2.2 Numbering Systems

Three numbering systems are used for Bechtel drawings: a basic numbering system, an area drawing numbering system, and a sketch numbering system.

1. Basic Numbering System

The basic numbering system applies to all Bechtel drawings other than area drawings and sketches. The drawing number conveys the following information:

- a. Job Number
- b. Originating job group symbol
 - A - Architectural
 - C - Civil
 - E - Electrical
 - M - Mechanical
 - J - Control Systems

ATTACHMENT TO ~~CL USE~~
PAGE 2 OF 12

- c. The serial number of the drawing
- d. The revision number

Bechtel Logo	Job No. 9645	Group Symbol-Drawing No. M-0007	Rev. 0
-----------------	-----------------	------------------------------------	-----------

- e. Drawing serial numbers shall be assigned as follows:

Drawings for units 1 and 2	0001 through 999
Drawings for unit 1 only	1000 through 1999
Drawings for unit 2 only	2000 through 2999

2. Area Drawing Numbering System

To facilitate the layout and the design of the plant the plant is divided into areas each of which can be accommodated on a standard size drawing at a scale of 1/4 inch equals one foot. For each area is first prepared a basic layout drawing from which each discipline later prepares the detailed information relating to its particular discipline. Each area drawing is uniquely identified by reference to the group or discipline preparing the drawing and the location of the area within the plant. To facilitate referencing the following codes are used:

a. <u>Discipline or Group Code</u>	<u>Code Letter</u>
<u>Group of Discipline</u>	<u>Code Letter</u>
Plant Design and Piping Layout	M
Electrical	E
Civil/Structural	C
Architectural	A
Control Systems	J

3. Sketch Numbering

Sketch numbering includes: Bechtel, job number, SK for sketch, group designation, and group serial number. Thus, e.g., 9645-SK-C-5 indicates the fifth sketch prepared by the civil group on job number 9645. Sketches prepared by the field staff follow this system and indicate field preparation with prefix F, e.g., 9645-FSK-C-5.

ATTACHMENT TO C/L WEE-51
PAGE 30 OF 12

3.4.3 Numbering of Seller Drawings

Seller drawings including the NSSS supplier and turbine generator supplier will employ a Bechtel Master Parts List Numbering System. Implementation of this system will provide a unique identification number to be applied to seller drawings. The Master Parts List Numbering System for the project is appended as Appendix I.

3.4.4 Processing of Drawings

3.4.4.1 Bechtel Drawings

The processing of Bechtel drawings includes procedures for revision, for transmittal, for certification to meet state requirements, and for MP&L approvals.

1. Revisions

While drawings are in a preliminary state, revisions are designated by letter A, B, C, etc. Upon issuance for construction, for bid, for purchase, or similar significant action by Bechtel, the first issue is designated as "0." Subsequently issued revisions are designated by 1, 2, etc. The appropriate revision blocks are completed with each numbered revision, starting with "0."

Subsequent to issue for construction or fabrication, changes in drawings may be deferred through the use of the Drawing Change Notice. The purposes of this form are:

- a. To advise the field promptly of minor drawing changes
- b. To minimize the handling of tracings and the expense of preparing and issuing a formal revision. The procedure for implementing a drawing change notice is described in the Grand Gulf Project Engineering Procedures Manual, paragraph 4.3.1.6.1.

| 4

ATTACHMENT TO C/L WEE-51
PAGE 46 OF 12

Rev. 4
5-7-76

2. Transmittals

The transmittal forms shown in Figures 3.4-1 through 3.4-4 are used to transmit drawings, specifications, and other items of engineering information to MP&L, General Electric Co. APED, Allis-Chalmers Power Systems, Inc. and sellers. Each transmittal is prepared in triplicate. The original and first copy is for the project files. The following stamp is imprinted on the first copy of the transmittal for action by the recipient.

Receipt & return this copy to the
project engineer.

(date)

(signature)

This copy with the receipt date and acknowledgement signature is returned to the project for record purposes. Transmittals to MP&L, NSSS(GE-APED), and turbine generator supplier (A-C PSI) will bear alpha identification codes with sequential numbers for control purposes. These are defined in the following table:

*ATTACHMENT to WEE-51
PAGE 5 OF 12*

Rev. 2
1-1-75

3-12a

INCLOSURE IV PAGE 40

To MP&L	MPT-XXXX
To NSSS (GE-NED)	GET-XXXX
To Turbine Generator Supplier (A-C PSI)	ACT-XXXX

3. Certification for the State

Design drawings shall be sealed by a registered professional engineer when required by state or regulatory requirements. Drawings which must be sealed are those which will be filed with public authorities (Mississippi State Law, Chapter 321, Laws of 1954, Section 15).

Examples:

1. Drawings required by ASME, Section III
2. Dredging drawings to be filed with Army Corps of Engineers
3. Any access road drawings to be filed with the state highway commission.

4. MP&L Approvals

MP&L reserves the right to comment on all drawings. The following classes of drawings will be submitted for approval; others will be submitted upon request or for information.

a. Electrical

- (1) Main Single Line and Single Line Meter and Relay Diagrams
- (2) Three-Line Diagrams
- (3) Phasing and Synchronizing Diagrams
- (4) Electrical Logic Diagrams
- (5) Electrical Control and Relay Board Arrangement Drawings

b. Mechanical

- (1) General Arrangement and Equipment Location Drawings of Mechanical and Electrical Equipment
- (2) Heat Balances
- (3) Piping and Instrumentation Diagrams
- (4) Process Flow Diagrams

c. Architectural and Civil

- (1) Architectural Renderings and Arrangement (Office, etc.) Drawings
- (2) Site Plans and Yard Arrangement Drawings
- (3) Circulating Water System Arrangement

d. Control and Instrumentation

- (1) Control Board Layout
- (2) Instrument Installation Details
- (3) Logic Diagrams

Approval of Bechtel drawings by MP&L normally constitutes endorsement and acceptance but does not relieve Bechtel of any contractual obligations. Approval or comments from MP&L will be as prescribed in the Grand Gulf Project Engineering Procedures Manual, Section 4.3.1.2.4.

Copies of all other drawings issued for construction are sent to MP&L for their information and use.

3.4.4.2 Processing of Other Drawings

Both NSSS and turbine generator supplier drawings and other manufacturers' drawings are processed by Bechtel. The drawings are initially submitted to Bechtel with a microfilm (aperture card) of the drawing. The drawing MPL number is posted in the project automated document control register and the drawing is processed by project engineering as described in the Project Engineering Procedures Manual. The appropriate drawing aperture card and a punched card are transmitted to MP&L.

After project engineering reviews and comments on the received drawing, a marked-up copy is returned to the applicable supplier. An entry of the appropriate information for each drawing returned to the supplier is posted in the project automated document control register.

MP&L's approval/comment procedure is the same as described for Bechtel drawings (See Section 3.4.4.1 above).

Final drawings submitted to Bechtel must be full-size reproducibles made from the original drawing together with two microfilm copies mounted on aperture cards.

3.4.4.3 Engineering Records for MP&L

In addition to copies of manufacturers' instruction manual and spare parts lists, Bechtel furnishes MP&L at appropriate times the following drawings in indicated format:

1. Copies of manufacturers' and contractors' final certified drawings
2. All Bechtel tracings (mylar originals) plus as-built revisions of:

- Embedded or underground conduit
- Schemes and single lines
- Connection diagrams
- Circuit and raceway schedules
- P&ID's
- Underground piping
- P&ID/functional descriptions
- Logic diagrams

ATTACHMENT TO C/LWEE-51
PAGE 7 OF 12

3. Drawings of portions of the plant which cannot be seen or are inaccessible

3.4.5 Specifications

3.4.5.1 Bechtel Specifications

Specifications shall be prepared in accordance with the Bechtel Power Corporation standards, the standard specifications as related to each discipline, and specific project requirements.

3.4.5.2 Processing of Specifications

The processing of Bechtel specifications includes procedures for revision, for transmittals for certification to meet state requirements, and for MP&L approvals.

1. Identification

Specifications will be identified by the job number followed by the number listed in the specification subject file index, Appendix J. For example, a typical specification will be numbered 9645-M-001.0, Nuclear Steam Supply System.

Appendices E and F of the Project Engineering Procedures Manual contain instructions and forms (i.e., appendices, exhibits, requisitions, and purchase memos) which are to be used as a guide in preparing purchase order and subcontract specifications.

2. Revisions

Initial editions of specifications which are issued for internal comments/approval will carry a letter revision starting with A, B, etc. Subsequent issues which are primarily outside of Bechtel offices for MP&L approval, bids, purchase orders, and purchase change orders, etc., will carry a numerical revision number starting with zero. Purpose of issue, approvals, and dates of issue corresponding to the revision number shall be indicated on the cover page. With issue of Revision 0, all previous references to letter revisions, i.e., A, B, etc., will be deleted and all prior copies may be destroyed.

4

ATTACHMENT TO C/L WEE-51
PAGE 8 OF 12

Rev. 4
5-7-76

All revisions will be referenced in the revision box of the cover page and will indicate the pages affected. The corresponding pages are to be annotated with a small triangle symbol (use revision letter or number inside triangle) in the left margin near where revision occurs. Should an entire page be revised, the triangle symbol and the notation Page Revised are to be shown at the bottom right of revised page above the page number. The procedure for revising specifications is described in the Grand Gulf Project Engineering Procedures Manual, Section 4.5.1.6 and 4.5.1.6.1.

3. Specification Change Notice (deleted)

| 6

| 6

4. Transmittals

Transmittal forms shown in Figures 3.4-1, 3.4-2, 3.4-3, and 3.4-4 are used to transmit documentation from Bechtel to MP&L, General Electric Company APED, Allis-Chalmers Power Systems, Inc., and sellers.

| 6

5. Certification for the State

All specifications prepared by Bechtel which require certification under Mississippi statutes are signed and sealed by a member of the Bechtel staff licensed in the particular engineering discipline concerned to practice in the state of Mississippi.

6. MP&L Approvals

Approval or comments from MP&L will be as prescribed in the Grand Gulf Project Engineering Procedures Manual, Section 4.5.1.2.3.

3.4.5.3 Processing of Other Specifications and Documents

The NSSS turbine generator supplier and other manufacturers' specifications and/or documents are processed by Bechtel. The specifications and/or documents along with a microfilm (aperture card) or microfiche of the document are initially submitted to Bechtel.

The procedure employed by Bechtel project engineering for processing these documents is the same as described in Grand Gulf Project Engineering Procedures Manual, Section 4.3.2, Processing of Other Drawings.

ATTACHMENT TO C/L WEE-51
PAGE 9 OF 12

Rev. 6
11-22-77

3.4.7 Project Q-List

It is an NRC regulatory requirement that safety related items in a nuclear power plant be identified. This identification document is called the Project Q-List. It identifies the major safety-related structures, systems, and components.

The Q-List is not a definitive document. The Q-System Data Source (Figure 3.4-5) has been generated to provide a reference to those Engineering documents that identify the individual components in the Q-List. These documents are dynamic documents and reflect the current status of individual items.

Any reference to a definite component in a Q-System can be traced through the documents listed in the Q-System Data Source. This source shall be used as a reference by all sections of the project.

and/or documents are processed by Bechtel. The specifications and

ATTACHMENT TO C/L WGE-51
PAGE 100 OF 12

DISPATCH
CORRESPONDENCE LETTERS AND CONTRACTS
GRAND GULF NUCLEAR STATION

0 Original 1,2,3 No. of Copies T Transparency * Original X Copy (if applicable) ** Including Amendments/Revisions Y Letter only (no enclosure)	JPL										MSS										BECHTEL										GE A-C					REMARKS
	CR Michelson	JP McLaughlin	W.L. Hall	T.E. Harris	J.T. Rinkley	P.W. Sly	T.W. Schatz	J.F. Vogt Jr.	C.W. Sandford	T.M. Robinson	D.C. Sommers	D. Trapp	H.H. Richardson	D. Lutz	R.L. Scott	C.J. Buckley	J.H. McKenry	H.H. Weber	W.N. Lott	H. Ebbelston	Vendor															
CORRESPONDENCE																																				
Bechtel to Owner																																				
Contractual & Policy																																				
Engineering																																				
Procurement																																				
Construction																																				
Environmental Memoranda																																				
QA/QC/GE																																				
Technical																																				
Start Up																																				
Owner to Bechtel																																				
Contractual & Policy																																				
Engineering																																				
Procurement																																				
Bid Analysis Approval (Over \$100,000)																																				
Bid Analysis Approval (Under \$100,000)																																				
Construction																																				
Bid Analysis Approval (Constr. under \$100,000)																																				
Environmental Memoranda																																				
QA/QC/GE																																				
Start Up																																				
Bechtel to GE NED																																				
GE NED to Bechtel																																				
GE NED to Owner																																				
Owner to GE NED																																				
Bechtel to GE NED (QA)																																				
GE NED to Bechtel (QA)																																				
GE NED to Owner (QA)																																				
Owner to GE NED (QA)																																				
Bechtel to AC																																				
AC to Bechtel																																				
AC to Owner																																				
Owner to AC																																				
Bechtel to Vendors other than GE NED & A-C																																				
Vendors other than GE NED & A-C to Bechtel																																				
Owner to NRC																																				
NRC to Owner																																				
Owner to NRC (QA)																																				
Conference Notes																																				
Safety Analysis & Environmental Reports																																				
PROCUREMENT																																				
Invitations for Proposals																																				
Bidders Proposals (Confidential)																																				
Bid Analysis (Confidential)																																				
Bid Analysis Approval (Over \$100,000)																																				
Bid Analysis Approval (Constr. under \$100,000)																																				
Bid Analysis Approval (Under \$100,000)																																				
Purchase Orders**																																				
Purchase Orders, Construction**																																				
Subcontract**																																				
Subcontract, Construction**																																				
Bidders List																																				

* Serial correspondence is permitted between the following Bechtel personnel and GE and A-C project procurement manager, project expeditor, project purchasing agent, and purchasing manager.

REV. 6
11 22 77

PPM Sections 3.3, 3.4, APP. G-1

VERIFY COMPLIANCE

[illegible]

DOCUMENTATION/
RECORDS:

1. E-009.0 (Rev. 2)
Spec.
2. E-000X (Rev. 5)
example
3. E-0117-00 (Rev. 2)
example
4. E-0117-01 (Rev. 2)
example
5. E-0117-02 (Rev. 2)
example
6. E-0117-03 (Rev. 2)
example
7. E-0117-04 (Rev. 2)
example
8. E-0117-05 (Rev. 1)
example
9. E-0117-06 (Rev. 1)
example
10. E-0101-00 (Rev. 3)
example
11. E-0101-01 (Rev. 3)
example
12. E-0101-04 (Rev. 3)
example
13. E-0037 (Rev. 2)
example
14. E-0115-14 (Rev. 1)

~~**~~ Yes for HCl(m)

[illegible]

MISSISSIPPI POWER & LIGHT COMPANY

AUDIT CHECKLIST

AUDIT-RESULTS (cont'd) (*C,A)

Audit Number 6

Appendix B of 10CFR50 Criteria(n) III

Drawing Coord., Review, Approval, Issuance
(Subject of Commitment) & Microfilming

Persons Contacted:

K. Ekrek, Aux.Bldg.Raceway
Gp. Ldr.

A. COMMITMENT: Bechtel PEPM Section
(Reference) 4.3.1

R. Gecoma, Civil Drafting Gp
Supervisor

See attached pages of Section 4.3.1

J. Desai, Proj. Civil Light
Structure Gp. Ldr.

G. Singh, Arch.Gp.Supervisor

B. Ritz, Assist.Gp. Supervisor
Plant Design

J. Love. Gp.Supervisor-Elect.

J. Catlin, Dept.Gp.Supervisor
Controls Systems

A. Dorian, Superv. of Micrographis

B. Ruplinger, Supv. of Micro.Sec.File
& Archives

B. METHOD OF VERIFICATION Review a representative sample of drawings
to assure compliance to 4.3.1.2.2, 4.3.1.2.3, 4.3.1.2.4, 4.3.1.3,
4.3.1.5 and 4.3.1.6.1.

C. FINDINGS*(Classification):

Verified compliance for drawings listed in attached matrix.
See C/L WEE-26

*Classification:

C- Conformance

N- Nonconformance

A- Not Audited

NC-Nonconformance Corrected

During Audit

Initials of Originator

-Checklist Number WEE - 63

f. Check prints and corrected drawings shall be given to the checker to determine that corrections have been properly made. Back-checker shall circle check mark ☒ if correction is properly made.

When details of a pending change have not been finalized, but the drawing is required for other reasons, a "HOLD" shall be placed on the portion of the drawing which is subject to change. Upon completion of the check, the checker should be satisfied that the quality of the drawing is consistent with the Bechtel design philosophy and drafting standards.

The checker, when satisfied that the drawings are correct, shall initial in the appropriate title block location. The original drawings are then to be given to the checker's immediate supervisor. After the drawings have been signed and released by the Project Engineer/Assistant Project Engineer, the check prints may then be destroyed.

4.3.1.2.2 PROCEDURES FOR COORDINATION OF DRAWINGS/DOCUMENTS AMONG DISCIPLINES
After sign-off by the checker, the discipline Group Supervisor routes coordination prints of the drawings, stamped with the coordinating print stamp (4.2.12F) to other interfacing project disciplines for information and comment. The Responsible Engineer or Designer shall log in discipline Coordinating Record Log which will contain as a minimum: Document Number, description, routing (disciplines), date out and date in.

The Discipline Group Supervisor receiving the print for coordination, is responsible for evaluation and review of matters pertinent to the reviewing group's area of responsibility and will take the necessary action to revise his discipline drawings, if required. He will date and initial the coordinating stamp and return the coordinating prints to the originating Group Supervisor with detailed comments. The originating discipline Responsible Engineer coordinates the comments and has them incorporated on the drawing.

4.3-6 *attaches to C/L WEE-63*

Matters which cannot be agreed upon by the various project disciplines, will be resolved by the Project Engineer/Assistant Project Engineer and/or the discipline Chief Engineers.

After the drawings have been signed and released by the Project Engineer/Assistant Project Engineer, the coordinating prints may be destroyed.

4.3.1.2.3 BECHTEL REVIEW AND APPROVAL

Standard Bechtel practices provide for several levels of review and approval of design work. These include: (a) Checking and sign-off within the discipline design group by qualified personnel; (b) review and approval by the responsible Group Supervisor; and (c) review and approval by the Project Engineer/Assistant Project Engineer. The Project Engineer is responsible, but may delegate authority to a representative, (Asst. Project Engineer) for accomplishing:

- a. Assuring complete sign-offs.
- b. General quality of drawings.
- c. Compliance with contract requirements.
- d. Release of drawings.

The Discipline Group Supervisor is responsible, but may delegate authority to the Group Leader, for:

- a. Completion of design work on drawings.
- b. Engineering check for conformance of drawings to design calculations.
- c. Technical adequacy and feasibility of design, including access for inspection and maintenance.
- d. Conformance to project design criteria, including codes, standards, and SAR commitments.
- e. Coordination with other disciplines and departments, including their design interfaces.

Attachment to C/L WEE-65

- f. Conformance to technical standards and engineering design principles, including suitability of materials.
- g. Completion of review requirements.
- h. Conformance to Engineering Registration Laws.
- i. Obtaining Chief Engineer's approval when applicable.

Safety Related Drawings (Q) will be submitted to the cognizant Discipline and Nuclear Chief Engineer for review and approval as required by the Design Control Check Lists (DCCL), prior to issuing drawings for construction. (Final review in accordance with use/definition noted on DCCL.)

This review process is initiated by the preparation and submission of a "Design Review Notice." (See Section 6, Engineering Quality Control, for instructions.)

Drawings not requiring the Chief Engineer's approval shall have N/R entered in the applicable signature block(s) for initial issue and all subsequent revisions, effective 7/1/75, - retrofit not required - (NOTE: Block on extreme right for Chief Engineer's initials.)

Final review by the Chief Engineers includes evaluation of evidence of correct approach and method, general professional quality, completeness of work and required reviews, and incorporation of appropriate QA/QC requirements. However, the scope and depth of review is left to the discretion of the Chief Engineer(s) based upon their knowledge of the design criteria and approach, previous experience with the selected approach, extent and completeness of the design analysis and checks.

The Quality Assurance documentation of the review and approval of Safety Related Drawings commences with "Issue for Construction" and applies to all subsequent revisions affecting Design Criteria, SAR, or Codes & Standards.

4.3-8 *Attachment to C/L WEE-63*

When a drawing is completed, copies will be distributed in accordance with the Drawing Distribution listed in Section 4.2 and paragraph 4.3.1.3.2.

4.3.1.2.4 MP&L REVIEW AND APPROVAL

The following classes of drawings shall be submitted to MP&L for approval. However, MP&L reserves the right to comment on all drawings.

1. Electrical

- a. Main Single Line and Single Line Meter and Relay Diagrams
- b. Three-Line Diagrams
- c. Phasing and Synchronizing Diagrams
- d. Electrical Logic Diagrams
- e. Electrical Control and Relay Board Arrangement Drawings.
- f. Sample Schematic Diagrams (as appropriate)

2. Mechanical

- a. General Arrangement and Equipment Location Drawings of Mechanical and Electrical Equipment
- b. Heat Balances
- c. Piping and Instrumentation Diagrams
- d. Process Flow Diagrams

3. Architectural and Civil

- a. Architectural Renderings and Arrangement (Office, etc.) Drawings
- b. Site Plans and Yard Arrangement Drawings
- c. Circulating Water System Arrangement

4. Control and Instrumentation

- a. Control Board Layout
- b. Instrument Installation Details
- c. Logic Diagrams

*Attachment to C/WEE-63
Dated 16/12/13 W.E. Edge 4/6/14*

4.3-9

Approval or comments on drawings (submitted to MP&L) shall be received within 10 working days from the date of transmittal. Comments, transmitted by meetings, telecons, TWX's (ie: conveyance other than by letter) shall be confirmed in writing by Bechtel. After ten (10) working days, if approval has not been received from MP&L it will be assumed that the drawing is approved and Bechtel will expeditiously advise MP&L that the process for issuing the drawing is being initiated".

4.3.1.3 ISSUING OF DRAWINGS

Each discipline shall control and maintain a record of all Bechtel drawings issued. When issued for any purpose (other than in-house review), the status of the drawing shall be recorded in the form of a revision note, e.g., "Issued for _____"; identified by revision letter or number, as applicable. Where applicable, issued prints or drawings shall be stamped to indicate the purpose of restrictions on release of the drawing. At the time of issue, the drawing shall be microfilmed on a 35mm aperture card which shall be retained as a permanent record in accordance with microfilming procedures.

If prints of Bechtel Drawings are issued for reference purposes to any external agency, client, vendor, or interested party other than the project for which they were intended, they shall be stamped or be preprinted to indicate the user's responsibility. In addition, personnel issuing drawings or data for non-project use, shall secure permission of the Project Engineer or Engineering Manager to verify original MP&L requirements or restrictions on release of such information.

All drawings, revisions, drawing change notices or RN's shall be effective upon issue. (DCN's and RN's remain in effect until cancelled or incorporated into drawing.)

(NOTE: Date of issue for drawings is the date shown in revision block opposite the respective issue. Date of issue for DCN & RN is the date signed by the Project Engineer. Implementation shall not await MP&L approval.

2. The revision date of the drawing
3. The latest revision number
4. Quality Assurance designation - QA or NQ
5. Number of last incorporated DCN
6. Month of oldest (first) unincorporated DCN
7. Number of most recent (last) unincorporated DCN
8. Drawing title/description
9. Engineering Planning and Control Group shall complete and maintain columns Nos. 1 thru 10, as required for scheduling purposes.

The Engineering planner will issue a complete Drawing Control Log (DCL) schedule which will be updated on a monthly basis. The current status of the drawing, initial schedule and the schedule for the next three months will be indicated. Group Supervisors will enter the "scheduled" dates when they initially prepare the drawing control for their group. Once entered, the scheduled dates are not changed, unless scope changes are required. Distribution of DCL shall be in accordance with Figure 4.2b.

✓ 4.3.1.5 MICROFILMING

At the time of initial issue (approval/sign-off, of first revision level), all drawings shall be microfilmed on a 35mm aperture card which shall be retained as a permanent record in accordance with microfilming procedures. All revisions shall be microfilmed before copies of the drawing are transmitted in order to maintain a history of the drawing and provide a reference file of changes. These cards will be stored in accordance with the Gaithersburg Power Division policy.

- a. Group supervisors will forward all drawings to be microfilmed to the Project Administrator, who will determine the numbers and types of negatives required for the Drawing Distribution Schedule.

Attachment to C/L WEE-63 7/25/78

b. At least two negatives of all drawings will be made for the record.

1 Diazo negative

1 silver negative

c. The Administrative Group will be responsible for completing the Coding Sheet, a Microfilm Requisition and delivering the package to Reproduction. The Administrative Group will maintain a complete, up-to-date record of the status of all drawings that are being or have been microfilmed.

d. Microfilm of superseded drawings will be kept separately from current drawings.

4.3.1.6 DRAWING REVISIONS AND LOGS

Revisions to drawings shall be processed by the same procedure as for the original issue of drawings. Revised areas on drawings shall be circled on the back of the original for ease of identification. (Exception P&ID & SFDs - see paragraph 4.3.1.6.2)

The revision note on the drawing shall include a brief statement of the purpose of the issue and a concise description of any changes incorporated at that time, for example, "issue for bid", "issue for construction", "includes DCNs (Drawing Change Notice) 1 through 5." All outstanding DCNs shall be incorporated when issuing revision to drawings. When it is necessary to supersede an issued drawing, the superseded drawing will be reissued as a new revision with the notation "Superseded by Drawings____, Rev. _____, dated____," in the revision block. The superseding drawing will be issued with its next revision number with the notation "Supersedes Drawing____, Rev.____, dated____". If the superseding drawing number has never been used, the superseding drawing will be issued as revision A or revision 0, whichever is appropriate.

When voiding, deleting or cancelling an issued drawing, the affected drawing will be reissued as a new revision with an appropriate statement entered in the revision block. The revision block shall also note the cancellation of all outstanding DCNs applicable to the affected drawing(s). Cancelled or

4.3-14

superseded drawings and/or DCN's shall be conspicuously stamped with appropriate statement (in red letters) on the face of the drawing(s) prior to issue.

Incorporation of drawing change notices shall be noted in the revision block with the statement "Incorporated DCN(s) # ." Drawing revisions in response to a Field Change Request or Nonconformance Report, shall be noted in the revision block "Revised in response to FCR/NCR # ." Drawings revised to reflect an as built condition shall note the "as built" statement in the revision block. Revisions to drawings that have been sealed by a registered Professional Engineer shall be initialed by that Professional Engineer. If a revision cannot be initialed by the original Professional Engineer, it shall be sealed and initialed by another registered Professional Engineer. In no case shall a vendor drawing that is reproduced and issued as a Bechtel drawing be stamped by a Bechtel Professional Engineer.

Revisions to data sheets or other multi-sheet drawings shall be reviewed, checked, approved and signed using the same procedure as used for the originals.

Drawing numbers on previously released drawings shall not be changed unless the change cannot be avoided in a practical manner. If changed, a record of the original number shall be retained on DCL by adding an "S" suffix to the number to indicate that the drawing is superceded; enter a note in the DCL comment field indicating the new (superseding) drawing number; and delete all schedule, budget, or activity information. The new drawing number shall then be entered, along with the appropriate budget and schedule information.

Drawing titles on previously released drawings shall not be changed if it can be avoided. However, if a drawing title is changed, the foregoing procedure, using the "S" suffix on the number of the original drawing and using the original number without the suffix with the new title, shall be followed.

Requirements for logging of drawings and subsequent revisions are delineated in Drawing Control - Section 4.3.1.4 and Appendix A.

4.3.1.6.1 DRAWING CHANGE NOTICE (DCN) *See drawing no 13*

Subsequent to "Issue for Construction/Fabrication," changes in drawings may be deferred through the use of the Drawing Change Notice, Figure 4-3b.

A Drawing Change Notice (DCN) may be issued to expediently document a change.

When issuing DCNs always issue a DCN against the latest drawing revision, i.e.:

Revisions signed by the Project Engineer/Assistant Project Engineer, regardless of whether the drawing has been formally distributed.

After five (5) DCN's have been issued against a drawing, the drawing must be revised to incorporate all changes. However, any outstanding DCN's against a drawing must be incorporated no later than 90 days after issue of the DCN.

DCN's shall be consecutively numbered against the drawing reflecting the change.

In no case will one DCN cover changes relating to different drawings. An example of DCN Number Requirements follows:

<u>Dwg. No.</u>	<u>DCN No.</u>	<u>Applicable Dwg. Rev.</u>
M-0060	1	0
	2	2
	3	2
	4	5
M-0030	1	1
	2	3
	3	4
	4	6

A DCN once issued, shall not be revised. A DCN shall be cancelled, superseded or voided by issuing another DCN or by a drawing revision.

The original entry in the DCN log shall be revised to reflect the DCN as being cancelled, superseded, or voided (as applicable). It shall

4.3-16

Attachment to C/L WEE-63



PEPM CHANGE NOTICE

PROJECT NO. 9645

1. PAGE 1 OF 1

2. CHANGE NOTICE
NO. 43

ATTACHMENT:

YES ☒ NO ☐

3.
DATE 4 24 78
MO DAY YR

4. PROCEDURE NO.

4.3.1.6.1 and Figure 4-3b

5. TITLE

Drawing Change Notice (DCN)

6. EXISTING CONDITION:

e. Add names of other.....list.

All DCNs shall be reproduced by Xerox or other black and white process. For distribution purposes, DCNs will be treated the same as drawings. A Transmittal Form.....receiver.

7. CHANGE TO READ

e. Add names of other.....list.

(Revise 3rd sentence and add 4th sentence to the paragraph referenced above).

For transmittal purposes, the DCN Form will serve as its own transmittal. When DCNs are issued, document control will enter the CDT number and date at the bottom of the DCN (Figure 4-3b). All DCNs will.....project files.

Note: see attachment for revised DCN Form (Figure 4-3b).

8.

Bruce C. Starchfield 4/20/78
PREPARED BY DATE

RS Sipe FOR RLS cat 4/21/78
DATE

William R. Jones 4/20/78
PQE CONCURRENCE DATE

TW Haberman 4/24/78
PROJ. ENGR. APPROVAL DATE

3153 4/17

MPL NO.
DRAWING TITLE



JOB NO	DRAWING NO	REV NO
	9645	
DCN NUMBER		Page of
QA CLASS		
By:		Date

DRAWING CHANGE NOTICE

Reason for change: _____

The following Requisitions are affected by this change: _____

They ^{have} been revised in accordance with this DCN
have not

PSAR change required ☐

APPROVALS:

GROUP SUPERVISOR/DATE P.E. / A.P.E. / DATE

CDT- _____ Date _____

To: D. M. Lake FILE NOS. 0075/

cc: J. P. McGaughy, Jr. (2)

W. L. Nail

T. E. Reaves

Document Control Register

*CHIEF ENG. / DATE *CHIEF NUC. ENG. / DATE

*Chief Engineers approval required when revision affects Design Criteria, SAR, Codes or Standards. N/A shall be entered if not required.

Figure 4-3b

13434/10 (G-238 GG)

reference the cancelling document and shall bear the date and signature of the engineer entering the referenced document.

If a DCN is in response to a Field Change Request or Nonconformance Report, the notation "Revised in Response to FCR/NCR # " shall be conspicuously noted on the DCN. Drawing Change Notices are prepared by the engineer cognizant of the proposed change and approved by the Group Supervisor/Deputy Group Supervisor, and the Project Engineering Manager/Assistant Project Engineer. The body of the form is for a simple sketch depicting the change or a description of the change in words. The sketch must identify and locate the items concerned with respect to the drawing being changed.

The Q A classification must be entered as "Q" or "N" and stamped "Q" when applicable in lower right corner. The "Q" entry is required when the drawing defines a Safety Related System/Equipment or Material included in the project Q-List.

Drawing Change Notices for Safety Related (Q) Drawings included on the DCCL, affecting Design Criteria, SAR, or Codes and Standards, will be submitted with DRN to the cognizant Discipline and Nuclear Chief Engineer for review and approval. (Ref. DRN Procedure 6.3 of PEPM.)

The Group Supervisor/Deputy Group Supervisor shall review the DCN for the following, before forwarding the DCN to the Project Engineering Manager (PE) or Assistant Project Engineer (APE) for approval:

- a. Review DCN for SAR commitments, interface consideration, material changes, scope change and/or cost impact and confirm technical adequacy.
- b. Coordinate the DCN with other affected disciplines as deemed necessary.

Attachment to C/WEE-63

4.3-17

- c. The Group Supervisor shall decide if the design change requires the same level of approval as its associated drawing.
- d. Approve by signing on the specified line.
- e. Add names of other personnel under ADDITIONAL DISTRIBUTION that should be included in distribution of the particular DCN who are not on the master distribution list.

All DCNs shall be reproduced by Xerox or other black-and-white process. For distribution purposes, DCNs will be treated the same as drawings. A Transmittal Form will be utilized to verify receipt of a DCN by the intended receiver.

All DCNs will be filed in the Project files. A copy of the DCN will be stapled to the record sepia and filed in the record sepia file. The original of the DCN will be filed in the general subject files, file no. 0075 (effective date 1-31-75 - retrofit not required). Figure 4-3d graphically illustrates this procedure. Each engineering discipline shall maintain a Drawing Change Notice Log, Figure 4-3c.

4.3.1.6.2 PIPING & INSTRUMENT DIAGRAM AND SYSTEM FLOW DIAGRAM REVISION NOTICES (RN)

P&IDs and SFDs are revised without circling the revisions on the back of the tracing. To facilitate identifying and locating each change, a "Revision Notice" (Figure 4-3f) will accompany each issue subsequent to "Issue for Construction" and be part of the transmittal letter. The notice will identify each change with a brief description of the revision and refer to its drawing location by use of zone coordinates. The revision block of the drawing will refer to the Revision Notice, i.e., "See Revision Notice 9645-SFD-0035-1." Revision Notices are prepared by the engineer cognizant of the proposed revision and approved by the Group Supervisor, Project Engineering Manager/Assistant P.E. The cognizant engineer will also maintain a Revision Notice Log, Figure 4-3g.

4.3-18
Rev. 2
4-17-78

COMPLIANCE
VERIFIED

PEPM SECTION 4.3.1

	4.3.1.2.2		4.3.1.2.3		4.3.1.2.4		4.3.1.3		4.3.1.5		4.3.1.6.1		Misc. Items C/L WEE-63 INSECURITY FILE (Case)
	YES	NO	YES	NO	YES	NO	YES	NO	YES	NO	YES	NO	
DRAWINGS:	✓												
1. C-2160A Rev. 0	XX		✓		Not Audited		✓		✓		Not Audited		YES *
2. C-2389A Rev. 3	XX		✓				✓		✓				YES *
3. C-1735D Rev. 3	XX		✓				✓		✓				YES *
4. HD-1475 Rev. 1	✓ XX		✓				✓		✓				YES ✓
5. Q2777600 4H12 Rev. 3	✓ XX		✓				✓		✓				YES ✓
6. A 1102 Rev. 4	✓ XX		✓				✓		✓		Not Audited		YES ✓
7. J1694 Rev. 0	✓ XX		✓				✓		✓		Not Audited		Not Audited
8. E-0134-01 Rev. 4	XX ✓		✓				✓		✓				YES ✓
9. E-0231-10 Rev. 5	XX ✓		✓				✓		✓				YES ✓
10. M-0196 Rev. 4	XX ✓		✓				✓		✓				YES ✓
11. M133/E Rev. 12	XX ✓		✓				✓		✓				YES ✓
12.													
13.													
14.													
15.													

398-

MISSISSIPPI POWER & LIGHT COMPANY

AUDIT CHECKLIST

AUDIT-RESULTS (conc'd) (* C)
Appendix B of 10CFR50 Criteria(n) III

Audit Number 6

Calculations
(Subject of Commitment)

Persons Contacted:
J. Love, Gp. Supervisor Elect.
D. Schmeeckle, Senior Engineer
P. Lauriat, Senior Engineer

A. COMMITMENT: Bechtel PEPM Ssection
(Reference) 4.4, Rev. 0 (8/4/75); Rev. 1
(8/4/75), Rev. 2 (4/17/78,
8/4/75, 1/14/77)
Rev. 3 (4/17/78)

See attached pages of Section 4.4

B. METHOD OF VERIFICATION Review selected calculations to assure compliance
to paragraphs 4.4.3, 4.4.4, 4.4.5, 4.4.6, 4.4.7, 4.4.8 & 4.4.9

C. FINDINGS*(Classification): See C/L WEE-26

*Classification:

C- Conformance
N- Nonconformance
A- Not Audited
NC- Nonconformance Corrected

Initials of Originator
-Checklist Number WEE - 65



PEPM CHANGE NOTICE

PROJECT NO. 9645

1. PAGE 1 OF 2

ATTACHMENT

YES ☐ NO ☒

2. CHANGE NOTICE

NO. 31

3. DATE MO DAY YR
3 1 78

4. PROCEDURE NO.

4.4

5. TITLE

CALCULATIONS

6. EXISTING CONDITION:

Current Page 4.4.2, rev. 1, paragraph 4.4.3

7. CHANGE TO READ

Insert between last sentence of paragraph 4.4.3 and heading - 4.4.4 CHECKING PROCEDURE
4.4.3.1 RELEASE OF PROJECT ENGINEERING CALCULATIONS TO CLIENT

The Project Engineer may release certain calculations, at his discretion, upon request from MP&L. The type of calculation which may be released are listed in Engineering Department Procedure (EDP) 4.40 (See Exhibit E).

Said release shall be in accordance with EDP 4.40 and PEPM section 4.2.10 except distribution, as a minimum, shall require a copy to Document Control w/o. (Without attachments). Other copies at the discretion of the Project Engineer.

4.4.3.2. STANDARD COMPUTER PROGRAMS

Standard Computer Programs (Calculations) are controlled and verified programs that may be used in individual design calculations without specific, detailed description and verification of the program in the calculation documentation package. Quality related requirements for control and use of standard computer

PREPARED BY

DATE

FOR CONCURRENCE



PEPM CHANGE NOTICE SUPPLEMENTAL SHEET

PROJECT NO. 9645

CHANGE NOTICE
NO. 31

PAGE 2

Paragraph 4.4.3.2. continued.

programs shall be as delineated in EDP 4.36. (See Exhibit D). Administrative procedures for development, control and use of computer programs shall be as delineated in this section.

Page 4.4-3, paragraph 4.4.5a, CHANGE TO READ

a. Calculations, except computer programs, stress analyses, and other forms unique to specific groups/functions, shall be prepared on standard Bechtel sheets (Figure 4-4a, sheet 1 or 2).

Page 4.4-6, paragraph 4.4.8.a.1, first line, CHANGE TO READ

1. Binders(and/or file folders), identified as to content, are used to contain calculations, graphs and engineering sketches.

*Attachment to C/L WEE-65
THIS W.E.E. 7/25/68*



PEPM CHANGE NOTICE

PROJECT NO. 9645

1. PAGE 1 OF 1

2. CHANGE NOTICE
NO 56

ATTACHMENT.

YES ☐ NO ☒

3. DATE 5/10/78
MO DAY YR

4. PROCEDURE NO.

4.4

5. TITLE

CALCULATIONS

6. EXISTING CONDITION:

4.4.4 CHECKING PROCEDURE

The checker...being checked.

7. CHANGE TO READ

(Add as noted)

The checker...being checked. Checking may be performed by the originator's supervisor if the supervisor is the only individual on the project team competent to perform the checking. If the originator's supervisor is the checker, the next level of supervision shall also initial in the "checked" box to attest that the supervisor is the only individual on the project or in the specialty group competent to perform the check. No requirements exist for the next level supervisor's initials in the "checked" box if the design calculations are on the DCCL. In the event...correctness.

attachment to C/L WEE-65
Page 37 of 15 W.E. Edge 7/25/78

Bruce C. Stanchfield 5/8/78
PREPARED BY DATE

R. S. Line for R. L. Scott 5/9/78
FOR CONFORMANCE WITH DATE

William Medina 5/8/78
FOR CONFORMANCE DATE

L. Rocca 5/10/78
FOR CONFORMANCE DATE

4.4 CALCULATIONS

4.4.1 GENERAL

To be in compliance with the NRC requirements for design control, it is necessary to supplement the standard procedures for performing and checking engineering design calculations.

4.4.2 ESTABLISHING DESIGN BASIS AND DESIGN CRITERIA

The Group Supervisor is responsible for coordinating and directing the design of project facilities assigned to his group. The responsible engineer, particularly regarding lengthy and complex design problems, should discuss the methods of approach, theories, and assumptions with his group leader. In this manner, a degree of design communication is immediately established between the responsible engineer and his supervisor. If additional technical guidance is required or if questions concerning interpretation of design criteria arises, the Group Supervisor should arrange for assistance from engineering specialists.

4.4.3 CALCULATION PROCEDURE

It is the duty of the responsible engineer to assure that the calculations are in agreement with the System Descriptions which includes design basis, criteria, SAR commitments, etc. The responsible engineer is also responsible for the legibility and neatness of the calculations made on the standard Calculation Sheet, so that the assumptions, calculated results, and conclusions can be easily checked by others and micro-filmed for the record. References cited or used should be clearly stated either at the bottom of each calculation sheet or at the end of the calculation. Calculations based upon sketches or drawings should reference the drawing number and revision. When practical, a copy of the drawing should be filed with the calculation.

Calculations performed by computer programs are no exception. The require-

particularly in calculating the input numbers for the problem to be performed by the computer program. Understanding of the program internal mechanics, logic and format are not required for the large Bechtel computer programs which have been reviewed with the NRC in topical meetings. However, the responsible engineer should understand the theories, equations, calculational procedures, and assumptions described in the respective User's Manual for the program. On the other hand, the responsible engineer must understand the internal characteristics and be prepared to explain them, if required, for any approved time-share programs applied in design.

Calculations prepared for one project may be used (when the applications and conditions are similar) by this project. These previously used calculations shall be rechecked for applicability, criteria, assumptions, as well as mathematical accuracy.

4.4.4 CHECKING PROCEDURE

The mathematical accuracy and correctness of engineering design is the responsibility of the Group Supervisor. He may delegate these tasks to any of his discipline engineers. The checker shall be an individual other than the preparer, qualified to prepare the document being checked. In the event a staff group is charged with responsibility for certain calculations, the specific group lead engineer will be responsible for the accuracy and correctness. After checking and at previously agreed upon frequency, the group lead engineer will furnish originals to the Group Supervisor while retaining reference copies within the group.

- a. The checker shall obtain a complete set of all calculations to be checked together with all available data relative to the design.
- b. Design drawings shall be used as required to facilitate checking and to confirm design assumptions, dimensions, materials, and physical conditions.
- c. The checker shall review the design calculations in view of concurrence

with design assumptions, correlations, and design strategies.

arithmetical correctness, and adequacy of design calculations.

1. After verifying the basis of a calculation, the checker has the option of performing a mathematical check or verifying the calculation by an alternate means. Approximation methods may be adequate for checking. Check calculations by alternate means shall be attached to the original calculations.
- d. It is not obligatory for the checker to make an exacting slide rule check of all calculations. However, he should visually check all equations for error and spot check by slide rule at random those calculations of significant importance.
- e. All errors and deficiencies detected through checking shall be discussed with the designer and corrections made to the satisfaction of the checker.
- f. Upon completion of checking and after all necessary corrections and additions have been made, the checker shall sign and date the cover sheet and each page of the calculations.

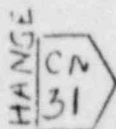
Unless otherwise specified, all hand-calculated parameters used in conjunction with a computer program should follow the same checking procedures. However, it is the duty of the responsible engineer and not the checker to verify the accuracy and the correctness of the computer input data.

The checker should indicate all corrections or required corrections clearly and with sufficient explanation, if required, for the responsible engineer's ready understanding. If the reason for any probable error is in doubt, the checker should discuss it with the design engineer before making the change. Before signing off the calculation sheets, the checker should assure himself, as well as his supervisor, that the required corrections previously marked off have been incorporated.

4.4.5 FORMAT

- a. All calculations will be prepared on standard Bechtel sheets (Figure 4-4a, Sheet 1 or 2).

4.4-3



b. Calculations shall include:

1. Engineer's Signature and Date (each sheet) —
2. Checker's signature and date (each sheet)
3. Title and Job No.
4. Subject and Sheet No. ___ of ___
5. The problem
6. Known data
7. Assumed data (identify as such and give any references for assumptions)
8. All references
9. Conclusions
10. Checker's comments
11. Note any departures from Seller's criteria, requirements, or recommendations
12. Action taken
13. Note if results of calculations change in any respect the SAR or ER commitments. Discuss with supervisor before proceeding further.
14. A calculation number shall be entered on each sheet.

c. An integral part of each calculation document is the Calculation Cover Sheet, Figure 4-4b.

Cover sheets shall include:

1. Engineering Discipline
2. Calculation number. Place Q designation on cover sheets for Safety Related items identified on the project Q-list
3. Title and Subject
4. Statement of Problem
5. Check compliance to SAR and indicate when applicable SAR change and SAR change initiated
6. Sources of data known and assumed
7. Sources of formulae and references



CALCULATION SHEET

DESIGNER _____ DATE _____ CHECKER _____ DATE _____
TITLE MISSISSIPPI POWER & LIGHT COMPANY
GRAND GULF NUCLEAR STATION UNITS 1 AND 2 JOB NO. 9645
SUBJECT _____ CALC. NO: _____ SHEET NO. _____ of _____

SAMPLE

Note: Supplies of this form may be used until exhausted.

When exhausted, use the form as shown on sheet 2.

*Attachment to C/L WEE-65
100-22-26-78*

Figure 4-4a

8. Identify preliminary or final calculation as appropriate
9. Previous calculation number superseded (as applicable)
10. Signatures and date of originator, checker, and Group Supervisor

4.4.6 REVIEW AND APPROVAL

When the calculation is submitted to the group supervisor for final approval and sign-off, it should be in an acceptable condition. When calculations are based upon preliminary data for early implementation of the work, such preliminary calculations are subjected to a review commensurate with the data available and the use to be made of the calculations. These calculations shall be identified as "Committed Preliminary Calculations."

Calculations performed by staff personnel, specialist groups, suppliers, and service agencies shall be reviewed and accepted by the cognizant project Group Supervisor or his designated representative.

Signing off by the group supervisor on the calculation cover sheet should not be later than the date of issuance of its associated purchase order or subcontract. Exceptions to this requirement may be authorized by the Project Engineer or Assistant Project Engineer when associated drawings are issued for mill order and/or fabrication. Safety related calculations (Q) will be submitted to the cognizant discipline and nuclear chief engineers for review and approval as required by the Design Control Check Lists (DCCL). This review and approval process shall be accomplished by the submittal of calculations on a Design Review Notice (DRN). The requirement for frequency of this submittal shall be as identified on the Design Control Check List (DCCL).

The final review and approval by the Chief Engineers is accomplished prior to issuing associated drawings for construction.

4.4.7 REVISIONS

For revisions to calculations, including superseding calculations, the same checking procedure shall be used for the revised calculations as for the original calculations. All parts of the complete calculation shall be checked

which are dependent on the revision, and the complete original calculation shall be reviewed to determine which parts are dependent. It is not necessary to recheck parts which are independent of the revision. Results of calculation revisions shall be made known to others who may be affected.

In making revisions, including handling superseded calculations, a record shall always be maintained of the original calculations, and they shall be identified as being superseded by crossing-out and marked "SUPERSEDED".

New calculation sheets shall be prepared for all such superseding calculations. Exceptions may be made to preparing new sheets where the change is very minor in nature and where the Group Leader authorizes a cross-out by initialing the change. In this case, it shall nevertheless be subject to all other revision procedures, and the change shall be identified with a revision number on the calculation sheet.

4.4.8 FILING OF CALCULATIONS *See PCN Change*

- a. Each Group Supervisor will maintain a file of the calculations pertinent to his group.

- SENTENCE CHANGED - SEE PCN*
1. Loose-leaf binders, each identified as to content and subdivided by indexed tabs for convenient reference, are used to contain all calculations, graphs, and small engineering sketches. Separate binders are maintained by each group supervisor for final work, for superseded work, and for Committed Preliminary Design Work.
 2. Committed Preliminary Calculations are filed in the binder titled Committed Preliminary Design Calculations (CPDC). A copy of the calculation cover sheet, clearly marked "Filed in CPDC Binder", is placed in the appropriate final calculation binder and it remains there until replaced by the final design package.
 3. Calculation Index, Figure 4-4c, shall be inserted in the front of each binder, to identify the calculations included in the binder. This index also provides a convenient means of separating and identifying calculations on Q-Listed Items for reference and audit purposes.
 4. Pertinent consultant and vendor calculations, designs, data, and all checks performed, shall be kept with the appropriate purchase order to technical file.
 5. Computer printouts should be cross-referenced to their corresponding calculation package, and printouts shall be labeled and filed.



PEPM CHANGE NOTICE SUPPLEMENTAL SHEET

PROJECT NO. 9645

CHANGE NOTICE
NO. 48

PAGE 2

Document Control shall complete the necessary forms, arrange to have the calcs. microfilmed and maintain the record of calcs. that have been microfilmed. When this volume has been microfilmed the contents shall be discarded and the binder reclaimed.

Final microfilming of All calculations will be performed when they are to be archived.



PEPM CHANGE NOTICE

PROJECT NO. 9645

1. PAGE 1 OF 2

2. CHANGE NOTICE
NO. 48

ATTACHMENT:

YES ☐ NO ☒

3. MO DAY YR
DATE 5 2 78

4. PROCEDURE NO.

4.4.8

5. TITLE

Filing of Calculations

6. EXISTING CONDITION:

b. The Group Supervisor...should be microfilmed.

All calculations...not carbons.

7. CHANGE TO READ

b. The Group Supervisor...should be microfilmed.

New and revised calculations will be microfilmed each 90 days. The original calculation must have a good line to background contrast. This means dark pencil, such as HB or black ink on bond paper. Blue ball point should not be used because it does not photograph well. Lettering should be large, well defined, and preferably printed rather than written in longhand. Copies of extracted reference material, which must be included in the book, should be originals or Xerox copies, not carbons. When calculations are revised or new calcs. made, the Responsible Engineer shall have a good Xerox copy made. He shall then place the original calc. in the appropriate calc. volume and the Xerox copy in the volume marked "New & Revised Calcs. (date - date)". He shall also make an entry in the first six columns of the index sheet in the front of this volume that a copy of the calc. has been entered therein. When the oldest calc. in this "New & Revised Calc." Volume is 90 days old, the Group Supervisor shall have the volume delivered to Document Control for microfilming.

8. Bruce C. Storchfield 5/2/78
PREPARED BY DATE

William H. [Signature] 5/2/78
FOR CONCURRENCE DATE

binder except when they are revised or reproduced. When calculation binders are removed from files, an "OUT" card shall be inserted in their place indicating what calculations were removed, when, and by whom.

- b. The Group Supervisor will present all calculations to the Project Administrator for Microfilming. When a computer printout is voluminous, only the input and final results should be microfilmed.

CN
48

All calculations will be microfilmed each 90 days, unless the calculations remain unchanged, and the reels are retained in Retired Records. The material to be microfilmed must have a good line to background contrast. This means dark pencil, such as HB or black ink on bond paper. Blue ballpoint should not be used because it does not photograph well. Lettering should be large, well defined, and preferably printed rather than written in longhand. Copies of extracted reference material, which must be included in the book, should be originals or Xerox copies, not carbons.

- c. Figure 4-4d, graphically illustrates this procedure.

4.4.9 CALCULATIONS AND ENGINEERING WORK BY OTHER DIVISIONS

This subsection contains the procedures for authorizing work to be performed by Bechtel Corporation Divisions other than the Gaithersburg Power Division.

- a. Preliminary arrangements for work by other Divisions should be initiated by telephone or IOM to determine the information required to formally authorize the work.
- b. The work will be authorized by use of an Inter-Division Work Order Memorandum (IDWOM), Figure 4-4e.
- c. The first paragraph in the IDWOM must define the work that is to be undertaken. This description should be in accordance with the preliminary arrangements.
- d. The second paragraph in the IDWOM must define the manhour allocation, budget as applicable, time change, and job and subjob number.
- e. The third paragraph in the IDWOM must define, by name and employee number, the personnel assigned to the work.

- f. The fourth paragraph must define the requirements for the work format, QC and project procedures and other qualifications, as required.
- g. A copy of the project procedures and the forms required for the presentation of the work must be attached to the IDWOM.
- h. Each IDWOM must be approved by the Group Supervisor and project engineer before it is issued.
- i. All IDWOM's shall contain one of the following phrases:
 - 1. Nuclear QA is Applicable.
 - 2. Nuclear QA is not Applicable.
- j. The project secretary will imprint the Q symbol in the lower right hand corner of the original and all copies of an IDWOM which bears the phrase - Nuclear QA is Applicable - on the first line of the subject.

*Attachment to C/L WEE-65
M. E. E. J.*

COMPLIANCE
VERIFIED

PEPM sections 4, 5, 6, 7, 8, 9

	4.4.3		4.4.4		4.4.5		4.4.6		4.4.7		4.4.8		4.4.9	
	YES	NO	YES	NO	YES	NO	YES	NO	YES	NO	YES	NO	YES	NO
1. 14	✓		✓		✓		✓		✓		✓		✓	
2. 19	✓		✓		✓		✓		✓		✓		✓	
3. 21	✓		✓		✓		✓		✓		✓		✓	
4.														
5.														
6.														
7.														
8.														
9.														
10.														
11.														
12.														

CALCULATIONS:

ELECT.

1. 14

2. 19

3. 21

4.

5.

6.

7.

8.

9.

10.

11.

12.

MP&L AUDIT OF BECHTEL-GAITHERSBURG
June 19-22, 1979

SUMMARY OF ATTACHED CHECKLISTS APPLICABLE TO DESIGN CONTROL OR DESIGN INTERFACE

<u>CHECKLIST NUMBER</u>	<u>SUBJECT</u>	<u>NONCONFORMANCE IDENTIFIED</u>
JER-08	Design Execution Responsibilities & Interface of Resident Engineer	D&CRs-92,93
JER-13	Change Request/Notices	CAR-226, D&CR-91
JER-14	Drawings & Documents by Vendors/Subcontractors	D&CR-95, CAR-227
JER-25	Design Office Records	None

NONCONFORMANCES IDENTIFIED DURING
MP&L QA AUDIT OF BECHTEL GAITHERSBURG
JUNE 19-22, 1979

D&CR Number 91

1. COMMITMENT:

- a. PPM Paragraph 2.7.2 - Quality Assurance Records Rev. 6, 11/22/77,
states in part:

"Copies of Documentation pertaining to the project QA Program and furnishing evidence of QC activities on the part of Bechtel, their sellers, contractors or subcontractors are collected, identified and collated by Quality Engineering in the Design Office."

- b. PEPM-Appendix G (EDP-4.66), Rev. 1, issued 3/9/79, including exhibits A, B & C states in part:

"3.4 PROJECT EVALUATION TEAM

.when the cognizant Group Supervisor and Project Engineer decide a deficiency may be reportable, a Project Evaluation Team is formed.

3.7 LOG

Project Engineering shall establish a log (Exhibit C)
.

4.0 PROCEDURE

<u>Responsibility</u>	<u>Action</u>
Evaluator	10.Fully documents all findings and prepares written evaluation reports.

Exhibit B - CONTENT OF DEFICIENCY/NONCOMPLIANCE EVALUATION REPORT TO PROJECT MANAGER

The written report shall provide for the following information
."

2. FINDING:

- a. Contrary to 1.a above, Quality Engineering does not collect, identify & collate QA Records as described in the PPM.

NONCONFORMANCES IDENTIFIED DURING
MP&L QA AUDIT OF BECHTEL GAITHERSBURG
JUNE 19-22, 1979

2. FINDING (cont'd)

- b. Contrary to 1.b above, a review of documentation for MCAR-39 and MCAR-50 responding to MP&L letters BMP-78/298 (7/5/78) and BMP-79/311 (5/30/79) revealed that the evaluations made and the records maintained regarding reportability appear quite adequate. However, evidence was not available to indicate that Appendix G was followed in accordance with the above commitment.

3. CORRECTIVE ACTION:

- a. Relative to finding 2.a above, Revision 9, dated 4/1/81, of the PPM clarified paragraph 2.7.2, "QA Records", as follows:

"Copies of documentation pertaining to the project quality assurance program which furnish evidence of quality control activities on the part of Bechtel, their sellers, contractors, or subcontractors are collected, identified and collated in accordance with the requirements of the GGNS-NQAM."

GGNS NQAM Policy-17.1, Rev. 2, 8/14/79 pertains to QA Records.

- b. Project Engineer A. Zaccaria's memo of 8/7/79 to discipline Group Supervisors and Assistant Project Engineers instructed them to become familiar with and to comply with Appendix G. This memo also initiated the creation and maintenance of a PRD tracking log and provided that copies of each PRD evaluation be provided to the PQE and Project File 0511. These actions were designed to preclude recurrence of this nonconformance.
- c. Verification of the implementation of corrective action per 3.b above was completed on 10/19/79. PPM, Revision 9, dated 4/1/81 was reviewed on 4/16/81, and this D&CR was closed on 4/16/81.

NONCONFORMANCES IDENTIFIED DURING
MP&L QA AUDIT OF BECHTEL GAITHERSBURG
JUNE 19-22, 1979

D&CR Number 92

1. COMMITMENT: PEPM Section 2.1 (K); Change Request Number 91 dated 4/27/79
states:

"The Lead Resident Engineer shall approve the QA Program submitted by GE I&SE for work performed under GE-NED FDI No. 44/42382. This approval is limited to the verification that the subject QA Program has been approved by GE-NED."

2. FINDING: Contrary to the above, objective evidence was not available to demonstrate that the lead Resident Engineer has approved the GE I&SE QA Program for GE-NED FDI No. 44/42382.

3. CORRECTIVE ACTION:

Bechtel obtained objective evidence to verify approval of the GE-I&SE QA Manual by the Lead Resident Engineer, Mr. M. L. Rayfield, on 6/22/79. This D&CR was verified and closed on 8/27/79.

NONCONFORMANCES IDENTIFIED DURING
MP&L QA AUDIT OF BECHTEL GAITHERSBURG
JUNE 19-22, 1979

D&CR Number 93

1. COMMITMENT: PEPM Section 2.1 (J); Change Request No. 74 dated 11/30/78 states:

"To expedite the processing of deviation requests received from subcontractors, and Suppliers for Field Procurement, the Lead Resident Engineer has been authorized by the Project Engineer to disposition and approve "accept as is" and "repair" action SDDRs. The Lead Resident Engineer shall coordinate with the cognizant Group Supervisor and the Project Quality Engineer or his designee for concurrence of disposition/rationale and document all communication with a telecon memo (Figure 4-2 t). He shall acquire an SDDR control number from the Project Quality Engineer and record the number on the original SDDR.

The Lead Resident Engineer shall complete the SDDR form as required by Procedure 4.2.17 and sign and date for the Project Engineer in Block 20 of the SDDR.

The SDDR original and a copy of the telecon memo shall be transmitted to Project Engineering for further processing in accordance with Procedure 4.2.17.4 of the PEPM. A copy of the approved SDDR shall be submitted to Field Subcontractors to extend authorization to the Subcontractor or the Project Field Engineer to extend authorization to the Supplier."

2. FINDING: Contrary to the above, objective evidence of required coordination with the Quality Engineer was not available for SDDR-M-618.1-004.

3. CORRECTIVE ACTION:

The PEPM was revised to document the processing difference of those SDDRs initiated for HVAC-subcontract 9645-M-618.1 - "Ductwork". PEPM Section 2.1, subparagraph "J", Revision 1, dated 7/9/79 (change #35) was reviewed and verified on 10/25/79 and this D&CR was closed on 10/25/79.

NONCONFORMANCES IDENTIFIED DURING
MP&L QA AUDIT OF BECHTEL GAITHERSBURG
JUNE 19-22, 1979

D&CR Number 95

1. COMMITMENT: a. PPM - Section 3.1.4, Rev. 6, 11/22/77, Page 3-5 states in part:
- "The project shall identify the following by placing a Q-stamp on the applicable Bechtel-originated document:
- 2- Design changes, including field changes, pertaining to design documents identified on the project Q-list."
- b. PEPM - Section 4.3.2.6.1, Subparagraph D.2, Rev. 2, 12/1/77 states:
- "2- A Supplier Drawing Revision Notice (figure 4-3m) shall be prepared by Project Engineering in accordance with PEPM paragraph 4.3.1.6.2 with the following exceptions;
- b. The Q designation shall be placed on Supplier Drawings and the RNs for safety related equipment."

2. FINDING:

- a. Commitment 1.b above appears to conflict with Commitment 1.a by taking exception to the Q-stamp requirement.
- b. Contrary to 1.a above, the following Q-SDRNs have no Q-stamp:

J-301.0-Q1P81N004-1.1-3-3
 E-018.0-Q1R20S520AA-1.1-2-1-1
 E-018.0-Q1R20S520AA-1.1-2-G
 E-018.0-Q1R20S520AA-1.1-2-F
 E-018.0-Q1R20S520AA-1.1-3-E
 E-018.0-Q1R20S520AA-1.1-3-D
 E-018.0-Q1R20S520AA-1.1-2-C
 E-035.0-Q1R60M013-C-1.4-1-E
 E-035.0-Q1R60M001-D-1.1-4-C
 E-017.0-Q1R20S530A-01.4-02.04-4
 M-067.0-Q2F15E004-N-1.4-10-2
 M-015.1-QSP41B001A-1.3-30-1
 M-143.0-Q1E12D004A-1.1-1-3

NONCONFORMANCES IDENTIFIED DURING
MP&L QA AUDIT OF BECHTEL GAITHERSBURG
JUNE 19-22, 1979

3. CORRECTIVE ACTION:

- a. Relative to finding 2.a above, it was determined that the intent of PEPM Section 4.3.2.6.1, subparagraph D.2.b, is to require that the "Q" designation be entered on safety-related supplier drawings in place of P&IDs as required by PEPM Section 4.3.1.6.2. Thus a misunderstanding, rather than a conflict, existed and no additional action was considered necessary.
- b. As preventive action to preclude recurrence of finding 2.b above, memos were issued by the Control Systems, Electrical, and Mechanical Group Leaders to remind the discipline engineers of PEPM requirements to "Q" stamp SDRNs for safety-related supplier drawings.
- c. Verification of implementation of corrective action as a result of 3.b above was accomplished on 10/18/79, and this D&CR was closed on 10/25/79.

NONCONFORMANCES IDENTIFIED DURING
MP&L QA AUDIT OF BECHTEL GAITHERSBURG
JUNE 19-22, 1979

CAR Number 226

1. COMMITMENT: PEPM-Section 4.2.14.3-Rev. 5, 12/15/78-General states in part:

"FCR/FCN originals are submitted to Project Engineering for review, evaluation and disposition ...

A FCR/FCN dispositioned as above becomes effective with the approval signature of the project Engineer or his designated representative (see note). This approval signature should be obtained within 30 days after FCR/FCN receipt and shall not exceed 60 days."

2. FINDING: Contrary to the above, the following FCR/FCNs have receipt and approved disposition dates exceeding 60 days.

<u>FCR/FCN No.</u>	<u>Date Received</u>	<u>Date Dispositioned</u>
E-393	10/11/78	1/4/79
E-384	9/27/78	12/18/78
J-044	8/11/78	11/27/78
M-648	4/4/79	Open
M-504	11/20/78	2/1/79
M-417	8/17/78	Open
M-569	2/2/79	5/2/79
E-495	2/28/79	Open
E-286	7/24/78	Open
J-047	9/26/78	12/6/78
J-065	11/1/78	Open

3. CORRECTIVE ACTION:

- a. Bechtel Project Engineering completed remedial corrective action concerning the disposition of Control Systems and Mechanical FCR/FCNs identified in this CAR. Such action was not required for Electrical FCR/FCNs as they were dispositioned within 30 days by a Resident Engineer acting in behalf of the Project Engineer in accordance with the last paragraph and Note of PEPM 4.2.14.3.

As preventive action, Control Systems and Mechanical Group Supervisors issued memoranda to discipline engineers reiterating the necessity of dispositioning FCR/FCNs within the 30-60 days required by the PEPM.

- b. Verification of implementation of corrective action to preclude recurrence was accomplished on 10/18/79, and this CAR was closed 10/25/79.

NONCONFORMANCES IDENTIFIED DURING
MP&L QA AUDIT OF BECHTEL GAITHERSBURG
JUNE 19-22, 1979

CAR Number 227

1. COMMITMENT: PEPM - Section 4.3.2.5 Rev. 4, 4/17/78, ASME Document Certification states in part:

"Calculations submitted in the form of a stress Report for the design of a component indicated under the ASME Boiler and Pressure Vessel Code shall be processed as outlined in 4.3.2.4. In addition, the responsible engineer shall prepare an ASME Document Certification (Figure 4.3i) for each stress report submitted as required per ASME Section III, and a Registered Professional Engineer, as designated by the project engineer, shall sign and seal each certification."

2. FINDING: Contrary to the above, the following Wm. Powell valve design analysis reports did not have the required certification.

9645-M-242.0 - QS - 8.0-14.0 (#D 68885)
9645-M-242.0 - QS - 8.0-12-0 (#D 69339)
9645-M-242.0 - QS - 8.0-13-0 (#D 67794)

NOTE: The three items identified as nonconforming were corrected during the audit, however, Bechtel should determine if nonconformance is generic in nature and take necessary action to correct and prevent recurrence.

3. CORRECTIVE ACTION:

a. Investigative Action:

Bechtel Project Engineering has completed its review of the vendor files to determine if ASME Stress Reports contain the required Bechtel Certification cover page. The results of the review by each discipline (Civil, Plant Design, Mechanical, Electrical and Control Systems) are as follows:

Civil - Specification 9645-C-153.0 in compliance.

Plant Design - Specifications 9645-M-147.1 - not in compliance
M-242.0 - in compliance
M-242.2 - in compliance
M-251.0 - in compliance
M-300.0 - in compliance
M-312.0 - in compliance

Mechanical - not applicable, no specification issued by
Control Systems these (2) disciplines that require ASME Stress Reports that require Bechtel Certification cover page.

NONCONFORMANCES IDENTIFIED DURING
MP&L QA AUDIT OF BECHTEL GAITHERSBURG
JUNE 19-22, 1979

3. CORRECTIVE ACTION (cont'd)

Electrical - Specification 9645-E-035.0 - not in compliance.

b. Remedial Action:

1. Plant Design discipline prepared the required ASME Document Certification for Specification 9645-M-147.1 and attached same to the Vendors Stress Report.
2. Electrical discipline prepared the required ASME Document Certification for Specification 9645-E-035.0 and attached same to the Vendors Stress Report.

c. Action to Prevent Recurrence:

Project Engineering disciplines were well informed of the requirements of the PEPM, Section 4.3.2.5 "ASME Document Certification". The disciplines reviewed their applicable vendor files to assure compliance to PEPM requirements and responded on memorandum of their results. In addition, the disciplines were asked to review their vendor files a second time to include any procurement of ASME "MC Components" that would require "ASME Document Certification" and the results of this review are also documented and on file.

- d. Corrective action verification was completed on 1/22/81 during BGA-9, and this CAR was closed 6/9/81.

MISSISSIPPI POWER & LIGHT COMPANY

AUDIT CHECKLIST

Classification A, C, N
 Appendix B of 10CFR50 Criteria(n) II III
 ANSI N45.2 (Sections) or Reg. Guide
DESIGN EXECUTION-RESPONSIBILITIES
AND INTERFACE OF RESIDENT ENGINEER
 (Subject of Commitment)

Audit Number 7
BECHTEL GAITHERSBURG

Persons Contacted:
A. ZACCARIA - Project Engr.
J. ARBAIZA - QA Engr
S. MARTIN - QR

A. COMMITMENT: PEPM SECTION 2
 (Reference) REV. 0, 4/17/78, REV 1,
2 & 5, 12/15/78

SEE ATTACHED PAGES 2.1-1 THRU 2.1-4

B. METHOD OF VERIFICATION EXAMINE DOCUMENTATION FOR
COMPLIANCE WITH PARAGRAPH 2.1 (A, B, C, D, E, F, G,
H, I, J, K)

Paragraph	Classification
2.1. A	A
2.1. B	A
2.1. C	C
2.1. D	A
2.1. E	C
2.1. F	C
2.1. G	C
2.1. H	A
2.1. I	A
2.1. J	N. - DEC 93
2.1. K	N. - DEC 92

*Classification:
 C- Conformance
 N- Nonconformance
 A- Not Audited
 NC- Nonconformance Corrected

Completed By: K. Keaney
 Date: 9-10-79
 Initials of Originator
 - Checklist Number JER-08

PEPM 2.1 A

Attachment to
JER-08
Page 1 of 34

Method of Verification:

Statement granting authority which
may be used - verification not
required.

Classification - (A - Not Audited)

PEPM 2.1 B

Attachment 4
JER-08
Page 2 of 3

B. Design changes requiring calculations to be checked must be referred to project engineering for approval.

Method of Verification:

Guidelines for determining the need for calculations for design changes are left to the Engineers judgement therefore the statement is not auditable.

It should be noted that all Design changes are returned to G'burg Engineering for review and approval after RE has made his approval

Classification : A Not Audited

PEPM
2.1 (C)

Attachment-
JER-08 ~~E~~ ^{GER 6/25/} ~~JER-25~~
Page 3 of 34

C. A record copy of each approved design change must be forwarded to project engineering for incorporation into the appropriate design drawing and for distribution and filing.

Approved Design Changes (FCRs/FCNs) are converted to DCNs

Review DCN Log for DCN Numbers assigned vs DCNs received by Project Engineering

Reviewed Change Request / Notice Log for the following FCRs

FCR

C-2091	E-518	M-645
C-2093	E-520	M-659
C-2094	E-527	M-733
C-2053	E-528	M-734
C-2054	E-536	

All were converted to DCNs as required by PEPM 4.3.1.6.1 "Drawing Change Notice (DCN,"

Classification: C - Confidential

64

PERM 2.1-D

Attachment to
JER-08
page 4 of 34

D. The Resident Engineer has the authority to approve deviations from drawing requirements which in his judgment do not require a change in design documentation. Examples are changes by moving rebar to miss anchor bolts, a small movement of imbedded drain pipe, moving pipe hangers a minimal distance which would not invalidate a stress analysis and extend or reduce projection of anchor bolts, etc.

Not Audited - Reference CAR NO. 200 for documentation and tracking of G/A concerns relative to this paragraph

Classification: Not Audited

65

E. He will prepare a monthly summary of activities which will briefly describe his actions for the past month and will include such items as may have been requested of him from time to time.

Method of Verification:

Reviewed ^{Monthly} Resident Engineer's status Report prepared by ML Rayfield, Lead Resident Engineer, for the ~~time~~ time period November 1, 1978 through May 31, 1979. The Lead Resident Engineer complies and submits a composite report for all disciplines. It was noted that ~~each~~ a summary for each discipline was not included each month however the Transmittal Memorandum contained a statement "routine activities have been omitted." Therefore it is concluded that activities for the omitted disciplines were routine. Confirmed with Mr A. Zaccaria, Project Engineer, that subject monthly reports contained management information he required to determine the actions of the Resident Engineers.

Classification: C - Conformance

66

PEPM 2.1(F)

Attachment to

JER-08
page 6 of 34

F. The Resident Engineer (R.E.) has the authority to approve Field Design Changes (FDC) prepared by field engineering in accordance with the "Field Design Change (Redline) Procedure For Pipe Hangers, Supports, Guides and Anchors." The R.E.'s approval shall be documented by his signing and dating the marked-up* design document. This approval is contingent upon submission of a Field Change Request (FCR) to Project Engineering for approval.

* REF. WP&IR No. QSA13-Z-00000Y036

1. WP&IR NO. QSA13-Z-0000Y036 has been changed to WP/P-P-100 with the same title. Review of PEPM Change. 1 ¹⁵ Page 2.1-3 Rev 2 indicated correction to procedure reference. This item is considered acceptable as change is only to procedure number and the title remains the same
2. Reviewed FCR Log for Pipe Supports as per PEPM 4.2, 14.4 "Processing of Field Change Requests / Field Change Notices"

Reviewed FCR / FCN PS-1233 PS1289
PS1241
PS1262

Changes were submitted and processed as required by PEPM 2.1 (F)

Classification: C - Confidential

documentation. Examples are changes by moving rebar to miss anchor bolts, a small movement of imbedded drain pipe, moving pipe hangers a minimal distance which would not invalidate a stress analysis and extend or reduce projection of anchor bolts, etc.

E. He will prepare a monthly summary of activities which will briefly describe his actions for the past month and will include such items as may have been requested of him from time to time.

F. The Resident Engineer (R.E.) has the authority to approve Field Design Changes (FDC) prepared by field engineering in accordance with the "Field Design Change (Redline) Procedure For Pipe Hangers, Supports, Guides and Anchors." The R.E.'s approval shall be documented by his signing and dating the marked-up* design document. This approval is contingent upon submission of a Field Change Request (FCR) to Project Engineering for approval.

* REF. *Construction Work Plan Procedures* WP/P-P-100.
WP&IR No. QSA13-Z-00000Y036

G. A Resident Engineering Light Structures Group (LSG) has been assigned to the jobsite to provide direct engineering support for the installation of safety related hangers for HVAC ducts and cable trays and conduit hangers. This group is authorized to perform calculations, revise existing drawings, initiate new drawings and to issue drawings as applicable to these installations. The performance of these functions shall be in compliance with applicable project engineering design criteria and procedures.

The Resident Engineering Light Structures Group Supervisor is authorized to sign drawings as Group Supervisor. The Resident Engineer, so designated in writing by the Project Engineering Manager, is authorized to sign/approve drawings (applicable to the function described above) for the Project Engineering Manager.

H. A Resident Power Generation Control Complex (PGCC) Engineer(s) has been assigned to the General Electric Nuclear Energy Systems Division at San Jose,

Attachment to
JCR-08
Page 8 of 34

documentation. Examples are changes by moving rebar to miss anchor bolts, a small movement of imbedded drain pipe, moving pipe hangers a minimal distance which would not invalidate a stress analysis and extend or reduce projection of anchor bolts, etc.

E. He will prepare a monthly summary of activities which will briefly describe his actions for the past month and will include such items as may have been requested of him from time to time.

F. The Resident Engineer (R.E.) has the authority to approve Field Design Changes (FDC) prepared by field engineering in accordance with the "Field Design Change (Redline) Procedure For Pipe Hangers, Supports, Guides and Anchors." The R.E.'s approval shall be documented by his signing and dating the marked-up* design document. This approval is contingent upon submission of a Field Change Request (FCR) to Project Engineering for approval.

* REF. Construction Work Plan Procedures WP/P-P-100

G. A Resident Engineering Light Structures Group (LSG) has been assigned to the jobsite to provide direct engineering support for the installation of safety related hangers for HVAC ducts and cable trays and conduit hangers. This group is authorized to perform calculations, revise existing drawings, initiate new drawings and to issue drawings as applicable to these installations. The performance of these functions shall be in compliance with applicable project engineering design criteria and procedures.

The Resident Engineering Light Structures Group Supervisor is authorized to sign drawings as Group Supervisor. The Resident Engineer, so designated in writing by the Project Engineer, is authorized to sign/approve drawings (applicable to the function described above) for the Project Engineer.

H. A Resident Power Generation Control Complex (PGCC) Engineer(s) has been assigned to the General Electric Nuclear Energy Systems Division at San Jose,

Attachment to
JER-08
Page of 34

CONSTRUCTION WORK PLAN/PROCEDURE

SPECIAL PROCEDURE
WP/P-P-100

FIELD DESIGN CHANGE (REDLINE) PROCEDURE
FOR
PIPE HANGERS, SUPPORTS, GUIDES, AND ANCHORS

REV. NO.	PREPARED BY	PFE	PROJ. SUPT.	PFQCE	DATE	QA	DATE
0	<i>DWG</i>	<i>[Signature]</i>	<i>[Signature]</i>	<i>[Signature]</i>	2-1-78		
1	<i>DWG</i>	<i>[Signature]</i>	<i>[Signature]</i>	<i>[Signature]</i>	1/16/79		

VOID
1. What does void mean & why
line drawn through?
2. why not on Rev 2?

REV. NO.	PREPARED BY	PFE	PROJ. SUPT.	PFQCE	DATE	QA	DATE
2	<i>[Signature]</i>	<i>TWT</i>	<i>[Signature]</i>	<i>[Signature]</i>	2/5/79	<i>24</i> <i>PL 3</i>	2/6/79

REV. NO.	PREPARED BY	PFE	PROJ. SUPT.	PFQCE	DATE	QA	DATE
3	<i>[Signature]</i>	<i>TWT</i>	<i>[Signature]</i>	<i>[Signature]</i>	6/8/79	<i>[Signature]</i>	6/8/79

California, to provide engineering interface of design project information



BECHTEL POWER CORPORATION
GRAND GULF NUCLEAR STATION



RECEIVED
M. P. C. L. 80

Attachment to
JER-08
Page 9(a) of 34

TELEPHONE CALL

ROUTE R. L. Scott
J. P. McGaughy, MP&
T. E. Reaves, Jr, M
A. Ramey, MP&L
J. N. Ward
A. Zaccaria
D. M. Lake
P. R. Britnell

BY Al Bettencourt OF Bechtel QA
TO Jim Reaves OF MP&L QA
DATE September 11 19 79 TIME 8:35 AM

SUBJECT WP/P-P-100 Revisions JOB NO. 9645
NUCLEAR QA (IS) ~~(IS/NOT)~~ APPLICABLE FILE NOS. 0750 / 0104
ACTION REQUIRED ~~YES~~ (NO) BY (DATE) COPY TO MP&L (YES) ~~NO~~

Returned Jim's call which questioned the revision 1 entry on the title page of
WP/P-P-100.

WP/P-P-100 Revision 1 was being processed through the review/approval cycle when
Field Engineering stopped the cycle to make additional changes. To preclude inadvertant
issuance of the WP/P-P-100, the field engineer responsible for program control lined
through the revision 1 entry and the initials of the preparer and the PFE and Project
Superintendent who had already approved the revision.

In addition to lining through the entry and initials, the responsible field
engineer initialed (RAC) and dated (1/16/79) his change and marked the revision "void".

When Field Engineering added their additional changes, Revision 2 of WP/P-P-100
was issued.

AL BETTENCOURT

70(a)



Attachment to
JER-08
page 10 of 34

TABLE OF CONTENTS

<u>SECTION</u>	<u>PAGE</u>
1.0 Introduction	3
2.0 References	3
3.0 Approval of FDC for Nuclear Class I, II, III, and Critical	3
4.0 Approval of FDC for BOP	3
5.0 Installation	4
6.0 Documentation of the FDC	4
7.0 Acceptance	4
 <u>APPENDICES</u>	
Hanger Field Design Change Flow Chart For Nuclear Class I, II, III, and Critical	5
Hanger Field Design Change Flow Chart For Balance of Plant	6

71

Attachment to
JER-08
page 11 of 34

1.0 Introduction

The purpose of this procedure is to provide guidelines for approval and documentation of Field Design Change (FDC) for Nuclear and Nonnuclear pipe hangers, supports, guides, and anchors not within the guidelines of MS-16 (Criteria For Hanger Installation).

2.0 References

WP/P-1: Establishment, Control, and Implementation of the Work Plan/Procedure Program

MS-16: Mechanical Standard - Criteria For Hanger Installation

3.0 Approval of FDC for Nuclear Class I, II, III, and Critical

3.1 The Responsible Field Engineer (RFE) shall originate the FDC by marking a copy of the approved design document showing the required variance.

3

3.2 Deleted.

3

3.3 The Responsible Field Engineer shall sign and date each marked-up copy and submit to the Resident Engineer for his concurrence. This concurrence is intended to permit fabrication and installation, and shall be subject to final approval by Project Engineering when submitted as an FCR/DCN per paragraph 6.2.

3

3.4 The Responsible Hanger Engineer (RHE) shall obtain QC Welding approval, and, if required, a new welding procedure. Four copies of the approved FDC document shall be made. The original and one copy shall be routed to the RFE. Two copies shall be routed to Welding QC. The final copy shall be placed in a log maintained by the Resident Engineer.

OK
✓

4.0 Approval of FDC for BOP

4.1 The RFE shall originate the FDC by marking a copy of the approved design document showing the required variance.

3

4.2 The RFE shall sign and date the marked-up copy and route to the Resident Engineer for his concurrence. This concurrence is intended to permit fabrication and installation, and shall be subject to final approval by Project Engineering when submitted as an FCR/DCN per paragraph 6.2.

3

4.3 Two copies shall be made of the FDC. One copy shall be placed in the Hanger Status Log. The second copy shall be placed in a log maintained by the Resident Engineer.

Attachment to
JER-08
PAGE 120 P 34

5.0 Installation

5.1 After all approvals are obtained, the RFE shall route the original copy to the Hanger Superintendent.

*Check
conversion to
DCN by Resident
Engr. ?*

5.2 The Hanger Superintendent may then proceed with fabrication and/or installation of the hanger on a risk basis, (if required) i.e., the hanger may be subject to rework or replacement when the FCR/DCN required by paragraph 6.2 is given final Project Engineer approval.

6.0 Documentation of the FDC



6.1 Upon completion of the installation, the RFE shall notify the Resident Engineer.



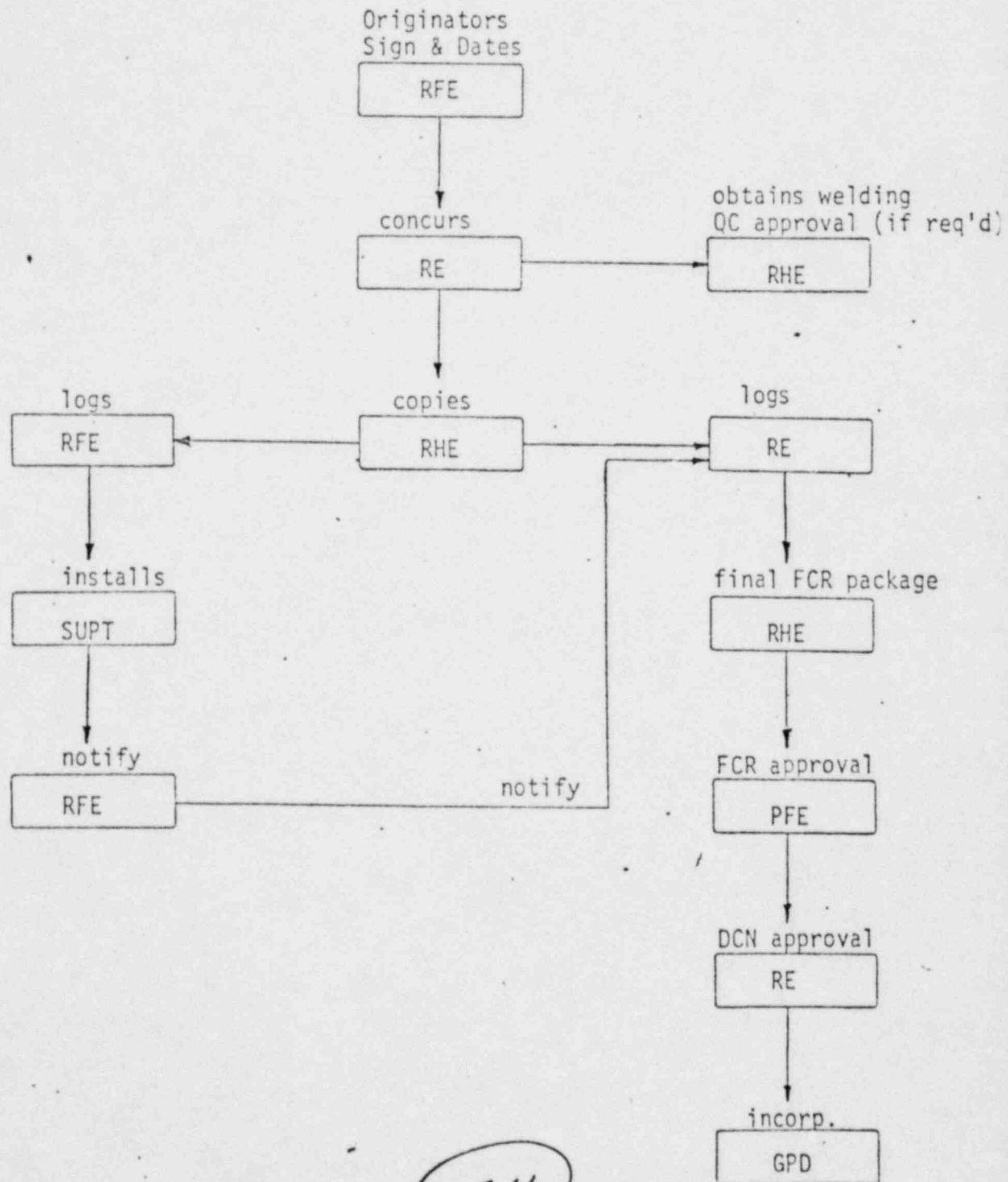
6.2 When notified by the RFE that installation is complete as redlined, the Resident Engineer shall submit the Field Change Request prepared by the RFE to Project Engineering for their approval.

7.0 Acceptance

No hanger shall be accepted as being complete by Field Engineering until the FCR/DCN or drawing revision has been approved by Project Engineering.

Attachment to
JER-08
page 13 of 34

HANGER FIELD DESIGN CHANGE
FLOW SHEET
NUCLEAR CLASS I, II, III, & CRITICAL



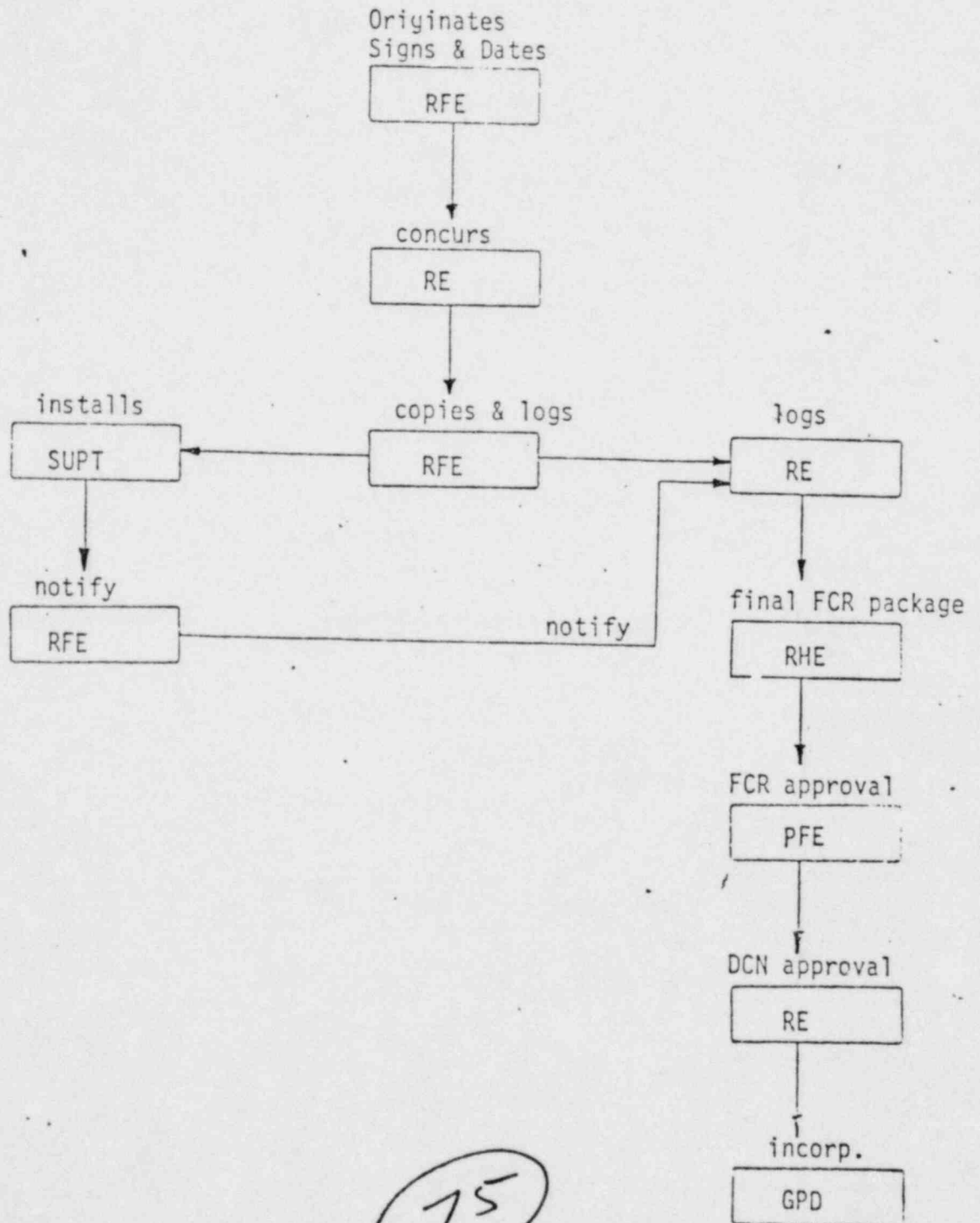
74

Attachment to
JER-08
page 14 of 34

HANGER FIELD DESIGN CHANGE

FLOW CHART

BALANCE OF PLANT (BOP)



75

PEPM

2.1(G)

Steve Martin
Attachment to
TER-08
Page 15 of 34

G. A Resident Engineering Light Structures Group (LSG) has been assigned to the jobsite to provide direct engineering support for the installation of safety related hangers for HVAC ducts and cable trays and conduit hangers. This group is authorized to perform calculations, revise existing drawings, initiate new drawings and to issue drawings as applicable to these installations. The performance of these functions shall be in compliance with applicable project engineering design criteria and procedures.

The Resident Engineering Light Structures Group Supervisor is authorized to sign drawings as Group Supervisor. The Resident Engineer, so designated in writing by the Project Engineering Manager, is authorized to sign/approve drawings (applicable to the function described above) for the Project Engineering Manager.

~~H. A Resident Power Generation Control Complex (PGCC) Engineer(s) has been assigned to the General Electric Nuclear Energy Systems Division at San Jose, California, to provide engineering interface between Project Engineering and~~

2.1-3
Rev. 1
12-15-78

Method of Verification: *pk*
Reference attached Memo dated April 25, 1979, granting authority by the Project Engineer.

Classification: C - Conformance

2.1 (H)

Attachment to
JER-09
PAGE 17 of 34

H. A Resident Power Generation Control Complex (PGCC) Engineer(s) has been assigned to the General Electric Nuclear Energy Systems Division at San Jose, California, to provide engineering interface between Project Engineering and General Electric Engineering for the fabrication of the PGCC.

The Resident Engineer(s), designated in writing by the Project Engineering Manager, is authorized to issue and approve Drawing Change Notices (DCN's) (Figure 4-3b), on behalf of the Project Engineering Manager, after consultation and verbal approval by the responsible Project Engineering Group Supervisor or his designee. Verbal concurrence must also be obtained from MP&L on all PGCC documents (panel layouts, etc.) originally reviewed and approved by them. These verbal consultations shall be documented in a Telephone Memorandum by the Resident Engineer (Figure 4-2c).

After the DCN has been signed and approved by the Resident PGCC Engineer, he may issue a copy directly to GE, and forward the original to Project Engineering for processing and distribution in accordance with paragraph 4.3.1.6.1 of the Project Engineering Procedures Manual.

The Resident Engineer will receive functional direction and technical guidance from, and will report to, the Project Engineer or, in his absence, to either of the Assistant Project Engineers. The Resident Engineer shall comply with the requirements of the Project Engineering Procedures Manual as applicable.

CN

Not Audited as a separate function

Classification: A Not Audited

(18)

2.1 (I)

Attachment to
JER-08
Page 18 of 34

- I. A Resident Engineer (PGCC) has been assigned to the jobsite, on a scheduled basis, to augment liaison between Project Engineering, Field Construction and the Check-out and Turnover Organization (CTO) in the fabrication and installation of the Power Generation Control Complex. PGCC problems identified by Project Engineering shall be coordinated through the PGCC engineer and documented in accordance with CTO procedures. The Project Engineer has delegated authority to the PGCC Resident Engineer as defined in preceding Sections 2.1(A) through 2.1(F) of these procedures.

Statement granting authority - functions
will not be audited separately

Classification : A - Not Audited

(79)

2.1(J)

Attachment to
JER-08
Page 19 of 34

(J) To expedite the processing of deviation requests received from Subcontractors, and Suppliers for Field Procurement, the Lead Resident Engineer has been authorized by the Project Engineer to disposition and approve "accept as is" and "repair" action SDDR's. The Lead Resident Engineer shall coordinate with the cognizant Group Supervisor and the Project Quality Engineer or his designee for concurrence of disposition/rationale, and document all communication with a telecon memo (Figure 4-2 t). He shall acquire an SDDR control number from the Project Quality Engineer and record the number on the original SDDR.

The Lead Resident Engineer shall complete the SDDR form as required by Procedure 4.2.17 and sign and date for the Project Engineer in block 20 of the SDDR. The SDDR original and a copy of the telecon memo shall be transmitted to Project Engineering for further processing in accordance with Procedure 4.2.17.4 of the PEPM. A copy of the approved SDDR shall be submitted to Field Sub-contractors to extend authorization to the Subcontractor or the Project Field Engineer to extend authorization to the Supplier.

Finding

Objective evidence was not available that LRE coordinated with the Project Quality Engineer or his designee for concurrence of rationale/disposition for SDDR# NOB M-618.1-004.

Reference DEC R NO 93

Classification: ~~N~~
JER
8/20/19 - Nonconformance

Attachment to
JEL-08
page 20 of 34

CN #74 → To PEPM Section 2.1 (J)

Tom R.

GPD is receiving Telcon's of agreement on subcontract SDDR's - except for SDDR's being provided by S/C M-618.1.

Reason, the disposition drawing review is provided by Project Engineering extension at Grand Gulf (Light Structures Group).

Project Engineering is providing rationale and ~~concurrence~~ approval.

Due to this condition, the Resident Eng. has not initiated a Telecon, since he is only calling for SDDR Number and assigning same to the SDDR, that LSG provides disposition.

Tom, the PEPM Section 2.1 (J) will be looked at for clarification.

(81)

JA

6-21-79

TRANSMITTAL

Attachment to
JER-08
page 21 of 34BECHTEL POWER CORPORATION
GAITHERSBURG POWER DIVISION15740 Shady Grove Road
Gaithersburg, Maryland 20760TO: O. B. Cannon & Son, Inc.
P. O. Box 471
Port Gibson, Mississippi 39150

DATE: May 3, 1979 VDT- 79/1015

MIDDLE SOUTH ENERGY, INC.

BECHTEL JOB 9645

SPECIFICATION NO. 9645-A-039.0

ATTN: Mr. R. B. Roth

BECHTEL FILE NOS. 0601/0675/ A-039.0

_____ Sepias	Encl. <input type="checkbox"/>	Under Sep. Cover <input type="checkbox"/>
_____ Prints	Encl. <input type="checkbox"/>	Under Sep. Cover <input type="checkbox"/>
_____ Microfilm	Encl. <input type="checkbox"/>	Under Sep. Cover <input type="checkbox"/>
_____ Specs	Encl. <input type="checkbox"/>	Under Sep. Cover <input type="checkbox"/>
_____ Vellums	Encl. <input type="checkbox"/>	Under Sep. Cover <input type="checkbox"/>
<u>1</u> Other	Encl. <input checked="" type="checkbox"/>	Under Sep. Cover <input type="checkbox"/>

SDDR

QA (IS) ~~IS NOT~~ APPLICABLE

ACTION NUMBER

1. Approved - Manufacturing may proceed.
2. Approved - Submit final dwg. - Mfg. may proceed.
3. Approved except as noted - Make changes and submit final dwg. - Mfg. may proceed as approved.
4. Not Approved - Correct and resubmit.
5. Review not required - Mfg. may proceed.
6. Comment/Approval Due Date _____
7. Information Only
8. Other See attached SDDR

Action No.	Vendor/Bechtel Document No.	Master Parts List Number	DESCRIPTION		Title
			Rev.	Date Issued	
8	SDDR-A-039.0-005			5/1/79	Supplier Deviation Disposition Request

GS/nl

cc: L. F. Dale w2w/1
C. K. McCoy w/1
T. E. Reaves w/1
P. Sly w/1
Dr. D. C. Gibbs w/1
D. M. Lake w/4
R. A. O'Neil w/1
D. E. Trapold w/1

bcc: G. Singh w/1
 W. Turner w/1
 L. Rayfield w/1
 P. Britnell w/1
 R. Scott w/1
 J. Roemer w/1

Very truly yours,



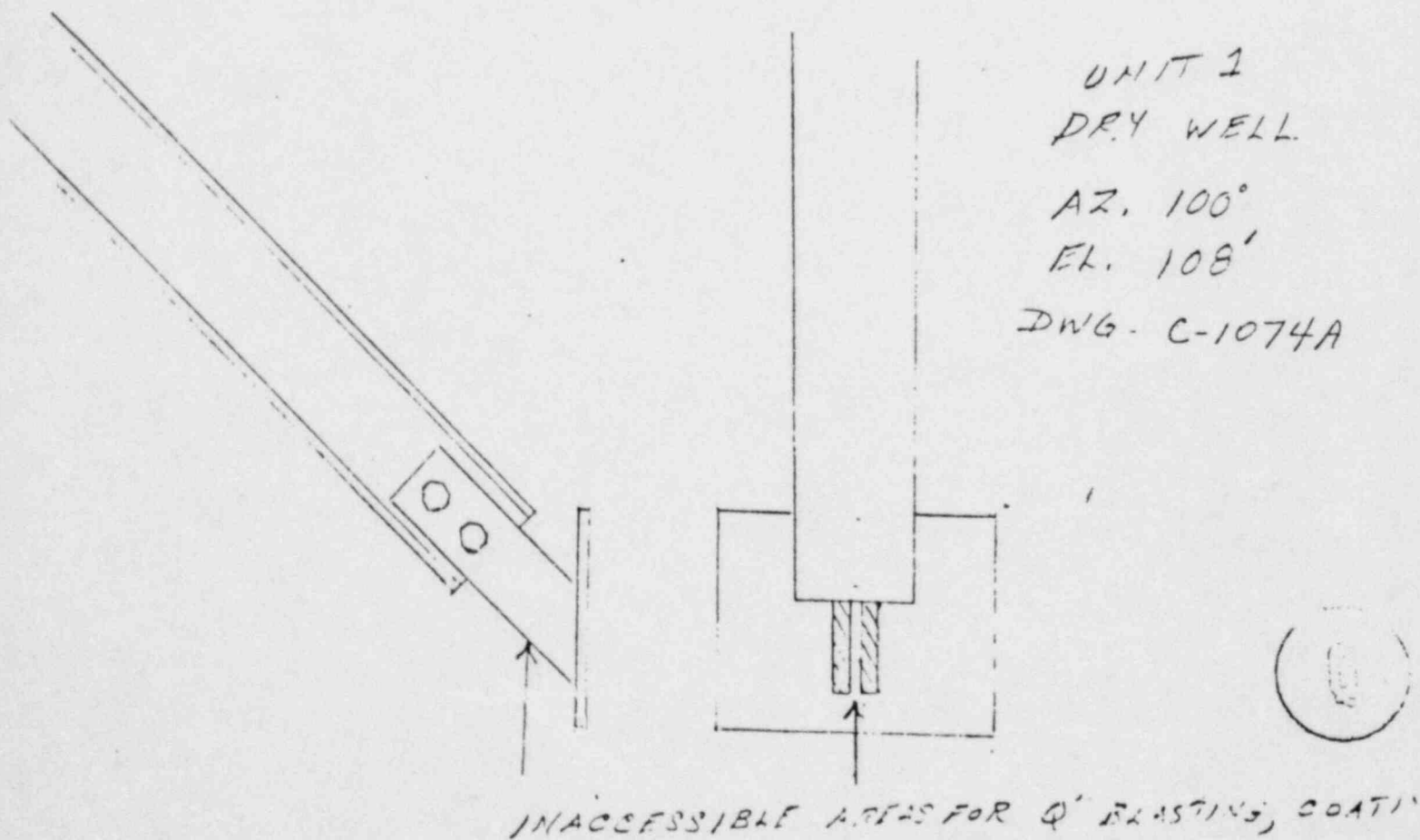
Supplier Deviation Disposition Request

Attachment to
JCR 08 Page 22 of 34



7 Deviation Affects		FOR BECTHEL USE	
Design Criteria: SAR		Bechtel SDDR NO	Date Received
Codes or Sids?		A-039.0-005	3-16-79
1 Supplier's Name		Address	
O. B. Cannon & Son		P. O. Box 471	
2 Supplier's Dwg. No		City & State	
N/A		Port Gibson, MS	
3 Supplier's Part No		Zip	
Type 51		39150	
4 Supplier's Part Name		5 Spec. No. and Rev	
Brackets		9645-A-039.0/11	
6 Previous SDDR (No. & Date)		7 Buyer's Part No	
A-039.0-003 10/17/78		Type 51	
8 Buyer's Part Name		9 Buyer's Part Name	
Brackets		Brackets	
10 P.O. No. and Rev		11 Equipment No.	
None		N/A	
12 Qty. or Serial No		13 Deviation Description (Attach extra sheets, photographs, sketches, etc. as necessary)	
19		Inaccessible areas for class 1 blasting, coating and documentation Unit 1 Dry Well El. 108' sketch attached (ATTACHMENT #1)	
14 Supplier's Disposition Classification		<input type="checkbox"/> Accept As Is <input type="checkbox"/> Repair <input checked="" type="checkbox"/> Other	
15 Proposed Disposition and Technical Justification		Wave Spec. Reprint	
Request Bechtel instruction			
16 Associated Supplier Document Change(s)		N/A	
17 Supplier's Authorized Representative			
Name R. A. Small F.Q.C.I.		C.A. Small	
Date 3/12/79			
18 Bechtel Engrg. Action			
<input checked="" type="checkbox"/> Accepted <input checked="" type="checkbox"/> Rejected <input type="checkbox"/> Rejected-Resubmit			
19 Bechtel Disposition Statement including Justification (Attach extra sheets, sketches, etc. as necessary)			
BASED UPON SPECIFICATION A-039.0, REVISION 12 ISSUED ON 4-10-79, THIS DEVIATION REQUEST IS NO LONGER APPLICABLE. REFER TO PARAGRAPH 11.8 FOR REVISED REQUIREMENTS. (SEE ATTACHMENT #2)			
RE Signature George Halverson		Date 5/11/79	
20 Bechtel Engineering Approval		Verification Signatures	

Attachment to
JER-08
page 23 of 34





ATTACHMENT "2"
SDDR-A-039.0-005
BECHTEL POWER CORPORATION
GRAND GULF NUCLEAR STATION

Alt to
JER-08
PAGE 24 OF 34



TELEPHONE CALL

ROUTE F. SMITH

BY M. L. RAYFIELD OF GPD - SITE

G. SINGH

TO G. SINGH OF GPD

W. TURNER

DATE APRIL 19 19 79 TIME _____

SUBJECT SDDR A-039.0-005

JOB NO. 9645

NUCLEAR QA (IS) (~~IS NOT~~) APPLICABLE

FILE NOS. A-039.01

ACTION REQUIRED (~~YES~~) (NO) BY (DATE) _____

COPY TO MP&L (~~YES~~) (NO) _____

REFER TO SPECIFICATION REVISION 12, ISSUED
ON 4-10-79.

PARAGRAPH 11.8 HAS BEEN ADDED TO REVISE
THE REQUIREMENTS FOR BLASTING & COATING
OF INACCESSIBLE AREAS INSIDE THE CONTAINMENT.

THEREFORE, THIS DEVIATION REQUEST IS NO
LONGER APPLICABLE.

M. L. Rayfield
4/19/79



TRANSMITTAL

Att. to SER-08
Page 25 of 34BECHTEL POWER CORPORATION
GAITHERSBURG POWER DIVISION15740 Shady Grove Road
Gaithersburg, Maryland 20760TO: General Mechanical Contractors, Inc.
8107 Interstate 30, Box 9219
Little Rock, Arkansas 72219

DATE: February 26, 1979 VDT- 79/0463

MIDDLE SOUTH ENERGY, INC.

BECHTEL JOB 9645

SPECIFICATION NO. 9645-M-618.1

BECHTEL FILE NOS. 0801/0675/M-618.1

ATTN: Mr. C. Swindler

ACTION NUMBER

1. Approved - Manufacturing may proceed.
2. Approved - Submit final dwg. - Mfg. may proceed.
3. Approved except as noted - Make changes and submit final dwg. - Mfg. may proceed as approved.
4. Not Approved - Correct and resubmit.
5. Review not required - Mfg. may proceed.
6. Comment/Approval Due Date _____
7. Information Only
8. Other See attached SDDR

_____ Sepias	Encl. <input type="checkbox"/>	Under Sep. Cover <input type="checkbox"/>
_____ Prints	Encl. <input type="checkbox"/>	Under Sep. Cover <input type="checkbox"/>
_____ Microfilm	Encl. <input type="checkbox"/>	Under Sep. Cover <input type="checkbox"/>
_____ Specs	Encl. <input type="checkbox"/>	Under Sep. Cover <input type="checkbox"/>
_____ Vellums	Encl. <input type="checkbox"/>	Under Sep. Cover <input type="checkbox"/>
1 Other	Encl. <input checked="" type="checkbox"/>	Under Sep. Cover <input type="checkbox"/>

SDDR

QA (IS) (IS NOT) APPLICABLE

Action No.	Vendor/Bechtel Document No.	Master Parts List Number	Rev.	Date Issued	Title
8	SDDR-M-618.1-004			2-16-79	Supplier Deviation Disposition Request

Note: Please sign ORIGINAL SDDR in Block 21 and retain for your files. (Do not return any copies to the Bechtel Project Engineer.)

Please include a copy of the SDDR (including attachments and approval data from Bechtel) with your shipment data package for the items to which the SDDR applies. In addition, make reference to the deviation (SDDR Number), in column 12 of the G-321-C form (Appendix "B" to the Specification).

Acceptance of a Deviation Request by Bechtel does not relieve the Seller from responsibility for the accuracy, adequacy or suitability of the items or the procurement documents.

PJR/dn dk

cc: L. F. Dale w/2w/1
C. K. McCoy w/1
T. E. Reaves w/1
P. Sly w/1
Dr. D. C. Gibbs w/1
D. M. Lake w/4
R. A. O'Neil w/1

bcc: A. Menendez w/1
W. Turner w/1
G. Niessen w/1
R. Scott w/1
J. K. Parikh w/1
P. Rombold w/1
P. Rombold w/1

Very truly yours,

Supplier Deviation Disposition Request

ATT to JER-08
PAGE 26 of 34



7. Deviation Affects Design Criteria SAR		FOR BECTEL USE	
Covers or Sigs?	YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	Bechtel SDDR NO M618.1-004	Date Received 12-4-78
CONTAINMENT			
1 Supplier's Name GENERAL MECHANICAL CONTRACTORS, INC		Address 8107 INTERSTATE 30 BOX 9219 LITTLE ROCK, ARKANSAS City & State AR 72219	
2 Supplier's Dwg. No. See #12	3 Supplier's Part No. See #12	4 Supplier's Part Name DUCT SUPPORT	5 Spec. No. and Rev. M-618.1 REV.1
		6 Previous SDDR (No. & Date) -003 12-4-78	7 Equipment No. see #12
8 Buyer's Part No. See #12		9 Buyer's Part Name DUCT SUPPORT	10 P.O. No. and Rev. M-618.1 REV.0
11 Deviation Description (Attach extra sheets, photographs, sketches, etc. as necessary)			
12 Qty. or Serial No. 13 Deviation Description (Attach extra sheets, photographs, sketches, etc. as necessary)			
NIM4IG002H09	REV. 0 GMC drawing # 1473	ATTACHED DESIGNS DO NOT COMPLY WITH SPEC. M-618.1 APP. "Y".	
NIM4IG003H03	REV. 1 1474		
NIM4IG003H04	REV. 1 1474		
NIM4IG003H05	REV. 1 1474		
NIM4IG003H06	REV. 1 1474		
NIM4IG003H07	REV. 1 1474		
14 Supplier's Disposition Classification			
<input type="checkbox"/> Accept As Is		<input type="checkbox"/> Repair	
<input checked="" type="checkbox"/> Other MODIFY BUYER'S REQUIREMENT			
15 Proposed Disposition and Technical Justification			
ACCEPT THE ATTACHED DESIGNS, SINCE THE SUBJECT SUPPORTS CANNOT BE DESIGNED IN ACCORDANCE WITH THE SPECIFICATION.			
CONSTRUCTION ACTION REQUIRED			
16 Associated Supplier Document Changers) SEE #12			
17 Supplier's Authorized Representative			
Name	Jim Roeder		Date 12/4/78
<input checked="" type="checkbox"/> Accepted <input type="checkbox"/> Rejected <input type="checkbox"/> Rejected-Resubmit			
19 Bechtel Disposition Statement including Justification (Attach extra sheets, sketches, etc. as necessary)			
NIM4IG002H09 - APPROVED AS NOTED (ATTACHMENTS 7 & 6) BASED ON DESIGN REVIEW AND NOTED REVISIONS, STRUCTURAL INTEGRITY IS NOT IMPAIRED, BECTEL SUB-CONTRACTS ADMIN. SHALL VERIFY IMPLEMENTATION.			
NIM4IG003H03 - APPROVED WITHOUT COMMENT			
NIM4IG003H04 - " " "			
NIM4IG003H05 - " " "			
NIM4IG003H06 - " " "			
NIM4IG003H07 - " " "			
(FIELD ENGR. NOTIFIED 2-14-79 TELECON. R.R. GEORGE TO P. VANSTALK) RRG			

Need Approval

SDDR-M-618.1-004
ATTACHMENT 1.

2 M-1 GANER - FAB TICKET

See HS-1, detail #2

Imbed, type 101, 1 1/2
x 1 1/2

See HS-2, detail #2A
typ. 2 pieces

See HS-1, detail #3

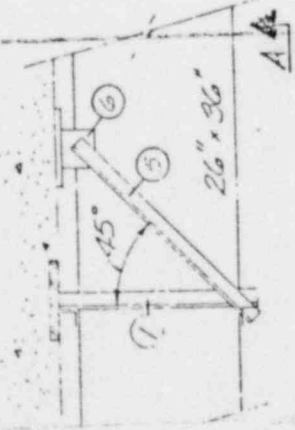
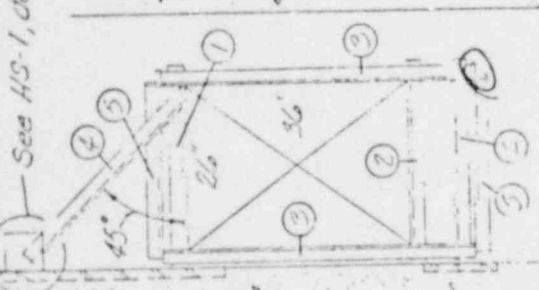
B.O.D. at 177'-0"

SECTION A-A
1/2" = 1'-0"

SECTION E-E
1/2" = 1'-0"

floor el. 170'-0"

FLAN VIEW
SECTION "A-A"
1/2" = 1'-0"
REQUIRED



Material Used
(Completed by Shop)

Material Weight
(Comp. by Shop)

Item	Qty.	Wt.
1	2' 7 1/2"	2 1/2 x 2 1/2 x 1/4"
2	2' 7 1/2"	2 1/2 x 3 1/2 x 1/4"
3	2' 3"	2' 2' 1/4"
4	2' 0"	2 1/2 x 2 1/2 x 1/4"
5	2' 3"	2' 2' 1/4"
6	2' 6' 0 1/4"	plate
7	2' 7' 1-0"	plate
8	2' 3' 1/4"	Rock-Ecks
9	2' 4' 1/4"	plate

Shop Checker:

Specifics by Site

Angles

Sheets

Gauge

Weld Procedure No.

Sheet to Sheet

Sheet to Angle

Angle to Angle

Sealant:

Q or Non-Q

Unit 1-2 or S Rec

System Hardware No.

4/11/10003402

Ticket & Piece No.

Ref. Dwg. No. 16-45 M-1474

Rev: 12 Date: 9/2/96

Rev Date Drawn

File G.I

Form No. MSM-33

To Shop: AM

Wanted: 44

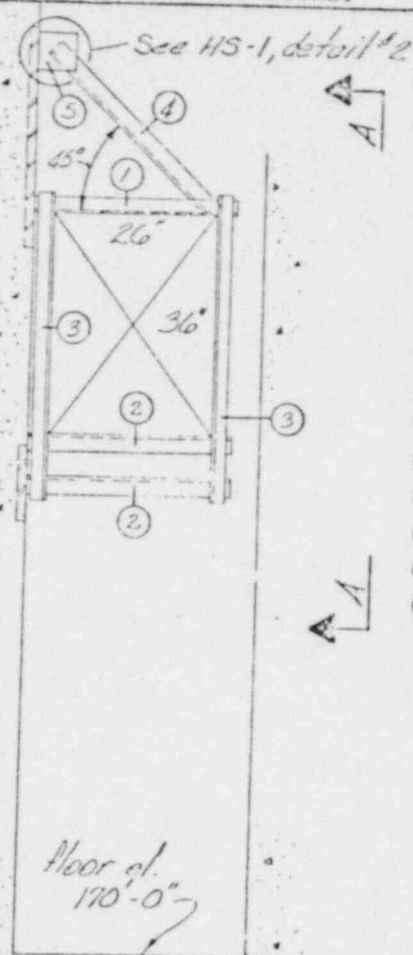
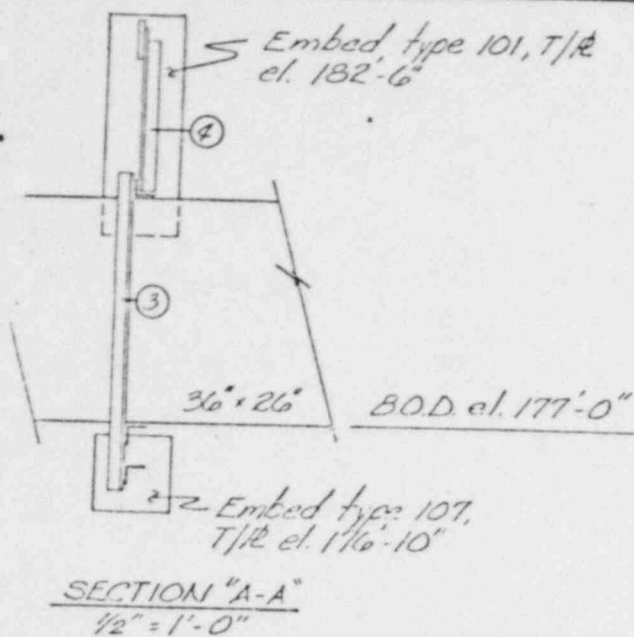
Job No. 825

pk

Att to
JER-08
Page 27 of 34



2 OVER 1 HANGER - FAB TICKET



Need Approval
SDDR-A-618.1-004
ATTACHMENT 2.

[illegible]

Shop Checker:

Total Wt	
----------	--

Specifications (Completed by Site)

Angles, etc		Sheets	Gauge
Weld Procedure No.	Misc. Requirements		
Sheet to Sheet			
Sheet to Angle			
Angle to Angle	Sealant:		

Weld Procedure No.	
--------------------	--

Misc. Requirements				
--------------------	--	--	--	--

Sheet to Sheet

Sheet to Angle

Angle to Angle

Sealant:

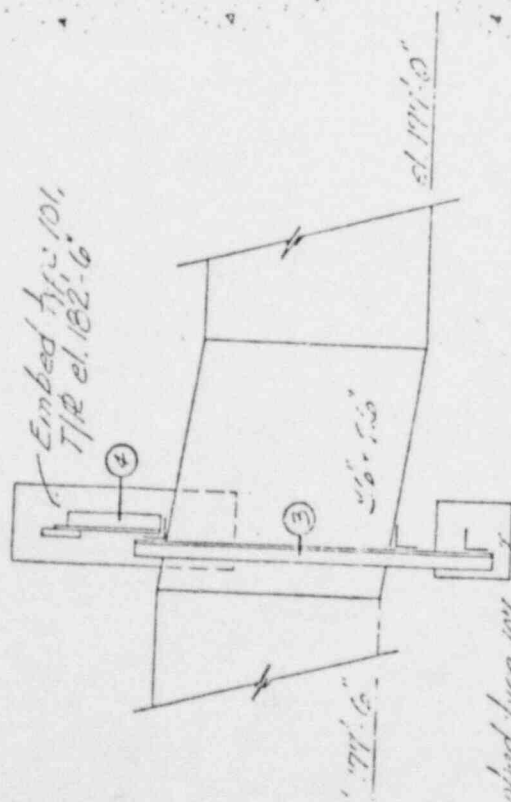
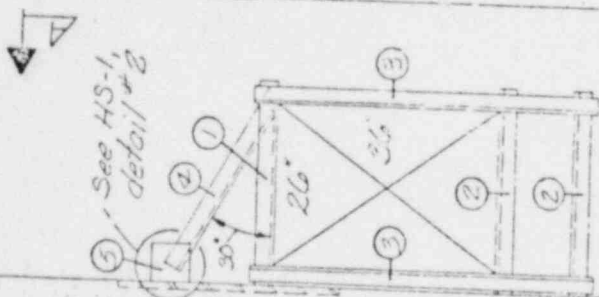
Q or Non-Q	GMC
Unit 1-2 or S Piece	
System Hardware No.	

Ref. Dwg. No. 9645 M-1474		Angle to Angle E-7018		Sealant:	
GMC	Rev: 12	Date: 9/21/78			Q or Non-Q GMC
					Unit 1-2 or S Piece
		11/20/78	GGC		System Hardware No.
	Rev	Date	Drawn	Site G.I.	
Form No. MSM-33		To Shop: NA		Wanted: NA	
				Job No. 825	
				Ticket & Piece No.	

OK

Att. to
JEN-08
page 28 of 34

45DDP-M-618.1-004
ATTACHMENT 3.



SECTION "A-A"
42" = 1'-0"

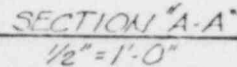
CONSTRUCTION
ACTION REQUIRED

INCLOSURE V PAGE 40

Material Used (Completed by Shop)		Material Weight (Comp. by Shop)	
Pcs	Cut Size	Qty.	Wt.
1	2' 7 1/2" x 2' 2 1/4" x 1/4"		
2	2' 7 1/2" x 2' 3 1/4" x 1/4"		
2	2' 8" x 2' 2 1/4" x 1/4"		
1	2' 9" x 2' 3 1/4" x 1/4"		
1	4' 10" x 0' 6" plate		
Shop Checker:		Total Wt.	
Specifications (Completed by Site)			
Angles, etc.	Sheets	Gauge	
Old Procedure No.	Misc. Requirements		
Sheet to Sheet			
Sheet to Angle			
Angle to Angle	Sealant:		
Q or Non-Q		GMC	
Unit 1-2 or S Piece		System Hardware No.	
Job No. 825	Ticket & Piece No.		

Att. to
JCR-08
page 29 of 34

90



CONSTRUCTION
ACTION REQUIRED

INFORMATION ONLY

Specifications (Completed by Site)

Weld Procedure No.	Misc. Requirements
--------------------	--------------------

Sheet to Angle		
----------------	--	--

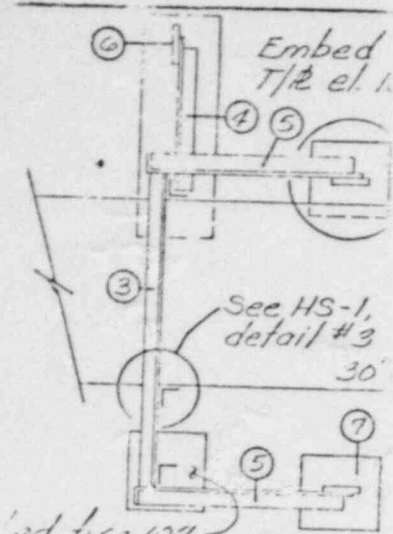
		Q or Non-Q	GMC
--	--	------------	-----

Q or Non-Q	GMC
Unit 1-2 or S Piece	
System Hardware No.	

N	1	A	4	/	G	0	0	3	4	0	4
Ticket & Piece No.											

OK

Att to
JER-08
Page 30 of 34

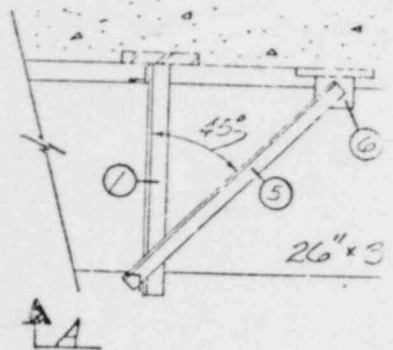


See HS-2 detail #3A
typ. 2 places

See HS-1,
detail #3

B.O.D. at 177'6"

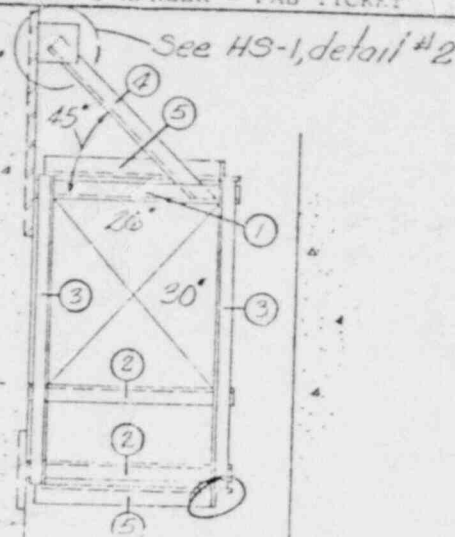
SECTION
N.



PLAN VIEW
N.T.S.

N.T.S.

N.T.S.
STRUCTION
N REQUIRED



SECTION "B-B"

Floor el.
177'-0"

11
SDDR-M-518.1-004
ATTACHMENT 5.

Material Used
(Completed by Shop)

Material Weight
(Comp. by Shop)

	Pcs.	Cut Size	Item	Qty.	#	Wt.
①	1	2'-7 1/2"	2" x 2" x 1/2"			
②	2	2'-7 1/2"	2 1/2" x 2 1/2" x 1/4"			
③	2	4'-2"	2" x 2" x 1/4"			
④	1	2'-0"	2" x 2" x 1/4"			
⑤	2	3'-3"	2" x 2" x 1/8"			
⑥	3	1/2" x 6" x 0'-6"	plate			
⑦	2	3/4" x 12" x 1'-0"	plate			
⑧	8	3/4" x 6" x 7"	hook bolts			
⑨	1	1/4" x 1 1/4" x 2"	plate			

INFORMATION ONLY

Shop Checker:

Total Wt.	
-----------	--

Specifications (Completed by Site)

Angles, etc

Sheets	Gauge
--------	-------

Weld Procedure No.	
--------------------	--

Misc. Requirements	
--------------------	--

Sheet to Sheet

Short to Angle

Angle to Angle

Sealant:

Q or Non-Q	GMC
Unit 1-2 or S Piece	
System Hardware No.	

Ref. Dwg. No. 9645 M-1874

Rev: 1/2

Date: 9/9/1982

1	10/30/78	GGC
---	----------	-----

Rev	Date	Drawn	Site G.R.
-----	------	-------	-----------

Form No. MSM-33

To Shop: *NA*

Wanted: *NA*

Job No. 875

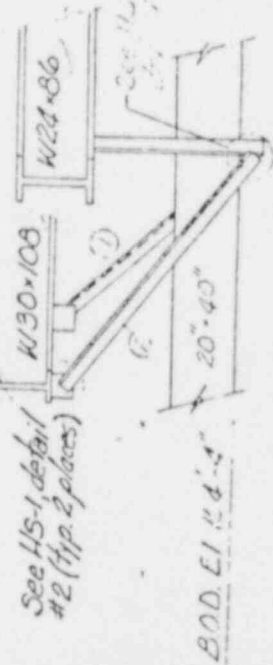
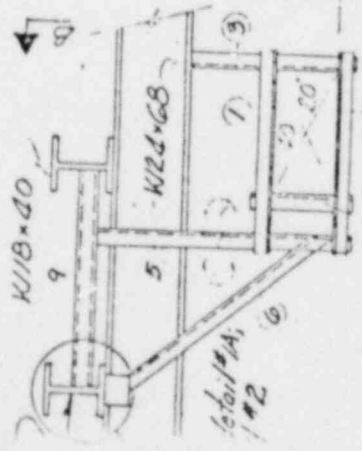
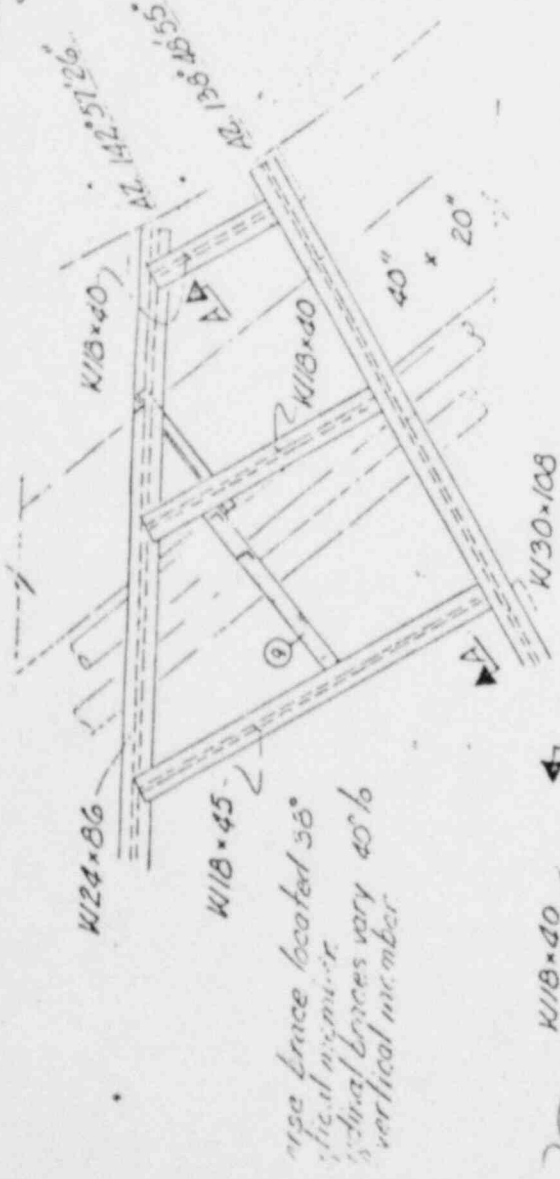
Ticket: 6 8 1 0 0 0 - 1111

of

Att to
Jerr-Og
Page 31 of 3

YOUNG

No. and Serial (Completed by Shop)		Material Weight (Comp. by Shop)	
Qty.	Mat.	Qty.	Mat.
1	4'-11"		2 1/2 x 3 1/2 x 5/16"
1	4'-11"		3 1/2 x 3 1/2 x 5/16"
1	4'-3"		2 1/2 x 3 1/2 x 5/16"
1	7'-5"		"
1	7'-3"		"
1	7'-5"		1 1/2 x 2 1/2 x 1/16"
1	7'-5"		2 x 1 x 1/16"
1	8'-0"		"
1	5'-9"		5 1/2 x 1 1/4 x 5/16"
4	4'-1 1/2 x 16'-3"		clips
3	1 1/2 x 6'-0"		plate
1	1 1/8 x 4 1/2 x 40"		plate
Total of items:		Total Wt.	



See 45-1, detail
#2 (typ. 2 places)

800.EL 12.4.4

INFORMATION ONLY

[illegible]

Att. to
JER-08
page 33 of 34

94

2.1(K)

CN 91
Att to JER
JER-09
Page 34 of 5

- (K) The Lead Resident Engineer shall approve the QA Program submitted by GE I&SE for work performed under GE-NED FDI No. 44/42382. This approval is limited to the verification that the subject QA Program has been approved by GE-NED.

Non conformance :

Objective evidence not available that LRE has approved GE I&SE QA Program. *

Reference DEC R NO. 92

Classification N-Nonconformance

(95)

MISSISSIPPI POWER & LIGHT COMPANY

AUDIT CHECKLIST

Classification (* N, NC, A)
Appendix B of 10CFR50 Criteria(n) III VI
ANSI N45.2 (Sections) or Reg. Guide

Audit Number 7
BECHTEL GAITHERSBURG

CHANGE REQUEST/NOTICE CR/N
(Subject of Commitment)

Persons Contacted:

JOE GRAY - DISC. QE
STEVE MARTIN - DISC. QE
DEBBIE ALEXANDER, PROJECT
TOM ELSTNER, DEPT. ADMIN
NANCY LEE, DOC. CONTROL SUPER
CLARENCE LUMFORD GER 6/29/79
GLADYS MUMFORD, ADMIN. CL
BRUCE FANCHFIELD, DISC. QE
JOE ARBIAZA, PGE
JOE ARBIAZA, PGE
2
QE 6/2

A. COMMITMENT: PEPM SECTION 4.2.14,
(Reference) REV. 2, 5/24/77; REV. 3,
12/1/77; REV. 5, 12/15/78;
REV. 6, 12/15/78; REV. 7,
12/15/78 & 2/5/79.

SEE ATTACHED PAGES 4.2-28 THRU 4.2-35
& APPENDIX G, EXHIBIT A

B. METHOD OF VERIFICATION EXAMINE A SAMPLING OF
CR/Ns FOR COMPLIANCE WITH PARAGRAPHS
4.2.14 & APPENDIX G, EXHIBIT A.

C. FINDINGS*(Classification): SEE ATTACHED
MATRIX CLTER-13 PAGES 1-8.
See page 3 of 8 for NC GER 8/25/79
See page 8 of 9 GER 6/29/79
See page 4 of 47 for NC's
See page 9 of 47 for N's. (CAR 226 & DEC 91)

*Classification:
C- Conformance
N- Nonconformance
A- Not Audited
NC- Nonconformance Corrected
During Audit

Completed By: J. E. Pene
Date: 6/21/79
Initials of Originator
-Checklist Number JER-13

1. SELECT A SAMPLE OF "Q" AND "NON Q" RECEIVED WITHIN PAST YEAR FROM FILES 0075 (DCN'S), 0162 (DEVIAT 0080 (FCR'S) / FCN'S - DISAPPROVED & 0076 (SCN) FOR EACH OF THE FOLLOWING DISCIPLINES:

- ARCHITECTURAL
- CIVIL
- CONTROL & INSTRUMENTATION
- ELECTRICAL
- MECHANICAL

2. VERIFY THAT THE FCR/FCN'S WERE LOGGED IN THE PROJECT FCR LOG.
3. VERIFY THAT THE FCR/FCN'S WERE LOGGED IN THE DISCIPLINE FCR LOG.
4. VERIFY COMPLIANCE TO REQUIREMENTS
5. SELECT A SAMPLE OF FCR-FCR/FCN'S FROM DISCIPLINE LOG. VERIFY IN APPROPRIATE FILE AND IN PROJECT LOG. VERIFY COMPLIANCE TO REQUIREMENTS.
6. SELECT A SAMPLE OF FCR-FCR/FCN'S FROM ~~THE PROJECT FCR LOG~~. VERIFY IN APPROPRIATE FILE AND DISCIPLINE LOG. VERIFY COMPLIANCE TO REQUIREMENTS.

The Project
Log
JER
6/24/79

7. • SELECT A SAMPLE OF ITEMS FROM THE GRAND GULF 10 CFR 50.55(c) / 10 CFR 21 REPORT LOG. VERIFY COMPLIANCE TO REQUIREMENTS. (PROJECT ENGINEER IS TO ESTABLISH LOG PER EXHIBIT A, PAR 3 & NP&L FOR BECHTEL EVALUATION. CHECK TO SEE THAT THEY ARE PROPERLY LOGGED AND FOR COMPLIANCE TO REQUIREMENTS.

Att to JER-13
page 1 of 47

FROM FILES		(2 EACH DISCIPLINE)		IN		Q/No	
No.	FCR-FCR/FCN#	FILE	DATE	DISCIPLINE	FCR-FCR/FCN#	FILE	Q/No
			REG. DISP.				
NOT AUDITED							
att & SER-13							

COMMENTS

P. E. Pen
6/21/79

No.	FCR-FCR/FCN	FILE	DATE		DISCIPLINE	IN	
			REC.	DISP.		PROG. LOG	DISC LOG
1	M-759(5/23/79)		6/12/79	5/31/79	MECH. (1)	✓	✓
2	M-756(5/23/79)		5/30/79	5/31/79	MECH (2)	✓	✓
3	M-609(3/1/79)		3/9/79	4/12/79	MECH (3)	✓	✓
4	M-569(1/24/79)		2/2/79	5/2/79	MECH (4)	✓	✓
5	M-712(4/27/79)		5/15/79	5/17/79	FLR. DESIGN (5)	✓	✓
6	M-553(1/5/79)		1/15/79	1/23/79	FLR. DESIGN (6)	✓	✓
7	M-523(11/17/78)		12/4/78	12/6/78	PLT DESIGN (7)	✓	✓
8	E-625(5/25/79)		6/13/79		ELECTRICAL (8)	✓	✓
9	E-495(2/16/79)		2/28/79	OPEN	ELECTR. (9)	✓	✓
10	E-286(7/10/78)		7/24/78	OPEN	ELECTR (10)	✓	✓
11	E-597(5/3/79)		5/15/79	5/24/79	ELECTR (11)	✓	✓
12	J-065(10/24/78)		11/1/78	OPEN	CONTROL (12)	✓	✓
13	J-047(9/15/78)		9/26/78	2/1/79	CONTROL (13)	✓	✓
14	J-096(4/13/79)		4/18/79	5/11/79	CONTROL (14)	✓	✓
15	C-2032(1/3/79)		1/8/79	1/9/79	CIVIL (15)	✓	✓
16	C-2049(2/8/79)		2/21/79	3/5/79	CIVIL (16)	✓	✓
17	C-2078(4/21/79)		4/18/79	4/26/79	CIVIL (17)	✓	✓

(521)

Comments: ① M-0039D Rev. Covered to DCN # 5/31/79 ② DCN 7 (M-10614 Rev 8) Transmitt
 79/4564 (4/1/79) ③ M-10614 Rev 4 Covered to DCN # 5/4/79 ④ DCN 79/2615 (4/4/79) ⑤ M-02 Rev 20 COT T.
 (5/3/79) DISAPPROVED ⑥ M-013 Rev 12 Covered to DCN # 10/5/18/79) ⑦ M-2856 Rev 9 - Disapproved
 by Res. Eng 1/8/79 - Pres. Eng Covered. ⑧ M-1475 Rev 11 - Disapproved by Res. Eng 11/28/78 -
 12/18/78 COT ⑨ E-0725H 12/3/4 Covered to Dev. D#E625 (6/11/79) ⑩ E-0725H 3C Rev 3 Covered.
 DCN # 4 2/21/79 ⑪ E-0688 Rev 14 Assisted E. Permitt 7/25/78 Covered to DCN # 10/
 ⑫ E-0725H 3A Rev 7 Covered to Dev. D#E597 (5/3/79) COT 79/4363 (5/130/79)
 ⑬ J-0104F Rev 1 Covered to DCN # 1 (11/23/7
 COT 78/7913 (12/18/78) ⑭ J-01316 Rev 3 Covered to DCN # 14/13/79 COT 79/3300 (5
 ⑮ C-1752 Rev 6 Covered to DCN # C2032 (1/3/79) COT 79/0612 (1/24/79)
 ⑯ C-1327 Rev 2 Covered to DCN # 21/3/79 Covered to 3/5/79 ⑰ C-0316 Rev 10 Covered to DC
 4/12/79 COT 79/3382 (4/27/79).

* Changes noted with * & initialed & were coordinated with
 R.E. Penn by telex on 6/24/79 gfd

J. E. Penn
 6/21/79

No.	FCR-FCR/FCR #	FILE	Date		DISCIPLINE	In	
			REC	DISP		Rec Log	Disc Log
E-393			10/11/78	11/4/79	ELECTRICAL	✓	✓ (11)
E-384-384 gce	**		9/27/78	12/18/78	"	✓	✓ (10)
E-592			5/15/79		"	✓	✓
E-557			4/18/79		"	✓	✓ (12)
E-562			12/21/78		"	✓	✓ (15)
J-071			8/11/78	11/27/78	CONTROL	✓	✓ (13)
J-044			11/1/78		"	✓	✓ (14)
J-065			4/4/79		"	✓	✓
M-648			2/13/79		"	✓	✓
M-527			11/20/78	2/11/79	"	✓	✓
M-564			9/22/78		"	✓	✓
M-455			8/17/78		"	✓	✓
M-417			4/6/79		"	✓	✓
P5-1495			4/6/79		"	✓	✓
P5-1455			4/6/79		"	✓	✓
A-135			1/12/79		"	✓	✓
C-2031			2/2/79		"	✓	✓
C-2007			12/4/78		"	✓	✓
C-2011			12/14/78		"	✓	✓

xx changes noted with xx were coordinated with R. Reno by telegram on 6/25/79 gce

See page 448-447

176

COMMENTS: 1. CLOSED IN DISC. LOG. DISPOSITIONED 12/20/78 CDT 78/6143 (12/23/78) - Not closed
 2. CLOSED IN DISC. LOG. DISC. APPROVED CDT 78/7960 12/13/78 - Not closed IN PROJ. LOG.
 3. CLOSED IN DISC. LOG. 2/12/79 CDT 79/1210 2/13/79 - Not closed IN PROJ. LOG.
 4. NOT LOGGED IN DISC. LOG. (# ON LTR). (NC) gce 4/26/79
 5. LOGGED IN DISC. LOG. CLOSED OUT 9/28/78 CDT 78/6337 (10/4/78) (NC) gce 6/26/79
 6. NOT LOGGED IN DISC. LOG. (# ON LTR). IN PLANT DESIGN. CLOSED 10/19/79 CDT 79/3113/75. N
 7. M-648 RECEIVED 4/4/79. NOT CLOSED TO DATE.
 8. CLOSED IN DISC. LOG. APPROVED 5/3/79 CDT 79/3593 5/8/79. (NC) gce 6/26/79
 9. CLOSED IN DISC. LOG. APPROVED 5/4/79 CDT 79/3626 (5/8/79) (NC) gce 6/26/79
 10. E-384 REC. 9/27/78. APPROVED 12/18/78
 11. E-393 REC 10/11/78. APPROVED 1/4/79
 12. REC 4/18/79. NOT CLOSED TO DATE - NOW-OK FOR RESERV. TOLIN.
 13. CLOSED IN DISC. LOG. 11/27/78 CDT 78-7606 (12/4/78)
 14. REC 11/1/78. NOT CLOSED TO DATE - AUSDON Pg 2048
 15. CLOSED IN DISC. LOG. 1/4/79

REQUIREMENT:

IN REPORT

CILJER-13

PEPM PAGE 4.2-31 PART 4.2.14.9.4 -
PROJECT ADMINISTRATION

2. LOG OUT IN PROJECT FCR/FCN LOG.

FINDING:

THE FOLLOWING FCR/FCNs CLOSED OUT
IN DISCIPLINE FCR/FCN LOGS BUT
NOT THE PROJECT FCR/FCN LOG.

FCR/FCN

DISC. LOG CLOSEOUT DATE

C-2011

12/20/78

C-2007

12/13/78

C-2031

2/12/79

M-455

9/28/78

M-527

3/19/79

PS-1459

5/3/79

PS-1495

5/4/79

CHECKED 6/19/79 - ENTRIES
PROPERLY MADE.

J. E. Pena
6/19/79

IN REPORT

CLOSED OUT

DURING

AUDIT

VERIFIED.

177

REQUIREMENT:

IN²

C/L JER-13

DEPM PAGE 4.2-29, PAR 4.2.14. 4.B. -
DISCIPLINE QUALITY ENGINEER

1. ENTER IN DISCIPLINE FCR/FCN LOG --.

FINDING:

FCR/FCN M-417 IS LOGGED IN THE
PROJECT FCR/FCN LOG HOWEVER IT
HAS NOT BEEN LOGGED IN THE DISCIPLINE
LOG (RECEIVED 8/17/78).

CORRECTED
DURING
AUDIT

VERIFIED
LOG ENTRY.

[Signature]
6/20/79

Att. to JER-13

page 46 of 47

178

BG 4-7

5.	
----	--

100

1000

ENCLOSURE V PAGE 53

$\frac{5}{N}$

179

BGA#7

COMMENTS (Page 40 of 7):
① RECEIVED M-609 ON 3/9/79. DISPOSITIONED 2/21/79 ③ M-569 RECEIVED 2/2/79. DISPOSITIONED:
DLC LOG WAS 4/2/79 — V-8 G.
③ RECEIVED 7/24/78 STILL OPEN
④ RECEIVED 2/28/79 STILL OPEN

att to JER-13
page 6 of 47

Q. to: Dan
6/21/79

UNITED STATES GOVERNMENT
 COMPLIANCE TO REQUIREMENTS (New-0)
 GAT-7

No.
 From Pgs
 1/2 3

7
 8
 12
 13
 14
 15
 16
 17
 18
 19
 20
 21
 22
 23
 24
 25
 26
 27
 28
 29
 30
 31
 32
 33
 34
 35
 36
 37
 38
 39
 40
 41
 42
 43
 44
 45
 46
 47
 48
 49
 50
 51
 52
 53
 54
 55
 56
 57
 58
 59
 60
 61
 62
 63
 64
 65
 66
 67
 68
 69
 70
 71
 72
 73
 74
 75
 76
 77
 78
 79
 80
 81
 82
 83
 84
 85
 86
 87
 88
 89
 90
 91
 92
 93
 94
 95
 96
 97
 98
 99
 100

A	1. 2. 3.			B	1. 2. 4. 5.					C	1. 2. 3.		
1													
2													
3													
4													
5													
6													
7													
8													
9													
10													
11													
12													
13													
14													
15													
16													
17													
18													
19													
20													
21													
22													
23													
24													
25													
26													
27													
28													
29													
30													
31													
32													
33													
34													
35													
36													
37													
38													
39													
40													
41													
42													
43													
44													
45													
46													
47													
48													
49													
50													
51													
52													
53													
54													
55													
56													
57													
58													
59													
60													
61													
62													
63													
64													
65													
66													
67													
68													
69													
70													
71													
72													
73													
74													
75													
76													
77													
78													
79													
80													
81													
82													
83													
84													
85													
86													
87													
88													
89													
90													
91													
92													
93													
94													
95													
96													
97													
98													
99													
100													

Q. 20. De
 6/21/79

att to JER-13
 pag 7 847

156A

Comments (Page 6 of 7):

- * ① J-065 Received 11/1/78. Still Open
- * ② J-047 Received 9/26/78. Approved 12/6/78

att to JER-13
page 8 of 47

Q. E. De
6/21/78

DEF/NUC Rpt # (FROM LOG)	LOG COMP. PROPERTY	3.2											3.4		3.5	3.6	3.7									
		(a)	(b)	(c)	(d)	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	(a)	(b)	(a)	(b)	(c)					
1 ATTACHED (MCAR-50)	①	N/A	N/A	✓	②	—————→											②	→	N/A	✓	N/A	✓	①	①	③	
2 ATTACHED (MCAR-46)	①	N/A	N/A	⑤	4	—————→																				
3 ATTACHED (MCAR-39)	①	N/A	N/A	✓	③	—————→											②	→	✓	⑥	✓	N/A	✓	②	①	③

183

COMMENTS: 1 LOG HAS NOT BEEN ESTABLISHED TO DATE (6/19/79) PER BILL TURNER.

- 2 Formal Evaluation Report w/ Evaluation Report # As Established by Appendix G Not Issued. MCAR-50 Response (Evaluation, Actions, Etc.) to Good and Adequate. No Evidence of Evaluation Team Assignment, Etc. In Accordance with Appendix G. (CAR 226)
- 3 No Eval. Report. No Eval. Rpt#. No Reference to MCAR-50. (Dfcr)
- 4 Records Adequate. However, Not Per Procedure Exactly.
- 5 Still in Reporting Evaluation Stage.
- 6 Process Alert # 10

Q. E. Deni
 6/21/79

4.2.14 Change Request/Notice (CR/N)

4.2.14.1 Purpose/Scope

To define the procedure for review, evaluation, disposition and control of Change Request/Notices received by Project Engineering from Field Engineering.

CN
95

The review of CHANGE REQUEST/NOTICES by Project Engineering shall include an evaluation to determine and identify any conditions reportable to NRC under 10CFR21 or 10CFR50.55(e). (Reference: PEPM Appendix "G", Exhibit "A").

4.2.14.2 Definitions

Change Request/Notices are initiated by Field Engineering to request a change in approved Project Engineering drawings, specifications, or other requirements. The CR/N's are initiated as Field Change Requests (FCR's) Field Change Notices (FCN's) and shall hereinafter be referred to as FCR/FCN.

CR
76

4.2.14.2.1 A Field Change Request (Figure 4-2w) is transmitted from Project Field Engineering to Project Engineering to request a change in project approved engineering drawings, specifications or other design documents. Project Engineer (PE) approval of each FCR is required prior to implementation by Project Field Construction.

CR
76

4.2.14.2.2 A Field Change Notice (Figure 4-2w) is issued by Project Field Engineering to notify Project Engineering of changes from approved engineering drawings, specifications or other design documents, after implementation by Project Field Construction.

4.2.14.3 General

FCR/FCN originals are submitted to Project Engineering for review, evaluation and disposition. The disposition (response) may result in any one of the following:

CN
82

- (a) Drawing Change Notice (DCN)
- (b) Drawing or specification revision.
- (c) Deviation, where departure from a Project Engineering approved drawing or specification is requested in a specific, limited

144

att & JER-13
Page 10 of 47

4.2-28
Rev. 5
12-15



PEPM CHANGE NOTICE

PROJECT NO. 9645

1. PAGE 1 OF 1

2. CHANGE NOTICE
NO. 86

ATTACHMENT:

YES ☐ NO ☒

3. DATE MO DAY YR
3 26 79

4. PROCEDURE NO.

4.2.14

5. TITLE

Change Request/Notice (CR/N)

6. EXISTING CONDITION

4.2.14.3 General (last paragraph of section)

NOTE: The Resident Engineer ... approve FCRs. This action ...
... as required. Subsequent Project... is required
and FCRs shall be processed per paragraph 4.2.14.4.

7. CHANGE TO READ

4.2.14.3 General

NOTE: The Resident Engineer... approve FCR/FCNs. This action ...
... as required. Subsequent Project ... is required
and FCR/FCNs shall be processed per paragraph 4.2.14.4.
Concurrence requirements for RELSG action FCR/FCNs
are defined in section 4.2.19.3.

att to JCR-13
page 11 of 47

185

B.C. Stanchfield
PREPARED BY

3/20/79
DATE

R.D. Bittell for L. Scott 3/26/79

W. B. Bays 3-26-79
FOR CONCURRENCE DATE

W. B. Bays 3/26/79

instance/situation for which a change in the drawing or specification is not required.

(d) Disapproved.

(e) A FCR/FCN dispositioned as above, becomes effective with the approval signature of the Project Engineer or his designated representative (see note). This approval signature should be obtained within 30 days after FCR/FCN receipt and shall not exceed 60 days.

(f) NOTE: The Resident Engineer, acting in behalf of the Project Engineer, may disposition and approve FCR/FCNs. This action may be taken without prior consultation with the cognizant Project Engineering discipline, except to obtain DCN numbers as required. Subsequent Project Engineering review and concurrence FCR/FCNs is required and ~~FCR~~ shall be processed per paragraph 4.2.14.4 -

4.2.14.4 Processing of Field Change Requests/Field Change Notices

A. Project Administration

1. Receive FCR/FCN and apply date received stamp.
2. Enter in project FCR/FCN Log (Figure 6-6a).
3. Attach a routing slip and a red resolution card to the original FCR/FCN and deliver to the Discipline Quality Engineer.

B. Discipline Quality Engineer

1. Enter in Discipline FCR/FCN Log (Figure 6-6b) and add appropriate general subject file number to routing slip.

2. Route to Group Supervisor.

C. Group Supervisor

1. Receive FCR/FCN and review.
2. Take action as Responsible Engineer or assign to a Responsible Engineer.

4.2-29

Rev. 5

2/78

RV4

30 & 60 DAYS (e)

Responsible Engineer

1. Review FCR/FCN and coordinate with other disciplines or supporting project groups as required. Assure that the FCR/FCN references the latest revision of the applicable document.
2. Complete "Action by Engineering-Description of Change" block or state disapproval in this area; if additional space is required, add supplemental sheets (Figure 4-2w.1). Sign and date as Responsible Engineer. When disapproving an FCR/FCN, state the reason therefore and the alternative action taken in "Action by Engineering-Description of Change" block.
3. Place DCN or deviation number and date in the appropriate blocks and place N/A (for not applicable) in remaining block(s). (See Figure 4-2w for illustration and instructions.) (When converted to a DCN, process per PEPN paragraph 4.3.1.6.1.)
4. When approving an FCR/FCN to be converted to a deviation, assure that the appropriate justification/rationale for the deviation is entered in the "Action by Engineering-Description of Change" block.
5. Response to the FCR/FCN may be made by issuing a revision to a drawing or specification. Enter the drawing/specification number, revision number, and date in the "Action by Engineer-Description of Change" block of the FCR/FCN. The FCR/FCN number shall be identified in the Revision Description block of the drawing or specification, i.e., "Incorporates FCR/FCN (No.)" (Process drawing revisions per PEPN paragraph 4.3.1.6, specifications per paragraph 4.5.1.6).
6. Check appropriate SAR change block. If marked yes, initiate SAR change in accordance with PEPN section 5.2.
7. Submit the approved/disapproved FCR/FCN and the drawing's specification

revision, if applicable, to the Group Supervisor.

E. Group Supervisor.

1. Review, sign and date FCR/FCN and drawing/specification, if applicable.
2. Route to Project Quality Engineer for his review, initials, date and then to the Assistant Project Engineer or Project Engineer for final review and approval.

F. Project Engineer/Assistant Project Engineer

1. Review, sign and date the FCR/FCN and check the appropriate approval block.
2. Return FCR/FCN to discipline Quality Engineer.

G. Discipline Quality Engineer

1. Enter close-out information in the FCR/FCN discipline log.
2. Review FCR's/FCN's for completeness, signatures, documents, and initial/date in Discipline Quality Engineer block.
3. Enter appropriate file number(s) on routing slip.
4. Route FCR/FCN to Project Administration.

H. Project Administration

1. Enter CDT number, date and file number at bottom of FCR/FCN (See Figure 4-2w).
2. Log out in project FCR/FCN log (Figure 6-6a).
3. Make distribution as follows:

. Field Construction Manager - one copy will be stamped with Return Receipt stamp (as in PEPM 4.2.10.B). This copy will be returned to the project for record purposes.

. L. F. Dale

. C. K. McCoy

. T. E. Reaves

148

att to JER 13
page 14 847

4.2-31
Rev. 7
12-13-78

Responsible Engineer

. Project Quality Engineer

. Project Files (see H-5 below)

. Document Control Register

4. Enter in Document Control Register

5. Converted FCR's/FCN's shall be filed as follows:

a. DCN's

CN
82

(1) File a copy with the appropriate drawing/~~specification~~
~~record document.~~

(2) File the original in general subject file 0075.

CN
82

b. Deviations

(1) File a copy with the appropriate drawing/specification
record document.

(2) File the original in general subject file 0162.

c. Disapproved

(1) File FCR's/FCN's (originals) in general subject file 0080.

d. Technical, PO/SC files as assigned.

e. File a copy of all CRN's in general subject file 0080.

att to JER 13
page 15 of 47

179

NO PAGE 12-33
Following
↓

4.2-32

a. DCNs

1. Attach a copy to record sepia and file in record sepia file.
2. File the original in general subject file 0075.

b. SCNs

1. File a copy in the appropriate purchase order/subcontract file.
2. File a copy in the applicable master specification file.
3. File the original in general subject file 0076.

c. Deviations

1. File a copy with the appropriate drawing/specification.
2. File the original in general subject file 0162

4.2.14.3 Processing of Non-Q Field Change Requests

DUPLICATE
PARAGRAPH
NUMBER
SEE PAGE
4.2-28

A. Resident Engineer

1. May approve/disapprove FCRs (within his technical competence) without consultation with the appropriate engineering discipline supervisor. FCRs beyond his technical competence shall be processed per section 4.2.14.2 of this procedure.
2. Shall secure an appropriate number from the respective discipline Group Supervisor or Responsible Engineer when converting FCRs to DCNs.
3. Shall transmit the original of all FCRs to Project Engineering.

B. Project Administration

1. Receive original FCR, date stamp, and Xerox three copies.
2. Log in project FCR log.
3. Attach one copy to appropriate Group Supervisor.
4. Attach one copy to record sepia (if deviation from drawing or DCN) or specification as applicable.
5. One copy to Document Control Register.

att to JER-13
page 16 of 47

NO PAGE
4.2-33
THIS PRECEDING

4.2-34
Rev. 2
5-24-77

6. Route original FCR for appropriate filing.

- a. If DCN - 0075 file
- b. If SCN - 0076 file
- c. If deviation - 0162 file
- d. Copy of a, b & c - 0080 file
- e. If disapproved - 0080 file

C. Group Supervisor

Receive copy of FCR, review, and assign to Responsible Engineer.

D. Responsible Engineer

- 1. Receive FCR, review for appropriate number(s).
- 2. Complete discipline logs.
- 3. Incorporate DCN (if applicable) into respective drawing in accordance with applicable procedures. This copy of the DCN may then be discarded.

(191)

att to JER 13
page 17 of 47



PEPM CHANGE NOTICE

PROJECT NO. 9645

PAGE 1 OF 1

2. CHANGE NOTICE

NO. 94

ATTACHMENT

YES ☐ NO ☒

3. DATE MO DAY YR
5 11 79

4. PROCEDURE NO.

APPENDIX "C"

5. TITLE

EXHIBIT "A"

6. EXISTING CONDITION

EXHIBIT "A" - EDP-4.66 (REV.0): REPORTING DEFICIENCIES AND
NONCOMPLIANCES TO THE NRC

7. CHANGE TO READ

EXHIBIT "A" - EDP-4.66 (REV. 1): REPORTING DEFICIENCIES AND
NONCOMPLIANCES TO THE NRC

att to JER-13
page 18 of 47

192

8.

Prepared by Bruce C. Stinchfield 5/7/79
DATE

Prepared by RL Scott 5/10/79
DATE

POAE CONCURRENCE

Prepared by William H. Lorian 5/7/79
DATE

Prepared by A. Zaccaria 5/11/79
DATE

PROJ ENGR APPROVAL

66

INCLOSURE V PAGE

BECHTEL
POWER
CORPORATION

ENGINEERING DEPARTMENT PROCEDURE

SUBJECT

REPORTING DEFICIENCIES AND
NONCOMPLIANCES TO THE
NUCLEAR REGULATORY COMMISSION

EDP- 4.66

REV
NO. 1CN
94

PAGE 1 OF 7

DATE ISSUED

J. H. Stone

PREPARED BY

L. Pinzow

DATE

3/5/79

APPROVED BY

R. H. Stone

3/7/79

QA CONCURRENCE

Not Applicable

DATE

1.0 PURPOSE

To provide procedures for identifying, evaluating and reporting deficiencies and noncompliances to the Nuclear Regulatory Commission (NRC) as required by 10CFR21 or 10CFR50.55(e).

2.0 SCOPE

This procedure applies to all Engineering Department personnel engaged in work on nuclear power plants.

3.0 GENERAL

Noncompliances from NRC regulations and significant deficiencies in basic components (safety-related structures, systems and components) and associated services which could constitute a substantial safety hazard may be reportable to NRC under 10CFR50.55(e) or 10CFR21. Reporting requirements are imposed directly upon the Client (Licensee) by 10CFR50.55(e), but 10CFR21 applies to everyone in the supply chain who is involved in the design, manufacture, construction and operation of a nuclear power plant. This includes sub-tier suppliers, and organizations providing consulting, testing or inspection services, and pertains to software (drawings, specifications, etc.) as well as hardware.

On October 19, 1978, notice was posted in the Federal Register (Vol. 43, No. 203) amending 10CFR21 effective immediately, to provide that commercial grade items (defined in Exhibit A) are not part of basic components and that suppliers of commercial grade items are exempt from the provisions of Part 21 to the extent that they supply commercial grade items. This means that Bechtel may procure commercial grade items directly, without notifying the suppliers that 10CFR21 applies. Part 21 applies only after these items are received and designated for use as a basic component (dedication). It also means that primary suppliers of basic components, to which 10CFR21 applies, need not invoke 10CFR21 to sub-tier suppliers of commercial grade items. Advice from the NRC indicates that prime contractors for entire security systems are subject to 10CFR21 but that their sub-tier suppliers of commercial grade items are not.

3.1 ENGINEERING DEPARTMENT RESPONSIBILITIES

Gaithersburg Power Division Procedure 14-01 assigns the following responsibilities to Project Engineering:

Proprietary Note:

These procedures are the property of Bechtel Power Corporation and are to be returned upon request. Where loaned it is on the express agreement that they will not be used in whole or in part except for the limited private use permitted by the Corporation. The Division Manager of Engineering will stipulate the required degree of proprietary control and will obtain acknowledgement from recipients as a condition of transmittal.

G-1

GPD-1701-A 8/77

REPORTING DEFICIENCIES AND
NONCOMPLIANCES TO THE
NUCLEAR REGULATORY COMMISSION

EDP-4.66

REV
NO

1

CN
94

PAGE 2 OF 7

- a. Identify those items and services subject to 10CFR21 (as amended Oct. 19, 1978). This shall be done on the purchase memoranda for Bechtel home office procurements and on the specification cover sheet for items procured by others.
- b. Identifying nonconformances or deficiencies reportable under 10CFR21 [or 10CFR50.55(e)] or receiving requests for evaluation of nonconformances or deficiencies from outside organizations.
- c. Evaluating deficiencies for reportability which includes determination that:
 1. A basic component is involved.
 2. The component or service is within Bechtel's scope of responsibility.
 3. The deviation, if uncorrected, would comprise a substantial safety hazard.
 4. Affected component or service is delivered. If they are not delivered, the deficiency is not reportable under 10CFR21 but may be reportable under 10CFR50.55(e).
- d. Retention of records of deficiency evaluations and reports of defects and noncompliances.

The procedure outlined in Section 4.0 for detecting and evaluating deficiencies and noncompliances is the same for the Engineering Department scope of responsibility regardless of whether 10CFR21 or 10CFR50.55(e) is ultimately invoked. The definition of basic component is the same for each. Bechtel's scope of responsibility is the same. The criteria for evaluation of the significance of the deficiency or whether or not a substantial safety hazard would exist is the same. What differs is terminology such as deficiency (10CFR50.55(e)), vs. deviation from technical requirements (10CFR21), reporting responsibility, and licensing stage during which each regulation is applicable. The differences affect actions by Project Manager and Client. It should be noted that although a report is not required under 10CFR21 if all the required information is incorporated in a report on the same deficiency/nonconformance under 50.55(e), the opposite is not true. If a report has been filed first under 10CFR21, the Client must file a report under 10CFR50.55(e) even if it merely references the 10CFR21 report.

Att to JER13 page 20 847

Exhibit A contains the definitions, which are actually utilized in these regulations, together with criteria for determining reportability of deficiencies and noncompliances. Modifications in design resulting from normal design evolution are not considered reportable under 10CFR21 or 10CFR50.55(e). This includes planned engineering actions, which must be taken during late stages of the design, to determine deficiencies correctable by design action, e.g., walkdowns of the plant to determine the need for barriers or rerouting pipe to protect safety-related components from pipe whip or failure of seismic category 2 components. When in doubt regarding reportability to NRC, the item shall be referred to the Project Evaluation Team (paragraph 3.3) for review.

JECT

EDP-4.66

REV

NO 1

CN
94REPORTING DEFICIENCIES AND
NONCOMPLIANCES TO THE
NUCLEAR REGULATORY COMMISSION

PAGE 3 OF 7

ION REPORTS

Engineering is responsible for evaluating deficiencies and non-compliances discovered within engineering or upon request by off-project such as suppliers, construction, client etc. Items not judged cognizant Group Supervisor to be reportable defects, shall be identified informally by discussion with the initiator (a) If this is not the case, or if the deviation report is in writing, the Group Supervisor shall discuss the matter with the Project Engineer and respond to the item in writing, with justification for the conclusion (b) The response shall be filed and filed as a project record.

Formally reportable items shall normally be referred to the component responsible engineer, who will conduct the formal evaluation, with assistance as necessary from other discipline project personnel and staff of Engineers and their staffs. (c) Evaluation reports shall be timely, including (IOMs, attached or referenced supporting calculations, etc.) and contain sufficient information to justify the conclusions. (d) In addition, the report must satisfy the information requirements of Exhibit B.

CT DEFICIENCY/NONCOMPLIANCE SOURCES

Following reports shall be screened by Project Engineering personnel for reportable deficiencies/noncompliances:

Management Corrective Action Reports (MCARs).

Field Change Requests (FCRs).

Supplier Deviation Disposition Requests (SDDR).

Startup Field Reports

Decision not to report is subject to review of the cognizant Group Supervisor and Project Engineer whose concurrence is indicated by initials on the report for these items.


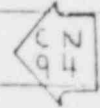
CT EVALUATING TEAM

Cognizant Project Manager (or cognizant Engineering Manager for projects that do not have a Project Manager) is responsible for final decisions regarding notification and reporting to NRC. Therefore the Project Manager must be fully informed of all potential reports. (c) When the cognizant Group Supervisor and Project Engineer decide a deficiency may be reportable, a Project Evaluation Team is formed. The composition of this team will vary with the nature of the deficiency, but will typically include the Project Manager, Project Engineer, cognizant Group Supervisor, Project Quality Assurance Manager or the Project Quality Engineer.

195

att to JER-13
page 21 of 47G-3
Rev. 0
3-27-78

69 INCLOSURE V PAGE 69

GAITHERSBURG POWER DIVISION  BECHTEL POWER CORPORATION	SUBJECT REPORTING DEFICIENCIES AND NONCOMPLIANCES TO THE NUCLEAR REGULATORY COMMISSION	EDP-4.66 REV NO 1  PAGE 3 OF 7
--	---	---

3.2 EVALUATION REPORTS

Project Engineering is responsible for evaluating deficiencies and non-compliances discovered within engineering or upon request by off-project sources such as suppliers, construction, client etc. Items not judged by the cognizant Group Supervisor to be reportable defects, shall be resolved informally by discussion with the initiator (a) If this is not possible, or if the deviation report is in writing, the Group Supervisor shall discuss the matter with the Project Engineer and respond to the item in writing, with justification for the conclusion (b) The response shall be logged and filed as a project record.

Potentially reportable items shall normally be referred to the component or system responsible engineer, who will conduct the formal evaluation, with assistance as necessary from other discipline project personnel and by Chief Engineers and their staffs (c) Evaluation reports shall be timely, in writing (IOMs, attached or referenced supporting calculations, etc.) and contain sufficient information to justify the conclusions (d) In addition, they must satisfy the information requirements of Exhibit B.

3.3 INDIRECT DEFICIENCY/NONCOMPLIANCE SOURCES

The following reports shall be screened by Project Engineering personnel for reportable deficiencies/noncompliances:

- Management Corrective Action Reports (MCARs).
- Field Change Requests (FCRs).
- Supplier Deviation Disposition Requests (SDDRs).
- Startup Field Reports


The decision not to report is subject to review of the cognizant Group Supervisor and Project Engineer whose concurrence is indicated by initials on the report forms for these items.

3.4 PROJECT EVALUATING TEAM

The cognizant Project Manager (or cognizant Engineering Manager for projects which do not have a Project Manager) is responsible for final decisions regarding client notification and reporting to NRC. Therefore the Project Manager must be kept fully informed of all potential reports (c) When the cognizant Group Supervisor and Project Engineer decide a deficiency may be reportable, a Project Evaluation Team is formed. The composition of this team will vary with the nature of the deficiency, but will typically include the Project Manager, Project Engineer, cognizant Group Supervisor, Project Quality Assurance Manager or the Project Quality Engineer.

*att to JER-13
page 21 of 47*

G-3
Rev. 0
3-27-78

GAITHERSBURG POWER DIVISION  BECHTEL POWER CORPORATION	SUBJECT REPORTING DEFICIENCIES AND NONCOMPLIANCES TO THE NUCLEAR REGULATORY COMMISSION	EDP-4.66 REV NO 1 494 PAGE 4 OF 7
--	---	---

- (a) The Project Evaluation Team will convene initially to determine the validity of the reported deficiency, assign responsibility for the evaluation and establish a schedule for its completion. The Project Evaluation Team will convene again to review the completed evaluation and establish the reportability of the deficiency.

3.5 OFF-PROJECT RESPONSIBILITIES

Deficiencies discovered by Chief Engineers' staffs in Topical Reports, computer codes, or other off-project work shall be reported to the Chief Engineer for review. With his concurrence regarding validity, Project Engineers of potentially affected projects shall be notified by means of a Problem Alert (refer to EDP 4.74).

Noncompliances or deficiencies discovered in work performed for projects based outside Gaithersburg shall be immediately referred to the Project Engineer of the affected project for evaluation and reporting to the Client.

A Site Liaison Engineer or Resident Engineer who becomes aware of a noncompliance or deficiency shall report it immediately to his Project Engineer.

3.6 COMMUNICATIONS

- (a) Communications from Bechtel to Clients, Suppliers, NRC and others external to Bechtel shall be via the Project Manager or Division Manager. Those outside Bechtel should be encouraged to communicate with Bechtel on these matters from a similar level, e.g., Supplier's General Manager, Q.A. Manager, etc. All parties shall be requested to notify the Project and the Client at the same time they report a deficiency to the NRC. Registered mail shall be used by Bechtel for transmitting evaluations performed for others outside of Bechtel.

- (b) Projects reporting significant defects to NRC shall notify related projects either by phone or by copy of their evaluation report. The cognizant Chief Engineer shall also receive a copy of the evaluation report for issuance of a Problem Alert.

- (c) The individual initially reporting the potential noncompliance or deficiency shall be advised of the actions taken. Such persons may appeal rejected reports to the next level of management after notifying their supervisor of their intent.

3.7 LOG

- (a) Project Engineering shall establish a log (Exhibit C) to account for reports of deficiencies and noncompliances, as well as 10CFR50.55(e) or 10CFR21 evaluation reports. (b) The sequential log numbers for deficiency/noncompliance reports shall be different in form from those of the formal evaluation reports, as indicated in Exhibit C. (c) The evaluation report number shall be referenced on the Deficiency/

Noncompliance Report as well as on associated correspondence.

3.6 RECORDS

Project Engineering shall maintain files of all reports, evaluations, supporting documentation and correspondence. These files shall contain actions taken by project and/or division management, the Client, Suppliers and the NRC. Retention and disposition of records shall be in accordance with procedures governing record retention.

4.0 PROCEDURE

Responsibility

Action

Initiator

(on or off project)

1. Discovers noncompliance or deficiency.
2. Immediately notifies supervisor. If supervisor is not available, notifies PE of affected project or cognizant Group Supervisor. (Proceed to step 4.)
3. Immediately notifies PE or cognizant Group Supervisor of affected project.

Cognizant Group Supervisor

4. Informally resolves report with initiator. If this is not possible, either prepares a memo to file indicating rationale for no further action or proceeds with evaluation. Initiator receives copy of memo.

PE and Cognizant Group Supervisor

- *5. Screen apparent deficiency/nonconformance for validity as potentially reportable defect. After five working days, the PE will either close out the item as not reportable, or convene a Project Evaluation Board for further consideration. Closure of nonreportable items shall be by PE notation on Exhibit B, which will be returned to the Group Supervisor for suitable log entry and filing.

Project Evaluation Board

6. Discuss reportability of item as a potential defect. If not considered reportable close out item by Project Manager notation on Exhibit B, which is returned to the Group Supervisor for suitable log entry and filing.
7. If considered reportable, establish schedule for completion of evaluation.

*Requests from Suppliers for LOGFR21 evaluations will be processed through project engineering starting at this point.


Att to JER 2/13

Date 23/4/7

G-5

Rev. 0

3-27-78

GAITHERSBURG POWER DIVISION  BECHTEL POWER CORPORATION	SUBJECT REPORTING DEFICIENCIES AND NONCOMPLIANCES TO THE NUCLEAR REGULATORY COMMISSION	EDP-4.66 REV NO 1 CN 94 PAGE 6 OF 7
--	---	---

Project Engineer

8. Assigns responsibility for evaluation report and directs cognizant Group Supervisor to establish an evaluation report number in the log.

1

Project Manager

9. Notifies Client verbally and in writing of potentially reportable defect and requests copy of any written client notification of NRC, when applicable.

1

Evaluator

10. Determines if deficiency/noncompliance can be considered to be a substantial safety hazard and is reportable to NRC (refer to Exhibit A). Fully documents all findings and prepares written evaluation reports.

NOTE: The evaluation needs only to determine if the condition is reportable. Inclusion of a fix is desirable, but the report shall not be delayed if the fix is not readily available. The requirement for corrective action shall be noted in the log remarks column.

Project Evaluation Team

11. Monitors and expedites the evaluation.
12. Reviews the evaluation report and determines validity of conclusions.



Cognizant Project Manager

13. Notifies Client of evaluation results. Requests copy of Client report to NRC, if made. If the Client declines to make the report, and the condition is reportable under 10CFR21, the Client must be notified that Bechtel is legally bound to report to NRC within 48 hours.
14. If the Client declines to report to NRC and Bechtel must report, the Client and Division Manager must be notified of the intended action before proceeding.
15. Reports condition to NRC by telephone within 48-hour limit after receipt of evaluation report with written report to follow within 5 calendar days. A copy of the report must be provided to the Client and Project Engineer for retention in project files (and to the Supplier or others if they are involved).

G-6
Rev.0
3-27-78

198

Att to JER 13
Page 24 of 41

GAITHERSBURG POWER DIVISION  BECHTEL POWER CORPORATION	SUBJECT REPORTING DEFICIENCIES AND NONCOMPLIANCES TO THE NUCLEAR REGULATORY COMMISSION	EDP-4.66 REV NO 1  PAGE 7 OF 7
--	---	---

Project Engineer

15. Gives copy of report to cognizant Group Supervisor for log entry and filing.

*att to JER 13
page 25 of 47*

199

CN
24

DETERMINING REPORTABILITY
TO THE NRC UNDER 10 CFR 50.55(e)
AND 10 CFR 21

1.0 CRITERIA FOR DETERMINING REPORTABILITY UNDER 10 CFR 21

- a. There is a failure to comply with NRC rules, regulations, orders or licenses, and the failure can be considered to create a substantial safety hazard.
 - b. There is a defect in the facility, activity, or basic component delivered to such a facility or in a delivered associated service and the defect can be considered to create a substantial safety hazard.
 - c. The defect or failure to comply is within the Bechtel scope of responsibility.
- 1.1 Refer to 1.4 of this Exhibit for definitions of defect, basic component, delivered, and substantial safety hazard.
- 1.2 The organization that discovers the deviation must either make the evaluation or, if not considered within its area of competence, request the next tier up the supply chain to make the evaluation. The organization that performs the evaluation and concludes a defect exists is responsible to assure that it is reported to the NRC.
- 1.3 In the case of a structure or system, a deviation or noncompliance does not become a reportable defect unless it is detected after the structure or system has been offered to the owner or next higher tier contractor, as applicable, for acceptance. Up to the time Bechtel accepts a component, a deviation detected by the supplier is not reportable by Bechtel.
- 1.4 Definitions of terms used in 10CFR21 as amended by Federal Register Vol. 43, No. 203
- a. Basic Component means a plant structure, system, component or part thereof necessary to assure:
 1. The integrity of the reactor coolant pressure boundary; or
 2. The capability to shut down the reactor and maintain it in a cold shutdown condition; or
 3. The capability to prevent or mitigate the consequences of accidents which could result in potential offsite exposures greater than that allowed by 10 CFR 100.11.

For additional details regarding identification of safety-related components refer to NRC Regulatory Guide 1.29.

NOTE 1: In all cases "basic component" includes design, inspection testing or consulting services important to safety that are associated with the component hardware, whether these services are performed by the component supplier or others. Examples of these types of safety-related services and software are:

100 att to JER 13
Rev. 2.6 5/11/71

G-7
Rev.0
10/17/70

- Nondestructive examination of safety-related welds
- Design of safety-related pipe hangers and supports
- Seismic and geologic surveys for a reactor site
- Specification of safety-related hardware characteristics
- Fire protection inspections by fire consultants
- Design of safety-related piping
- Materials selection criteria
- Pipe whip and separation criteria
- Analyses, modeling or data input for computer codes for basic components (including structures and systems)

NOTE 2: A commercial grade item is not part of a basic component until after dedication. (see d)

b. Commercial Grade Item means an item that is:

1. not subject to design or specification requirements that are unique to facilities or activities licensed pursuant to part 30, 40, 50, 70 and 71 of this chapter (title 10) and,
2. used in applications other than facilities licensed pursuant to part 30, 40, 50, 70 and 71 of this chapter and,
3. to be ordered from the manufacturer/supplier on the basis of specifications set forth in the manufacturer's published product description (for example a catalog).

NOTE 3: An item with unique design or specification requirements which may be satisfied by the primary supplier after dedication or incorporation in an assembly may be treated as commercial grade by the sub-tier supplier. An example of this is a commercial grade instrument which will be mounted in a control panel which is seismically qualified as an assembly by the control panel manufacturer

c. Constructing or Construction means the design, manufacture, fabrication, placement, erection, installation, modification, inspection or testing of a facility or activity which is subject to 10CFR21 and consulting services related to the facility or activity that are important to safety.

d. Dedication of a commercial grade item occurs after receipt when that item is designated for use as a basic component.

e. Defect means:

1. A deviation (see Item e) in a basic component delivered to a purchaser for use in a facility or an activity subject to the regulations of 10CFR21 if, on the basis of an evaluation (see Item f), the deviation could create a substantial safety hazard; or
2. The installation, use, or operation of a basic component containing a defect as defined in Item c.1; or
3. A deviation in a portion of a facility subject to the construction permit licensing requirements of 10CFR50, provided the deviation could, on the basis of an evaluation, create a substantial safety hazard, and the portion of the facility containing the deviation has been offered to the purchaser for acceptance; or

4. A condition or circumstance involving a basic component that could contribute to the exceeding of a safety limit, as defined in the technical specifications of a license for operation issued pursuant to 10CFR50.

f. Delivered means that:

1. A manufactured item has been received and accepted by the jobsite; or
2. A manufactured item has been received and accepted by another supplier in the supply chain; or
3. A structure or system has been offered for acceptance to the client or next higher tier contractor; or
4. Design documents have been received for construction or purchase; or
5. Reports of tests, inspections, or consulting services have been received.

NOTE: If receiving inspection is contractually defined as a condition of acceptance, deviations discovered during receiving inspection are not re-portable.

- g. Deviation means a departure from the technical requirements included in a procurement document. It also includes departure from technical requirements in project design criteria, design bases and SAR commitments.
- h. Evaluation means the process of determining whether a particular deviation could create a substantial safety hazard.
- i. Procurement document means a contract that defines the requirements which facilities or basic components must meet in order to be considered acceptable by the purchaser; e.g., specification, purchase order, drawing, etc.
- j. Substantial safety hazard means a loss of safety functions to the extent that there is a major reduction in the degree of protection provided to public health and safety.

Specific illustrations would include:

1. Moderate exposure to or release of licensed material corresponding to the dose and concentration limits specified in 10CFR20.403(a)(1), 10CFR20.403(b)(2) and 10CFR20.105 or
2. Major degradation of essential safety-related equipment. This is considered to be a loss of redundancy if...
3. Major deficiencies including design, construction, inspection, test or use of licensed material or deficiencies. Major deficiency means a condition or circumstance which under normal operating conditions or anticipated transient could contribute to exceeding a safety limit or cause an accident or in the event of an accident due to other causes could, considering an independent single failure, result in a...

UN
94

CONTENT OF DEFICIENCY/NONCOMPLIANCE EVALUATION,
REPORT TO PROJECT MANAGER

The written report shall provide for the following information. If necessary to describe the condition more completely, additional appropriate information shall also be reported.

1. Evaluation Report Number.
2. Name and address of individual(s) informing the Commission.
3. Identification of the facility, the activity or the basic component supplied for the facility or activity.
4. Identification of the firm constructing the facility or supplying the basic component which fails or contains a defect.
5. Nature of the defect or failure to comply and the safety hazard which is created or could be created by such defect or failure to comply.
6. The date on which information of such defect or failure to comply was obtained.
7. The number and locations of all basic components which fail to comply or contain a defect and which are in use, supplied for or being supplied for one or more facilities or activities.
8. The corrective action that has been taken or will be taken, the name of the individual or organization responsible for the action and the length of time that has been or will be taken to complete the action. If the corrective action is not known when the deficiency evaluation is completed, this should be noted and the report shall be delivered to the Project Manager immediately.
9. Any advice related to the defect or failure to comply about the facility, activity or basic component that has been, is being, or will be given to the purchasers or licensees.
10. Are components or services delivered? See Exhibit A for definition of delivered.
11. Date formal evaluation delivered to Project Manager.

Att to JER 13
Page 30 of 47



PEPM CHANGE NOTICE

PROJECT NO. 9645

1. PAGE 1 OF 1

2. CHANGE NOTICE
NO 95

ATTACHMENT:

YES ☐ NO ☒

3. DATE 5 11 79
MO DAY YR

4. PROCEDURE NO.

4.2.14

5. TITLE

CHANGE REQUEST/NOTICE (CR/N)

6. EXISTING CONDITION

4.2.14.1
(2nd sentence)

Purpose/Scope

The review... or 10 CFR 50.55(e). (Reference:
PEPM Appendix "G", Exhibit "A").

7. CHANGE TO READ

4.2.14.1
(2nd sentence)

Purpose/Scope

The review of CHANGE REQUEST/NOTICES shall include a determination if a condition is reportable under 10 CFR 21 or 10 CFR 50.55(e). When a condition is considered reportable, Project Engineering shall proceed in accordance with Appendix "G", Exhibit "A" of the PEPM.

8.

Bruce C. Strickland

5/7/79

William C. Strickland 5/7/79



PEPM CHANGE NOTICE

SUPPLEMENTAL SHEET

PROJECT NO. 9645

CHANGE NOTICE

NO. 82

PAGE 2

6. EXISTING CONDITION: (Continued)

D.6. Check appropriate SAR change block. If marked... ...section 5.2.

H.5. Converted FCR's/FCN's shall be filed as follows:

a. DCN's

(1) File a copy with the appropriate drawing/specification record document.

(2) ...

b. Deviations

(1) ...

(2) ...

c. Disapproved

(1) ...

d. Technical, PO/SC files as assigned

e. File a... ...file 0080.

Figure 4-2w (Sheet 1 of 2)

7. CHANGE TO READ: (Continued)

D.6. Check appropriate SAR change block. If marked... ...section 6.8.

H.5. Converted FCR's/FCN's shall be filed as follows:

a. DCN's

(1) File a copy with the appropriate drawing. (See PEPM section 4.3.1.6.1).

(2) ...

b. SCN's

(1) File a copy with the appropriate specification. (record copy)

(2) File the original in general subject file 0076.

(3) File a copy in the appropriate specification file.

c. Deviations

(1) ...

(2) ...

d. Disapproved

(1) ...

e. Technical, PO/SC file as assigned.

f. File a... ...file 0080.

Figure 4-2w (Sheet 1 of 2) REVISED (Attached)

page 33 8841

107



PEPM CHANGE NOTICE

PROJECT NO. 9645

PAGE 1 OF 2

2. CHANGE NOTICE
NO 82

ATTACHMENT

YES ☒ NO ☐

3
DATE MO DAY YR
2 28 79

4. PROCEDURE NO.

4.2.14

5. TITLE

Change Request/Notice (CR/N)

6. EXISTING CONDITION

4.2.14.3 General

- (a) Drawing Change Notice (DCN)
- (b) Drawing or Specification revision.
- (c) Deviation, where... ...Not required.
- (d) Disapproved.

NOTE: (2nd sentence) This action... ...except to obtain DCN numbers as required.

4.2.14.2 Processing of Field Change Requests/Field Change Notices

- D.3. Place DCN or deviation... ...block(s). ... (when converted to a DCN, process per PEPM paragraph 4.3.1.6.1)

CONTINUED ON PAGE 2

7. CHANGE TO READ

4.2.14.3 General

- (a) Drawing Change Notice (DCN)
- (b) Specification Change Notice (SCN)
- (c) Drawing or Specification revision.
- (d) Deviation, where... ...not required.
- (e) Disapproved.

NOTE: (2nd sentence) This action... ...except to obtain DCN or SCN numbers as required.

4.2.14.4 Processing of Field Change Requests/Field Change Notices

- D.3 Place a DCN, SCN or Deviation... ...block(s). ... (when converted to a DCN or SCN, process per PEPM paragraph 4.3.1.6.1 or 4.5.1.6.2).

CONTINUED ON PAGE 2

8.

Prepared by Paul C. Stanchfield

DATE 2/27/79

FOR CONCURRENCE William M. Gierke DATE 2/28/79



PEPM CHANGE NOTICE

PROJECT NO. 9645

1. PAGE 1 OF 1

ATTACHMENT:

YES ☐ NO ☒

2. CHANGE NOTICE
NO. 76

3. DATE 12/6/78
MO DAY YR

4. PROCEDURE NO

4.2.14 (Page 4.2-28)

5. TITLE

Change Request/Notice (CR/N)

6. EXISTING CONDITION

- 4.2.14.2.1 A Field Change Request... ...specifications or other design documents.
- 4.2.14.2.2 A Field Change Notice... ...specifications or other design documents, after implementation by Project Field Construction.

7. CHANGE TO READ

- 4.2.14.2.1 A Field Change Request... ...specifications, approved supplier drawings or other design documents.
- 4.2.14.2.2 A Field Change Notice... ...specifications, approved supplier drawings or other design documents, after implementation by Project Field Construction.

att to JER 13
page 35 of 47

209

Prince C. Stueckel 12/1/78

William M. Turner 12/1/78



PEPM CHANGE NOTICE

PROJECT NO. 9645

1. PAGE 1 OF 1

2. CHANGE NOTICE
NO. 86

ATTACHMENT:

YES ☐ NO ☒

3. DATE MO DAY YR
3/26/79

4. PROCEDURE NO.

4.2.14

5. TITLE

Change Request/Notice (CR/N)

6. EXISTING CONDITION

4.2.14.3 General (last paragraph of section)

NOTE: The Resident Engineer ... approve FCRs. This action ...
... as required. Subsequent Project... is required
and FCRs shall be processed per paragraph 4.2.14.4.

7. CHANGE TO READ

4.2.14.3 General

NOTE: The Resident Engineer... approve FCR/FCNs. This action ...
... as required. Subsequent Project ... is required
and FCR/FCNs shall be processed per paragraph 4.2.14.4.
Concurrence requirements for RELSG action FCR/FCNs
are defined in section 4.2.19.3.

att to Jer 13
page 36 of 47

710

B.C. Stanchfield
PREPARED BY

3/26/79
DATE

3-26-79
FOR CONCURRENCE DATE

MPL NO.
DRAWING TITLE



DRAWING CHANGE NOTICE

JOB NO	DRAWING NO	REV NO
9645		
DCN NUMBER		Page of
QA CLASS		
By:		Date

Reason for change: _____

The following Requisitions are affected by this change: _____

They ^{have} ~~have not~~ been revised in accordance with this DCN

PSAR change required ☐

*att to JER 13
page 37 of 41*

APPROVALS:

(211)

GROUP SUPERVISOR/DATE P.E. / A.P.E. / DATE

CDT- _____ Date _____

To: D. M. Lake FILE NOS. 0075/ _____

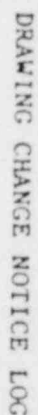
cc: J. P. McGaughy, Jr. (2)
W. L. Nail

*CHIEF ENG. / DATE *CHIEF NUC. ENG. / DATE

*Chief Engineers approval required when revision affects Design Criteria, SAR, Codes or Standards. N/A shall be entered if not required.

Figure 4-3b
Rev. 1

178 (G 238 GG)



BECHTEL POWER CORPORATION
GAITHERSBURG DIVISION

DRAWING NO.

CLASS

PROJECT: GRAND GULF NUCLEAR STATION

JOB NO: 9645

UNIT NO.

Q. CLASS

[illegible]

Figure 4-3c
REV. 0
2-5-79

DRAWING CHANGE NOTICE

DCN

EVENT WHICH REQUIRES
ISSUE OF D.C.N.

DISCIPLINE
ENGINEER
DISCIPLINE
QUAL. ENGR.

GROUP
SUPERVISOR

PRO
ENGR

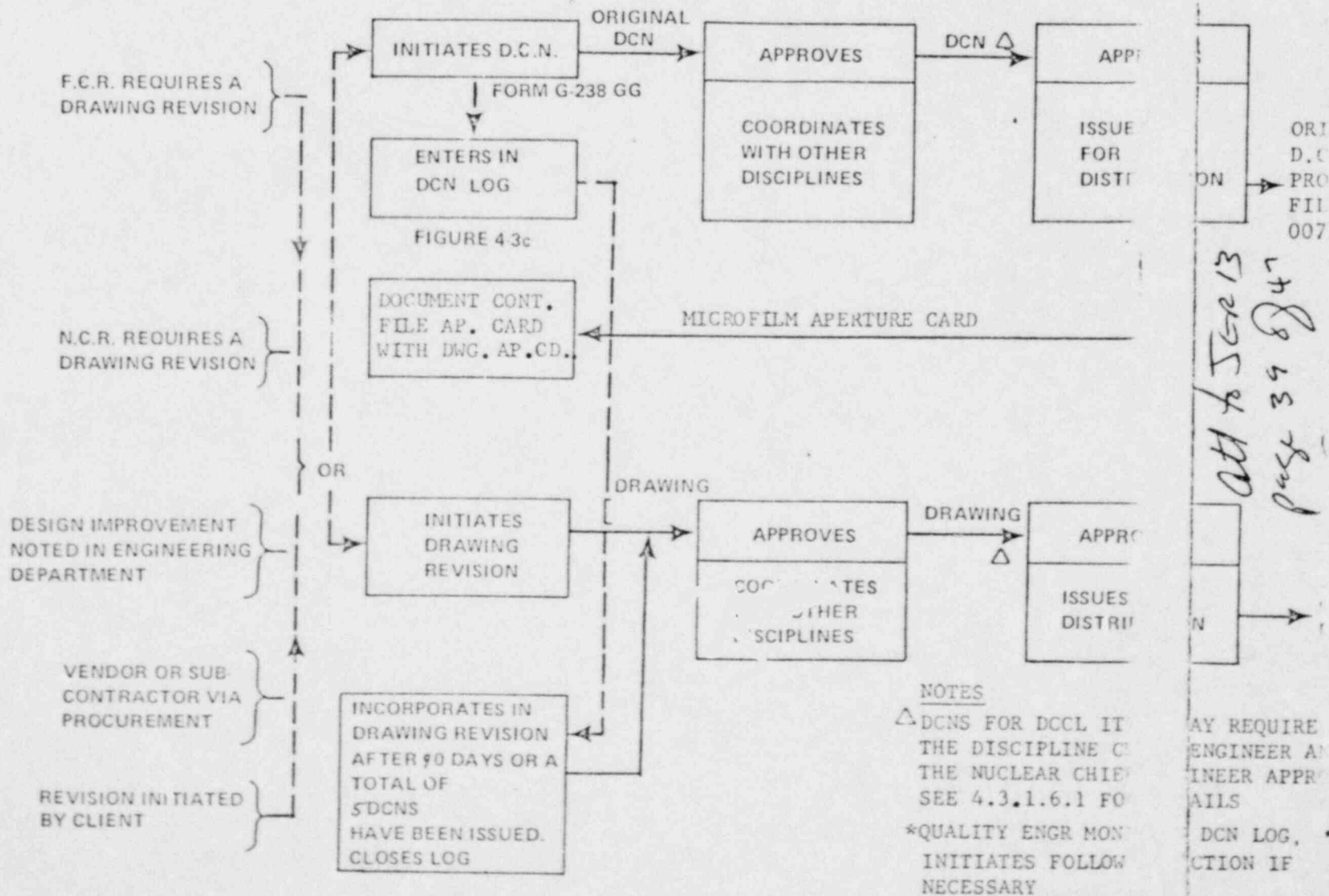


Figure 4-3d
Rev. 3
2-5-79

86

INCLOSURE V PAGE 87



MISSISSIPPI POWER & LIGHT COMPANY

Helping Build Mississippi

P. O. BOX 1640, JACKSON, MISSISSIPPI 39205



MCAR 50

DEPARTMENT

May 30, 1979

N. Ward, Project Manager
Power Corporation
Andy Grove Road
Essex, Maryland 20760

Copy:

SUBJECT: Grand Gulf Nuclear Station
Bechtel Job No. 9645
File 0272/0498/15525/5031
Evaluation of PRD 79/10
BMP-79/311

May 21, 1979, MP&L notified the NRC of a Potentially Reportable Deviation (PRD) concerning gross failure output of Rosemount Calibration Master and Slave Trip Units. Please review the attached form and all required rationale including your recommendation on reportability 16, 1979.

Yours truly,

L. F. Dale
Nuclear Project Manager

cc:

Mr. D. C. Gibbs
Mr. Adrian Zaccaria
Mr. D. M. Lake
Mr. H. H. Weber
Mr. N. L. Stampley
Mr. W. L. Nail
Mr. L. F. Dale
Mr. T. E. Reaves
Mr. G. K. McCoy

File

Page 40 of 47

87

INCLOSURE V PAGE 87 88



MISSISSIPPI POWER & LIGHT COMPANY

Helping Build Mississippi

P. O. BOX 1640, JACKSON, MISSISSIPPI 39205



MCAR 50

PRODUCTION DEPARTMENT

May 30, 1979

Mr. J. W. Ward, Project Manager
Bechtel Power Corporation
15740 Shady Grove Road
Gaithersburg, Maryland 20760

Dear Jerry:

SUBJECT: Grand Gulf Nuclear Station
Bechtel Job No. 9645
File 0272/0498/15525/5031
Evaluation of PRD 79/10
BMP-79/311

On May 21, 1979, MP&L notified the NRC of a Potentially Reportable Deficiency (PRD) concerning gross failure output of Rosemount Calibration System Master and Slave Trip Units. Please review the attached form and provide all required rationale including your recommendation on reportability by June 16, 1979.

Yours truly,

L. F. Dale
Nuclear Project Manager

JRF/pa
Attachment

cc: Dr. D. C. Gibbs
Mr. Adrian Zaccaria
Mr. D. M. Lake
Mr. H. H. Weber
Mr. N. L. Stampley
Mr. W. L. Nail
Mr. L. F. Dale
Mr. T. E. Reaves
Mr. C. K. McCoy

File

Page 40 of 47

POTENTIALLY REPORTABLE DEFICIENCY (PRD)

PRD 79/
NUMBER 10I. DESCRIPTION:

Rosemount Model 510 DU Trip Calibration System Master and Slave Trip Units have been identified as having a problem with the gross failure output function. The gross failure output may erroneously reset after the system is energized thus providing inaccurate information to the operator.

Initiated By: T. E. Reaves, Jr. Organization: MP&L QA

Date: 5/21/79

II. EVALUATION OF POTENTIAL REPORTABILITY:

Rationale:

The potential exists that if this condition remains uncorrected, it could adversely affect the safety of operations of the Nuclear Power Plant.

Concurrence:

	Yes	No	Initial	Date
Manager QA	<input checked="" type="checkbox"/>	<input type="checkbox"/>	ER	5-21-79
Project Mgr.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	LDD	5/21/79

+ Dir. of Pwr Prod. _____

III. NOTIFICATION TO NRC: Person Notified: D. S. Price How Notification Was Made: Telephone

Notified By: W. E. Edge

Date: 5/21/79

IV. EVALUATION OF REPORTABILITY:

Rationale:

Concurrence:

	Yes	No	Initial	Date
Manager QA	<input type="checkbox"/>	<input type="checkbox"/>		
Project Mgr.	<input type="checkbox"/>	<input type="checkbox"/>		

+ Dir. of Pwr Prod. _____

V. REPORT TO NRC:

Due Date: 6/20/79

Submitted Date: _____

Letter Number: _____

VI. CORRECTIVE ACTION VERIFICATION:

By: _____

Date: _____

att to JER 13
page 41 of 47



MISSISSIPPI POWER & LIGHT COMPANY

Helping Build Mississippi

P. O. BOX 1640, JACKSON, MISSISSIPPI 39205

2

MCAR-

PRODUCTION DEPARTMENT

January 10, 1979

Mr. R. L. Scott
Project Quality Assurance Manager
Bechtel Power Corporation
Post Office Box 41
Port Gibson, Mississippi 39150

Dear Bob:

SUBJECT: Grand Gulf Nuclear Station
Bechtel Job No. 9645
File 0272/0490/15525
Request for Evaluation of
Reportability, Bechtel NCR
Number 2374
BCQM-79/07

Attached is a copy of MP&L Potentially Reportable Deficiency Number 79/01 pertaining to the use of an incorrect welding procedure. This deficiency is also identified on your NCR Number 2374 which was initiated on two welds performed to an incorrect welding procedure.

Please review this matter to determine if this deficiency is reportable as defined by 10CFR50.55(e) and the estimated cost of repair for the two welds in question.

Your response by January 26, 1979 would be appreciated.

Yours truly,

T. E. Reaves, Jr.
Manager of Quality Assurance

TER/ATR:lb
Attachment

cc: Dr. D. C. Gibbs
Mr. J. N. Ward
Mr. D. M. [unclear]
Mr. P. R. Britnell
Mr. N. L. Stampley
Mr. J. P. McGaughy, Jr.
Mr. L. F. Dale
Mr. C. K. McCoy
Mr. P. W. Sly

File
(All with attachments)

Page 42 of 47

(16)

POTENTIALLY REPORTABLE DEFICIENCY (PRD)

PRD
NUMBER 79/01I. DESCRIPTION:

Reference Attachment "A"

Initiated By: *J. E. Keane* Organization: *Quality Assurance* Date: *1-10-79*II. EVALUATION OF POTENTIAL REPORTABILITY:

Rationale:

Concurrence:

Yes No Initial Date

Manager QA

Reference Attachment "B"

Project Mgr.

V.P. Prod. & Engr.

III. NOTIFICATION TO NRC: Person Notified:How Notification Was
Made:

Notified By:

Date:

IV. EVALUATION OF REPORTABILITY:

Rationale:

Concurrence:

Yes No Initial Date

Manager QA

Project Mgr.

V.P. Prod. & Engr.

V. REPORT TO NRC:

Due Date:

Letter Number:

VI. CORRECTIVE ACTION VERIFICATION:

By:

Date:

I. REQUIREMENTS:

- A. BQAM - ASME III, Div. 1, Appendix 3, WD-1, Rev. 4, Paragraph 6.2 states in part:

"The following information shall be entered by the LWQCE in the correspondingly numbered blanks on the WR -5 form.

Item (6) Welding Procedure and Rev. No. This is obtained from the form 84 (MS-11), applicable specification or repair procedure.

Item (24) certified correct. When all of the above information has been entered into the appropriate blanks of the WR-5 form, the LWQCE shall confirm, sign, and date this item."

- B. Mechanical Standard (MS-11) - Welding and NDE Requirements for Field Erected Piping and GE Components, sheet 46, states that for Penetration Field Welds, ASME III, Class 2, carbon steel, over 5/8" material thickness the welding procedure shall be PI-AT-LH(CVN).

II. FINDING:

Contrary to these requirements, Dwg. FSK-P-199-2034 Rev. 1 and welding documentation (WR-5 form) for the following two (2) welds reflected welding procedure PI-AT-LH to be used in lieu of PI-AT-LH (CVN). As a result; the incorrect welding procedure was used. These welds were inspected and accepted by QC and documentation was filed in the QC vault. NCR # 2374 was issued and dispositioned by Engineering to reject and cut-out these two welds:

<u>MPL NO.</u>	<u>Component</u>	<u>Dwg.No.</u>	<u>Weld No.</u>	<u>Diameter/ Thickness</u>
Q1E21	Flued Head/Penetration #31	FSK-P-199-2034	11	26"/1.00"
Q1E12	Flued Head/Pentration #22	FSK-P-199-2034	8	26"/1.00"

NOTE: D&CR #1069 and NCR #2374 reflected welding procedure noted nonconformance. (D&CR #1069 closed 5/2/78, NCR #2374 still open as of 1/10/79).

218

att to JER 13
page 44 of 47

Evaluation of Potential Reportability cannot be made until
Bechtel determines safety considerations and estimated cost of repair.
Request for this information has been made by letter BCQM-79/07.

J. E. Weaver Jr.
1-10-77

(219)

att to JER 13
page 45 of 47



MISSISSIPPI POWER & LIGHT COMPANY

Helping Build Mississippi

P. O. BOX 1640, JACKSON, MISSISSIPPI 39205

3
MICAR 35

PRODUCTION DEPARTMENT

July 5, 1978

Mr. J. N. Ward, Project Manager
Bechtel Power Corporation
15740 Shady Grove Road
Gaithersburg, Maryland 20760

Dear Jerry:

Low
50,55 (e)
78/03 file

SUBJECT: Grand Gulf Nuclear Station
Bechtel Job No. 9645
File 0272/0490/15525/15526
Potentially Reportable Deficiency
PRD Number 78/03 *PMI78/635*
BMP-78/298

Attached is the notification to the Nuclear Regulatory Commission for a deficiency with regard to "Unistrut Type Hanger Material". We have reported the problem on a generic hanger material basis and not restricted the evaluation to only the brand name "Unistrut".

Please provide all required rationale and your recommendation on reportability on or before July 14, 1978.

Yours truly,

J. P. Dale

J. P. McGaughy, Jr.
Director of Power Production

JPF/WDH/LFD:db
Attachment

cc: Dr. T. W. Schnatz
Mr. A. Zaccaria
Mr. D. M. Lake
Mr. N. L. Stampley
Mr. R. L. Scott
Mr. P. R. Pritnell
Mr. T. E. Reaves
Mr. W. L. Nail
Mr. L. F. Dale
Mr. C. K. McCoy

Potentially Reportable Deficiency File
File
(all with attachments)

(229)

att to Jec 13
page 46 of 47

POTENTIALLY REPORTABLE DEFICIENCY (PRD)

PRD
NUMBER 78/0I. DESCRIPTION:

Bechtel Field procured "Unistrut" (Part Number P1001; back-to-back welded P1000) has factory weld separation from parent material.

This material is received in 20ft. lengths and is field cut to size (lengths) per drawing requirements for installation.

An undetermined amount of this material (P1001) has been received, cut and installed in Electrical seismic installations. *OK 6/22/78*

See Attached NCAR 39 and NCR 2351. for additional information *OK 6/22/78*

Initiated By: *P. W. Sel*

Organization: Field QA

Date: 6/19/78

II. EVALUATION OF POTENTIAL REPORTABILITY:

Rationale:

The generic weld failure problem on unistrut type hanger material is considered to be potentially reportable as the structural adequacy is indeterminate.

Concurrence:

Yes No Initial Date

Manager QA *✓* *OK* *6-22-78*Project Mgr. *✓* *LPO* *6/22/78*V.P. Prod. & Engr. *✓* *W.H.* *6/22/78*III. NOTIFICATION TO NRC:

Person Notified:

How Notification Was

Mr. V. L. Brownlee Made: Verbal during site inspection *OK*

Notified By: T. E. Reaves, Jr. Date: 9:00 a.m. 6/23/78

IV. EVALUATION OF REPORTABILITY:

Rationale:

Concurrence:

Yes No Initial Date

Manager QA _____

Project Mgr. _____

V.P. Prod. & Engr. _____

V. REPORT TO NRC:

Due Date: _____

Submitted Date: _____

Letter Number: _____

VI. CORRECTIVE ACTION VERIFICATION:By: *(22)*Date: *att to JER 13*
page 47 of 47

MISSISSIPPI POWER & LIGHT COMPANY

AUDIT CHECKLIST

Classification (* N, NC, A) Audit Number 7
 Appendix B of 10CFR50 Criteria(n) III VI BECHTEL GAITHERSBURG
 ANSI N45.2 (Sections) or Reg. Guide L. RAHAEL, D. ENG
DRAWINGS & DOCUMENTS BY VENDORS P. ROMBOLO, DES ENG
SUBCONTRACTORS Persons Contacted:
 (Subject of Commitment) J. ARBAIZO, PDE
I. MATHUR, DES. ENG.
A. MENDEZ, GP SUP. MECH
J. K. FARUKH, GP SUP. PLT DESIG
R. GIBSON, GP LDR MECH.
S. JOHNSON, DES. ENG.
SEE ATTACHED PAGES 4.3-20, 4.3-21, 4.3-22,
4.3-23, 4.3-25, 4.3-26, 4.3-27 & 4.3-28
J. ILLMAN, D. ENG.
R. ULMAN, D. ENG.
L. ZERANSKI, D. ENG.
V. CABLING, D. ENG.
T. SPRATT - D. ENG.

B. METHOD OF VERIFICATION EXAMINE SAMPLING OF VENDOR
DRAWINGS FOR COMPLIANCE WITH PARAGRAPH
4.3.2.2, 4.3.2.4, 4.3.2.5 & 4.3.2.6

C. FINDINGS*(Classification):
SEE ATTACHED MATRIX C/LTER-14
PAGES 1-9.

ISSUED DEC-95 (see Matrix, Page 18 of 62)

CAR-227 (see Matrix, Page 15 of 62)

Paragraph 4.3.2.2 was not Audited for
Architectural & Civil Disciplines

See pages 14 of 62 & 18 of 62 for NC

*Classification:

C- Conformance

N- Nonconformance

A- Not Audited

NC-Nonconformance Corrected

During Audit

Completed By: P. E. Demos

Date: 6/21/79

Initials of Originator

-Checklist Number JER-14

Att to JCR 14
page 15862

The original of the RN will be filed in the general subject file (No. 0079). Effective Date 1-31-75 - Retrofit not required.

4.3.2 DRAWINGS AND DOCUMENTS BY VENDORS/SUBCONTRACTORS

4.3.2.1 GENERAL

The purchase order or subcontract specification contains the requirements for the engineering and quality verification and documentation, Appendix B, to be furnished by the seller or subcontractor.

4.3.2.2 RECEIVING, HANDLING, AND REVIEW OF VENDOR DRAWINGS/DOCUMENTS

A. DOCUMENT CONTROL

1. Upon Receipt (1st day)

- a. Receive package and verify contents with transmittal letter and SED-1.
- b. Apply Date Received Stamp to transmittal letter, SED-1, each sepia, print, aperture card, and document received.
- c. Sort documents by discipline utilizing MPL or specification number.
- d. Enter receipt of drawings/documents into the Automated Document Control Register.
- e. Check standard VENDOR DRAWING/DOCUMENT DISTRIBUTION FOR REVIEW form for that specification (Figure 4-3h as filled in by the Responsible Engineer), determine copies needed and order from reproduction. (Note: If sufficient prints are received from Vendor, these will be distributed and the reproduction cycle will be bypassed.)

2. During Reproduction Cycle (2nd working day)

(The following steps must not interfere with the distribution of the drawings/documents.

4.3-20
Rev. 3

Att to JER 14
page 2 of 62

a. Fill in Intra-Project Transmittal (IPT) (Figure 4-3e). Unless the Vendor has requested an earlier response, the return to the responsible engineer date shown on the IPT will be 14 working days after the day of package receipt on project; the return to Vendor date will be 25 working days after receipt.

If the SED-1 has not been provided, is incomplete or inaccurate, or the drawing/document does not bear the required unique identification number, request the Responsible Engineer to complete the necessary documentation.

b. Xerox copies of the transmittal letter, SED-1 and IPT; staple SED-1 to transmittal letters; process as follows:

Original transmittal letter with Xerox copy of SED-1. Circle Specification file number and place in file basket.

Copy of transmittal letter with copy of SED-1. Circle 0800 series file number and place in file basket.

Expediter (Transmittal letter with SED-1 and IPT).

Follow-up file (Transmittal letter with SED-1).

Copy of transmittal letter with original and a Xerox copy of the SED-1 for attachment to package for Responsible Engineer.

3. Upon Return of Prints from Reproduction (3rd working day, approximately)

a. Apply coordinating print stamp to each print/document, attach copy of IPT and distribute.

b. Apply Vendor review stamp to sepia/document, attach original IPT, original and copy of SED-1, copy of transmittal letter, one print of each drawing/document and deliver to Responsible Engineer.

B. REVIEWING DISCIPLINES (3rd through 14th working day)

1. Review drawings, mark up as required, initial and date coordinating print stamp and IPT and review affected Bechtel drawings as appropriate.

att to JER14
Page 3 of 62

2. Return directly to Responsible Engineer no later than due date. If this date cannot be met, contact the Responsible Engineer, advising him of the earliest date review can be completed.

C. RESPONSIBLE ENGINEER (3rd through 21st working day)

1. Upon receipt of package from document control, immediately verify correct distribution. If additional distribution is required, notify document control. Determine whether drawing/document is "Q" or "N" and verify that it is properly identified. (Not applicable to GE-NSSS items). Verify accuracy of SED-1 and equipment list, correct as required and return copy to Document Control.
2. Review for own discipline input and revise affected Bechtel drawings as appropriate.
3. Receive comment prints from reviewing disciplines, coordinate comments and resolve problems.
4. Mark up record sepia/document with official comments.
5. Check appropriate action block, date and sign-off "Vendor drawing review" stamp on sepia/document.
6. Prepare draft transmittal letter.
7. Return package to document control.

D. DOCUMENT CONTROL (Upon Receipt of Package from Responsible Engineer 22nd through 25th working day)

1. Send sepia/documents to reproduction for required copies.
2. Type transmittal letter, obtain signature, and have reproduced.
3. Receive copies from reproduction, assemble, and mail, giving priority handling to Vendor package, then distribute CCs and BCCs.
4. Attach sepia to transmittal letter with SED-1.

Enter in the Automated Document Control Register
utilizing the info contained on the transmittal letter/SED-1.

Place a copy/copies of the transmittal letter & SED-1 in the files.

Att to JER 14
page 4 of 62

5. If microfilm has been received, enter MPL number and the Client Document Number from the ADCR on all copies. (GE-NSSS only)
6. For Suppliers other than GE-NSSS, prepare a coding sheet, listing only those drawings (document category 1.0 through 1.6) assigned action number 1, and as appropriate, number 5. Send drawings for microfilm aperture cards, 2 for MP&J. (1 silver and 1 diazo), 1 diazo for Field Construction and 2 for Bechtel files (1 silver and 1 diazo).
7. Mail aperture cards.
8. Stamp sepia/document as Record Sepia/Document and file.

33

226

4.3-23
Rev. 2
2-5-79

not only being incorporated on the drawings, but that they are being adhered to during the actual manufacturing or fabrication cycle.

4. A final check point occurs when the Inspection Department assigns a Field Inspector to visit the vendor's shop. During his periodic visits he will be checking to see if the vendor is manufacturing or fabricating to the correct drawings. Final shipment will not be permitted until all drawings have received a code 1 approval from the Bechtel Engineering Department and the Bechtel Inspector verifies that the material does comply with the approved drawings.

4.3.2.4 CALCULATION/TEST RESULTS APPROVAL

The Calculation/Test Results approval stamp as shown below will be used whenever there are client or legal requirements for approval of calculations or laboratory test results. It is to be used only as directed by the responsible engineer and he will sign and date the stamp. (See Appendix E, Instructions for Review of Supplier Documentation, paragraph 4.2d, for further specific guidelines in reviewing supplier calculations and test results.)

ANALYTICAL TEST STATUS	
METHOD OF ANALYSIS, CALCULATION, AND/OR TESTING IS:	
1. <input type="checkbox"/> APPROVED	2. <input type="checkbox"/> NOT APPROVED
ENGINEER _____	DATE _____

Att to JER 14
page 5 of 62

4.3.2.5 ASME DOCUMENT CERTIFICATION

Calculations submitted in the form of a Stress Report for the design of a component indicated under the ASME Boiler and Pressure Vessel Code shall be processed as outlined in 4.3.2.4. In addition, the responsible engineer shall prepare an ASME Document Certification (Figure 4-3i) for each Stress Report submitted as required per ASME Section III, and a Registered Professional Engineer, as designated by the project engineer, shall sign and seal each certification.

A copy of each ASME Document Certification shall be transmitted to the supplier for his file and a copy shall be attached to the front of the Stress Report maintained in the project file.

227

4.3-25
Rev. 4
4-17-78

APPE IS ENTITLED "INSTRUCTIONS AND SAMPLE FORMS FOR PREPARATION OF SUBCONTRACT SPECIFICATIONS."

4.3.2.6 PROJECT ENGINEERING REVISION OF SUPPLIER DRAWINGS AND MODIFICATION
OF EQUIPMENT BY FIELD CONSTRUCTION

att to JER 14
page 6 of 62

4.3.2.6.1 GENERAL

Should it become necessary to modify any Supplier equipment which has been delivered to the jobsite, the procedures noted below shall be followed to provide Field Construction with the necessary information/guidance to make the modification.

- A. Changes which would alter the functional or seismic properties of delivered equipment, shall not be performed by Field Construction without prior approval by Project Engineering.
- B. Project Engineering shall insure that the modifications will not prevent the equipment from meeting its safety design function.
- C. When issuing drawings or specifications that modify equipment which has been seismically qualified by the Supplier, Project Engineering shall review the proposed modification with the Supplier to determine the effects on the seismic qualification.
 1. All physical modifications to equipment which involve structural dynamic properties should be directed by the Supplier to the extent necessary to maintain original equipment qualification.
 - a. Resubmittal of Supplier drawings by the Supplier is not required. However, a re-qualification certificate shall be issued by the Supplier to Bechtel.
 2. If C1 above cannot be achieved, i.e.; the Supplier equipment qualification cannot be maintained, Project Engineering shall perform an evaluation to determine if qualification can be achieved by other means. The analysis and/or data used in the evaluation shall be included with the original qualification document package.
 3. Should new or additional components be required for class IE, ASME III, Q designated and/or seismically qualified equipment, it shall be



PEPM CHANGE NOTICE

PROJECT NO. 9645

1. PAGE 1 OF 1

2. CHANGE NOTICE
NO. 77

ATTACHMENT:

YES ☐ NO ☒

3.
DATE 12 6 78
MO DAY YR

4. PROCEDURE NO.

4.3.2.6

5. TITLE

Project Engineering Revision of
Supplier Drawings and Modification of

6. EXISTING CONDITION

Equipment by Field Construction

4.3.2.6.1 GENERAL (Page 4.3-27)

D. All changes... ...revisions.. Those revisions...

4.3.2.6.1 GENERAL (Page 4.3-28)

E.5 The words... ...remarks column.

Att to JER 14
page 7 of 62

7. CHANGE TO READ

4.3.2.6.1 GENERAL (Page 4.3-27)

D. All changes... ...revisions or DCNs in accordance
with procedure 4.3.1.6.1. Those revisions...

4.3.2.6.1 GENERAL (Page 4.3-28)

E.5 The words... ...remarks column.

NOTE: To augment the above requirements, a supplemental
SDRN procedure has been implemented by the Electrical
Group to accommodate unique discipline requirements.
This procedure is defined on Electrical Drawing E-0031,
(Standard Electrical Procedures).

8.

Bruce C. Stancfield 12/1/78
PREPARED BY DATE

William M. Kurose 12/1/78
FOR CONCURRENCE DATE

RL Scott 12/4/78
FOR CONCURRENCE DATE
RCAM

W. J. ... 12/6/78
PROJ. ENGR. APPROVAL DATE

att to 56214 Page 9 of 62
2. A Supplier Drawing Revision Notice (figure 4-3m) shall be prepared by Project Engineering in accordance with P.E.P.M. paragraph 4.3.1.6.2 with the following exceptions;

- a. Submittal of the RN to the Chief Engineers for review and approval is not required.
- b. The Q designation shall be placed on Supplier drawings and the RNs for safety related equipment.
- c. A copy of the RN shall be stapled to the reproducibles of the Bechtel Revision only.
- d. The Supplier Drawing Revision Notice shall be filed in general subject file 0081.

3. In addition to the P&ID RNs, (figure 4-3f) the Supplier Drawing RNs may be used to supplement the revised drawings by:

- a. Providing written instructions for the execution of the field modification and where applicable,
- b. May provide a list of components needed to complete the modification.

4. The revised drawings/documents and revision notices shall be transmitted to Field Construction for action (figure 4-3n). 25

E. The Supplier Print Control Register (Part of ADCR) shall be updated to reflect Bechtel Revision data.

1. The next higher revision assigned by Project Engineering.
2. The "date in" shall be the Bechtel revision date.
3. The "date out" shall be the transmittal date to Field Construction.
4. The transmittal number.
5. The words "Bechtel Revision" in the remarks column.



4.3-28
Rev. 2
12-1-77

231

BGA #7

1. OBTAIN A SAMPLE OF VENDOR DOCUMENTS RECEIVED FOR EACH OF THE FOLLOWING DISCIPLINES (FOR THE SPECIFICATIONS INDICATED. LIST BELOW. DETERMINE COMPLIANCE TO REQUIREMENTS)

NO. ARCHITECTURAL (A-22.3 & A-22.4) DATE RECEIVED SP

NONE AUDITED

CIVIL (C-11.0 & C-15.4.0)

NONE AUDITED

CONCRETE & INSTRUMENTATION (J305.0 & J606.0)

J-350.0
6/24/79

9 CONCRETE (C-11.0 & C-15.4.0) (J305.0 & J606.0)

10 J-305.0 - Q11413P891-1.4-1-7

11 J-606.0 Q1E51F004-1.0-1-3

12 J-702.1 Q5-1.1-2-1

ELECTRICAL (E-020.0 & E-092.0 & E-009.1/E-009.2)

13 E-009.1/E-009.2 Gould Dwg. 33-50469.E13 2 RVS (8/17/78)

14 " " 33-50470.E53 RVS (8/14/78)

15 E-020.0 DETACHED BOARDS Dwg. No. D50375R1 (Rec 3/22/79)

16 E-035.0 - Q1R60-M1004-4-1.4-1-F

MECHANICAL (M-018.0 & M-141.1 & M-015.1 & M-011.0)

17 9645-M-015.1-Q5P41B001A-1.2.2

18 9645-M-011.0-Q1277-B001A-4-1.1-1-5

19 M-011.0-Dwg #09-500-74033 RVH (TRANSMERICH-DECAVAL)

20 M-141.1-Q1-1.2-1-1

21 M-141.1-Q1-1.2-7-4

22 M-141.1-Q1-1.2-7-0

D. J. Dando 6/21/79

NOTE: CHECK THE SPECIFICATION TO DETERMINE THE DOCUMENTS TO BE RECEIVED. SELECT THE DOCUMENTS FROM THESE (2 PER SPECIFICATION) IF POSSIBLE.

SELECT VARIOUS TYPES OF DOCUMENTS; E.G., DRAWINGS, SPECIFIC DATA, ETC. IF THEY BECHER DOESN'T HAVE THE SUPPLIER DOCUMENTATION, FIND OUT WHY.

M-141.1
Q1
6/24/79

M-018.0
Q1
6/24/79

Att to JBR 14
page 108 62

232

Att to JER 14
page 11 of 62

746

— 2 W N 4 5 7 100 0 1 2 3 4 5 6 7 8 9 10 11 12

[illegible]

4.3.2.2		4		1		2		3		4		5		6		7		8		9		10		11		12		13		14		15		16		17		18		19		20		21		22		23		24		25		26		27		28		29		30		31		32		33		34		35		36		37		38		39		40		41		42		43		44		45		46		47		48		49		50		51		52		53		54		55		56		57		58		59		60		61		62		63		64		65		66		67		68		69		70		71		72		73		74		75		76		77		78		79		80		81		82		83		84		85		86		87		88		89		90		91		92		93		94		95		96		97		98		99		100	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100																																																																																																								
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100																																																																																																								
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100																																																																																																								
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71																																																																																																																																					

233

INCLOSURE, V PAGE 107 ~~106~~

6212179

att to JER 14
page 12 of 62

15 GA #7

Comments (Page 2):
* OK ① Coordinating Training Stamp Not Applied. Coordination Required By Vendor Dwg/Disc.
DISTRIBUTION FOR REVIEW FORM (CIVIL, ELECTRICAL & PLANT DESIGN). FOR COORDINATION
PRINT. THROU HWAY DUCE COORDINATED.
② Approved. However Vendor Did Not Have "CHK BY" & "APPROVED BY" BLOCKS
Signed DFF. 10/25/77 (NON-Q)

~~Comment #1 - N/A~~ N/A Jell 6/25/79

532

D. E. P
6/21/79



SPECIFICATION NO. _____ TITLE _____
VENDOR _____ RESPONSIBLE ENGINEER _____

DOCUMENT CATEGORY	NO.	DESCRIPTION	ARCHITECTURAL	CIVIL	CONTROL SYSTEMS	ELECTRICAL	MECHANICAL	PLANT DESIGN	OTHERS	OTHERS	OTHERS	
DRAWINGS (E)	1.1	Outline Dimensions, Services and Foundation/Mounting Details										
	1.2	As-built										
	1.3	Shop Detail Drawings										
	1.4	Wiring Diagrams										
	1.5	Control Logic Diagrams										
	1.6	P&IDs										
	2.0	PARTS LISTS AND PARTS COSTS (E)										
	3.0	COMPLETED BECHTEL DATA SHEETS (E)										
	INSTRUCTIONS (E)	4.1	Erection/Installation									
		4.2	Operating									
		4.3	Maintenance									
		4.4	Site Storage and Handling									
	5.0	SCHEDULES: ENGINEERING AND FABRICATION/ERECTION (E)										
	6.0	QUALITY ASSURANCE MANUAL/PROCEDURES (E)										
	7.0	SEISMIC DATA REPORT (E)										
	8.0	ANALYSIS AND DESIGN REPORT (E)										
9.0	ACOUSTIC DATA REPORT (E)											
10.0	SAMPLES (E)											
11.0	MATERIAL DESCRIPTION (E)											
12.0	WELDING PROCEDURES AND QUALIFICATIONS (E), AND VERIFICATION REPORTS (V)											
13.0	WELD ROD CONTROL PROCEDURES (E), AND VERIFICATION REPORTS (V)											
14.0	REPAIR PROCEDURES (E), AND MAJOR REPAIR VERIFICATION REPORTS (V)											
15.0	CLEANING AND COATING PROCEDURES (E), AND VERIFICATION REPORTS (V)											
16.0	HEAT TREATMENT PROCEDURES (E), AND VERIFICATION REPORTS (V)											
CERTIFIED MATERIAL PROPERTY REPORTS (V)	17.0											
	17.1	MTR (Certified Material Test Reports)										
	17.2	Impact Test Data										
	17.3	Tensile Data										
	17.4	Material Certificate of Compliance										
17.5	Electrical Property Reports											
18.0	CODE COMPLIANCE (V)											
19.0	UT - ULTRASONIC EXAMINATION PROCEDURES (E), AND VERIFICATION REPORTS (V)											
RT - RADIOGRAPHIC EXAMINATION PROCEDURES (E)	20.0											
	20.1	Radio Examination Verification Reports (V)										
20.2	Radiographs (V)											
21.0	MT - MAGNETIC PARTICLE EXAMINATION PROCEDURES (E), AND VERIFICATION REPORTS (V)											
22.0	PT - LIQUID PENETRANT EXAMINATION PROCEDURES (E), AND VERIFICATION REPORTS (V)											
23.0	EDDY CURRENT EXAMINATION PROCEDURES (E), AND VERIFICATION REPORTS (V)											
24.0	PRESSURE TEST - HYDRO, AIR, LEAK, BUBBLE OR VACUUM TEST PROCEDURE (E), AND VERIFICATION REPORTS (V)											
25.0	INSPECTION PROCEDURE (E), AND VERIFICATION REPORTS (V)											
26.0	PERFORMANCE TEST PROCEDURES (E), AND VERIFICATION REPORTS (V)											
26.1	Mechanical Tests											
26.2	Electrical Tests											
27.0	PROTOTYPE TEST REPORTS (E)											
28.0	SUPPLIER SHIPPING PREPARATION PROCEDURE (E), AND VERIFICATION REPORTS (V)											
29.0	CERTIFIED PERFORMANCE DATA											

235

Att 2 JUN 14
Page 14 of 62

DC #1

1. CHECK PAR 4.3.2.4'S REFERENCE TO APPENDIX E. IF SOME OTHER PROCEDURE APPLIES, GET A COPY OF THE PROCEDURE. OK.
2. SELECT A SAMPLE OF CALCULATIONS / TEST RESULTS REQUIRING APPROVAL. VERIFY COMPLIANCE TO PAR 4.3.2.4 (AND OTHER PROCEDURE REQUIREMENTS, IF ANY).

9445-M-141.1 Q5-7.0-1-4 SEISMIC CALCULATIONS STREET & RELIEF VALVES RECEIVED 11/17/76 APPROVED (VENDOR DOC. REVIEW) (STAMP) NO STAMP PER 4.3.2.4.

4242.0-SEE BELOW
M-141.1-SPEC. REQUIRED SUBMITTAL OF TEST DATA FOR ENGINEERING REVIEW
NO TEST DOC. AVAILABLE. SEE ATTACHED EXTRACTS COT 77/3736476/3053
TEST REPORT (6/29/76 APPROVED) 9445-E-620.0
DELTA DANIEL BOARDS IDA 2
NOT STAMPED

NOT STAMPED
6/21/79

932

- SEISMIC ANALYSIS REPORT NO S-68954 (9445-M-242.0-Q5-7.0-1-2 11/22/77 VENDOR DOC REVIEW OK - NO ANALYTICAL TEST STATUS STAMP.

- DESIGN ANALYSIS REPORT NO. D-69339 (9445-M-242.0-Q5-8.0-12-0) VENDOR DOC REVIEW 3/22/78 - NO ANALYSIS TEST STATUS STAMP

SEISMIC ANALYSIS REPORTS
Wm. Powell

9445-M-242.0-Q5-7.0-19-1
9445-M-242.0-Q5-7.0-20-1
9445-M-242.0-Q5-7.0-21-1

Q5-7.0-22-1
Q5-7.0-23-1
Q5-7.0-24-1
Q5-7.0-25-1
7.0-26-1

-27-1
-28-1
-29-1
-30-1
-31-1

6/21/79

See page 15 of 62

(ASME DOCUMENT CERTIFICATION)

BS 4#7

1. SELECT A SAMPLE OF CALCULATIONS IN THE FORM OF STRESS REPORTS AND VERIFY COMPLIANCE TO PAR 4.3.2.4 AND 4.3.2.5.

WM Powell
DESIGN
ANALYSIS
REPORTS
VALVES

- 9645-M-242.0-05-8.0-14-0 STRESS REPORT # D-68885
3/22/78 - NO COMPLIANCE - NO ASME DOCUMENT
- 9645-M-242.0-05-8.0-12-0 STRESS REPORT # D-69339
3/22/78 - SAME
- 9645-M-242.0-05-8.0-13-0 STRESS REPORT # D-67794
3/22/78 - SAME.

ALL CORRECTED DURING AUDIT

HOWEVER CAR 227 ISSUED FOR INVESTIGATION QCR 6/25/79

232

att to JCR 14
page 15 of 62

Q. E. Davis
6/21/79



att to JER14
page 16 of 62



ASME DOCUMENT CERTIFICATION

FOR

MISSISSIPPI POWER & LIGHT COMPANY

GRAND GULF NUCLEAR STATION UNITS 1 AND 2

GRAND GULF, MISSISSIPPI

BECHTEL POWER CORPORATION

GAITHERSBURG, MARYLAND

Document Title _____
Prepared by _____
No. _____ Rev. _____ Date _____
Purchase Order No. 9645- _____
Item No(s). _____
Supplier _____

The undersigned hereby certifies that the above document has been submitted as the Stress Report for the component indicated under the ASME Boiler and Pressure Vessel Code; that it has been certified by a person signing as a registered professional engineer; and that it is based on design and operating conditions stated in the Design Specifications.

SIGNATURE DATE
(Registered Professional Engineer)

GG-53
4-20-76

238

Figure 4-3i
Rev. 0
(Seal) 7-26-76

DC#7

1. SELECT A SAMPLE OF SUPPLIER DRAWING REVISION NOTICES FROM FILE 0081. VERIFY THAT THE SDREN COMPLETED AND PROCESSED PER PAR. 4.3.1.6.2. AND 4.3.2.6.1.D.2.; THAT THE CHANGE TO THE SUPPLIER IS PER PAR. 4.3.1.2.3 AND 4.3.2.6.1.D.4.b AND THAT BECHTEL COMPLIED WITH PAR. 4.3.2.6.1 OVERALL. (SELECT 2 FROM EACH DISCIPLINE) (WITHIN LAST YEAR)

2. SD REN#	(FIG 4-3m)	4.3.1.6.2										4.3.2.6.1.D.2			
		Used	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	b.	c.	d.	
ARCH.	None Issued														
CIVIL	None Issued														
CONSTR.		UT-301.0Q1P812004-1.1-3-3 ①	✓							OK					
		UT-302.0-01P42002-1.1-3-8	✓							OK					
		UT-515.0-01N171R0054-1.1-1-2	✓							OK					
ELECT.		E-018.0-01R2055204A-1.1-2-H ①	✓							OK					
		E-017.0-01R205504A-1.4-2-4	✓							OK					
MECH		M-015.1-05P413001A-1.5-30-1 ①	✓							OK					
		M-062.0Q1T31001A-1.1-2-5	✓							OK					
		M-611.0-01Z77-B001A-1.1-1-7-7V	✓							OK					

532

D. E. Dene
6/21/79

Att 2 JCR14
Page 173 62

COMMENTS (PAGE 6)

CG 44-1

① NO T "Q" STAMPED. PPM 3.1.4 Pg 3-5 RV 6 (11/22/77) REQUIRES "Q" STAMP. PERM, PAR 4.3.12.6.1.D. 2.b. CONFIRMS WITH THIS REQUIREMENT BY TAKING EXCEPTION TO THE "Q" STAMPING. FOLLOWING SDRS CHECKED & FOUND NOT TO HAVE "Q" STAMP.

- T-301.0-Q1P81N004-1.1-3-3
- E-018.0-Q1R205520AA-1.1-2-6
- E-018.0-Q1R205520AA-1.1-2-F
- E-018.0-Q1R205520AA-1.1-3-E
- E-018.0-Q1R205520AA-1.1-3-D
- E-018.0-Q1R205520AA-1.1-2-C
- E-035.0-Q1R60-M013-C-1.4-1-E
- E-035.0-Q1R60M001D-1.1-4-C
- ~~E-017.0-Q1R205520AA-1.1-4-1-E~~
- ~~E-017.0-Q1R205520AA-1.1-4-1-E~~
- ~~E-017.0-Q1R205520AA-1.1-4-1-E~~
- E-017.0-Q1R205530A-01.4-02-04-4
- M-143.0-Q1E12D004A-1.1-1-3
- M-367.0-Q2F15E004-N-1.4-10-2

See
DEC 95

240

att to JER14
page 18 of 62

NOTE: M-001.0-H22-P042 6E137D7209 ^R 4 - NO PAOS, EUG. STANOFF.
CORRECTED.

NC
file
6/25/79

J. E. Deane
6/21/79.

Att to JER 14
page 19 of 62

3.1.3.5 Automated Document Control System

The Automated Document Control System is utilized to register the transmittal and receipt of project documents and to furnish records of these documents to project personnel for administrative control purposes.

A copy of the Automated Document Control Register (ADCR) will be maintained by the document coordinator to verify the configuration of the engineering documentation transmitted from project engineering. These copies will reflect the engineering documentation released since the last ADCR printout and will provide an accountability of the configuration.

a. Documents to be Registered.

Correspondence between:

Bechtel and Mississippi Power and Light Co.
Bechtel and Middle South Energy, Inc.
Bechtel and Allis-Chalmers
Bechtel and General Electric
Mississippi Power & Light Co. and Allis-Chalmers
Mississippi Power & Light Co. and General Electric
Middle South Energy, Inc. and General Electric

Drawings: Seller drawings and Bechtel drawings

Specifications, Purchase Orders, Subcontracts and other documents, as appropriate.

b. Time of Entry of Data in the Register

Incoming documents will be entered upon receipt by Bechtel.
Outgoing documents will be entered when transmitted from Bechtel.

c. The project administrative services group is responsible for transmitting the ADCR printout of the seller documents and drawings to the jobsite at least quarterly.

3.1.4 Grand Gulf Project Criteria for Quality Records

One of the requirements set forth by NRC's 10 CFR 50, Appendix B, QA Criteria for Nuclear Power Plants, is that every nuclear power plant applicant or his delegated agent have a system which indexes, files, and maintains sufficient records to furnish documentary evidence on the quality of items and activities affecting quality. To comply, the following requirements and guidelines are submitted for project information and implementation:

Rev. 6
11-22-77

3-4b

att to JER 14
Page 20 of 62

Criteria XVII - Quality Assurance Records - 10 CFR 50, Appendix B, specifies that at least the following records shall be maintained:

1. operating logs and the results of reviews, inspections, tests, and audits
2. monitoring of work performances
3. materials analyses

These records should also include closely related data such as qualifications of personnel, procedures, and equipment.

Criteria III - Design Control - requires that documentary evidence and records be maintained to assure that adequacy of designs, including design changes, have been verified or checked.

The project shall identify the following by placing a Q-stamp on the applicable Bechtel-originated document:

1. Drawings, specifications, procedures, instructions, and other design documents which pertain to structures, systems, and components identified on the project Q-list
2. Design changes, including field changes, pertaining to design documents identified on the project Q-list
3. Reports resulting from surveys or audits which are performed by Bechtel to verify compliance with the various aspects of the division/project quality assurance program, NRC, and ASME requirements
4. Verification data and reports resulting from inspections, tests, monitoring of work performance, materials analyses, and qualification of personnel, procedures, and equipment which pertain to structures, systems, and components identified on the project Q-list
5. Nonconformance and corrective action reports and documentation relating to structures, systems, and components identified on the project Q-list

Communications (i.e., letters, wires, teletype, facsimiles, data transmittal forms, telecons, conference notes, etc.) involving documents specified in Section 3.1.4, above, shall include a heading, Nuclear QA Is Applicable, and a Q-stamp in the lower right corner of the communication. These communications shall be maintained as supporting records of evidence of activities affecting quality. (Scheduling, cost, and manpower-related communications are not included in this requirement.)

Rev. 6
11-22-77

This drawing and the design it covers are the property of BECHTEL. They are merely loaned and on the borrower's express agreement that they will not be re-produced, copied, loaned, exhibited, or used except in the limited way and private use permitted by any written consent given by the lender to the borrower.



CORRECTED
COPY

6-21-74
SUPPLIER DRAWING
REVISION NOTICE

NOTE: P.E. Signature added. *EJE*

JOB NO.	DRAWING NO.	REV. NO.
9645	M-00 0-H22-P042 G.E. 13707209	4
RN NO. 4	PAGE 1 OF 1	
BY: W. FORNEY		DATE 2/12/79

REASON FOR CHANGE: Δ ADDED RESISTOR NETWORK FOR COMPUTER INPUTS

This revision indicates the latest status of required field modification for the referenced equipment and supersedes all previous revisions.

*att to JER 14
page 21 of 62*

DESCRIPTION OF CHANGE

ADDED (3) RESISTORS TO TERMINAL BLOCK CC.

MATERIALS REQUIRED

- (2) 500 Ω , 1/4 WATT, 0.1% TOL., NON-INDUCTIVE RESISTORS
- (1) 8 Ω , 1/4 WATT, 0.1% TOL., NON-INDUCTIVE RESISTOR

MANUFACTURERS:

AMF — MANCHESTER, NH
TEL LABS, INC. — LONDONERRY, NH

SDRN REVISIONS					
REV	4				
DATE	2/12/79				
BY/CHK	WJ/JS				
SUP	WJ				
PROJ	WJ				

243

INCLOSURE V PAGE 117

H6



SUPPLIER DRAWING
REVISION NOTICE

JOB NO.	DRAWING NO.	REV NO.
9045	M-001.0-H22-PO42 G.E. 137D7209	4
RN NO. 4	PAGE 1 OF 1	
BY: W. FORNEY		DATE 2/12/79

REASON FOR CHANGE: Δ ADDED RESISTOR NETWORK FOR COMPUTER INPUTS

This revision indicates the latest status of required field modification for the referenced equipment and supersedes all previous revisions.

*att L Jerris
page 22 of 62*

DESCRIPTION OF CHANGE

ADDED (3) RESISTORS TO TERMINAL BLOCK CC.

MATERIALS REQUIRED

- (2) 500 Ω , 1/4 WATT, 0.1% TOL., NON-INDUCTIVE RESISTORS
- (1) 8 Ω , 1/4 WATT, 0.1% TOL., NON-INDUCTIVE RESISTOR

MANUFACTURERS:

AMF — MANCHESTER, NH
TEL LABS, INC. — LONDONERRY, NH

SDRN REVISIONS					
REV	4				
DATE	2/12/79				
BY/CHK	WJ/62				
SLP	WJ				
PROJ					

244

INCLOSURE V PAGE 118

#7

4

*

1/8 INCH MIN. FROM ALL OTHER COLORED WIRED
BECHTEL FIELD TO INSTALL RESISTORS.

AF B33-N0140

SIGNAL

TEST FOR METER

SIGNAL
(+)-EE-1 } SEE NOTE 4
(-)-EE-2 }

AJ E31-N086D

SIGNAL

TEST FOR METER

SIGNAL
(+)-EE-4 } SEE NOTE 4
(-)-EE-5 }

ELEMENTARY DIAGRAM

MPL NO

- | | | |
|----|---------------------------------|----------|
| 1. | FEEDWATER CONTROL SYSTEM (TURB) | C34-1050 |
| 2. | NUC STEAM SUPPLY SHUTOFF SYSTEM | B21-1090 |
| 3. | POWER RANGE NEUTRON MON 3Y5 | C51-1080 |

GRAND GULF 1 & 2
MPL ITEM NO. H22-P042
PART OR GROUP NO.

REVISED		DATE	BY	REASON	PRINTS TO
1	11-30-77	48	2	5-22-77	AMC-1415
3	11-30-77	48	2	5-22-77	AMC-1415
NE 75777		NE 22243		NE 77422	
CHAP BY DAKW.		CHKE H-5		CHND RLS	
P. CANNIZZANO		P. CANNIZZANO		P. CANNIZZANO	
SAN JOSE		SAN JOSE		SAN JOSE	
132D7209		132D7209		132D7209	

CHD BY R. SHALLINGER

CI

284639

393011

4	11/11/77	SEE SDRN	GRP	PE
REV	DATE	RE	CHK	DESCRIPTION
BECHTEL REVISION				

BECHTEL P.

JAN 19 1978

NO. 945

ENCLOSURE V PAGE 1/5

H8

H. Clatter

2-23-78

Att to Jerry
page 23 of 62

att to JER 14
page 24 of 62



SUPPLIER DRAWING
REVISION NOTICE

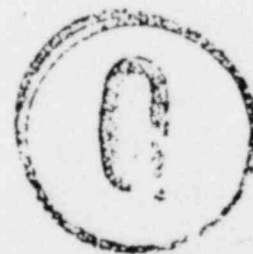
JOB NO.	DRAWING NO.	REV NO.
9645	044424	3
RN NO. 01-1.2-1063 PAGE 1 OF 1		
BY: L.S. Raphael DATE 4/11/79		

REASON FOR CHANGE: Body Drain for Valves not needed

DESCRIPTION OF CHANGE

ZONE LOCATION

Body Drains to be plugged in field.



[Signature] 4/11/79
GROUP SUPV./DATE

246

[Signature] 4-11-79
P.E./A.P.E./DATE

This drawing and the design it covers are the property of BECHTEL. They are merely loaned and on the borrower's express agreement that they will not be re-produced, copied, loaned, exhibited, or used except in the limited way and private use permitted by any written consent given by the lender to the borrower.



SUPPLIER DRAWING
REVISION NOTICE

att to 56014
page 25 of 62

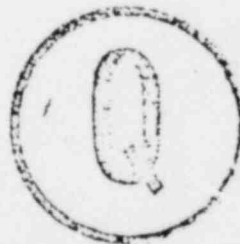
JOB NO.	DRAWING NO.	REV. J.
9645	Master Certification sheets - 6 sheets	3
RN NO. ^{SDR N-1-4} 6-3	PAGE 1 OF 1	
BY: L. S. Raphael	DATE 4/5/79	

REASON FOR CHANGE: Limitation of Actuates do not meet
revised wiring requirements.

DESCRIPTION OF CHANGE

Revised Applicable
Wiring Diagrams

ZONE LOCATION



W. H. H. 4/6/79
GROUP SUPV./DATE

(247)

F. J. Smith 4-10-79
P.E./A.P.E./DATE

This drawing and the design it covers are the property of BECHTEL. They are merely loaned and on the borrower's express agreement that they will not be re-produced, copied, loaned, exhibited, or used except in the limited way and private use permitted by any written consent given by the lender to the borrower.



SUPPLIER DRAWING
REVISION NOTICE

att to JER 14
page 26 of 62

JOB NO.	DRAWING NO.	REV NO.
5045	9-122-D-QIERIACCHA-	1-1-1-6
RN NO. 6-122-D-QIERIACCHA- 1-1-1-6	PAGE 1	OF 1
BY: J. Illan	DATE 3-9-79	

REASON FOR CHANGE: Correct nozzle service

DESCRIPTION OF CHANGE

Corrected nozzle service

ZONE LOCATION

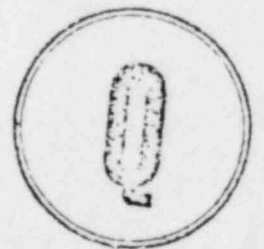
Upper left of the
Title block

24. 3/12/79

3/12/79
GROUP SUPV./DATE

248

3/14/79
P.E./A.P.E./DATE



att to JER 14
page 27 of 62



SUPPLIER DRAWING
REVISION NOTICE

JOB NO.	DRAWING NO.	REV. NO.
9345	M-06210 QIT31E001-N-1.1-2	5
RN NO. 5	PAGE 1 OF 1	
BY: D. PRICE	DATE 7-13-78	

REASON FOR CHANGE: To change location of limit switches per
CR/N NO. M-213 dated 5/9/78

DESCRIPTION OF CHANGE

ZONE LOCATION

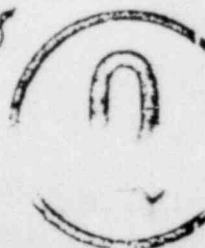
1. Changed view to show new
placement of limit switches
AND ADDED DETAIL TO CLARIFY
PLACEMENT.

LEFT CENTER AND
RIGHT CENTER OF
SHEET.

7/19/78
GROUP SURV. DATE

(249)

7-20-78
P.E./A.P.E./DATE



att to JER14
page 28 of 62



SUPPLIER DRAWING
REVISION NOTICE

JOB NO.	DRAWING NO.	REV. NO.
9645	9645-M-015,1-QSP41 B001A-1,3-30-1	1
RN NO. 1	PAGE 1	OF 1
BY: S. JOHNSON		DATE MAY 29, 1979

REASON FOR CHANGE: To REVISE BOLT HOLE PATTERN ON DRIVESHAFT
GUARD CHANNELS "A" & "B" (PER FCN-M-164)

DESCRIPTION OF CHANGE

ZONE LOCATION

1. REVISED BOLT HOLE LOCATIONS
ON CHANNELS "A" & "B" AND
SWITCHED ORIENTATION OF
CHANNELS SO CHANNEL "A" IS ON
THE BOTTOM AND CHANNEL "B"
IS ON TOP

UPPER RIGHT
CORNER

5/29/79
5/29/79
GROUP SUPV./DATE

250

5/29/79
M. O. P. / DATE

Att. to JEC 14
Page 29 of 62



SUPPLIER DRAWING
REVISION NOTICE

JOB NO.	DRAWING NO.	REV. NO.
9645	M-611.0-Q1277- B001A-A-1.1-1-7	7
RN NO. 7	PAGE 1	OF 4
BY: P.J. ROMBOLD DATE APR. 16 1979		

REASON FOR CHANGE: FCR-M642

SEE BELOW

DESCRIPTION OF CHANGE

ZONE LOCATION

- ITEM 1. - PROVIDE ADDITIONAL ELECTRICAL PENETRATIONS IN UNIT HOUSINGS WITH PROCEDURE FOR CUTTING & WELDING. VENDOR SUPPLIED PENETRATIONS ARE INADEQUATE. SEE PAGE 3 AND NOTES "C", "D", AND "E"
- ITEM 2. - USE EXISTING PENETRATION FOR MOTOR GROUNDING. SEE PAGE 3
- ITEM 3. - PROVIDE PROCEDURE FOR INSTALLING SUPPORTS FOR CONDUITS & CABLES INSIDE UNIT HOUSINGS. NO PROVISIONS FOR THIS SUPPORT SUPPLIED WITH THE UNITS. SEE PAGE 4 AND NOTE "F"
- ITEM 4. - RELOCATE CONTROL CABINET TO OPPOSITE SIDE OF UNIT HOUSING ON UNIT Q1277B001B-B ONLY. INTENDED LOCATION INTERFERES WITH SPOOL

NO. M-0225 REV. 4.

NOTES: A. - ITEMS 1, 2, & 3 APPLY TO UNITS Q1277B001A-A, B-B, AND Q2277B001A-A, B-B.

B. - SEE NCR #3468 FOR UNAUTHORIZED WELDING OF 2" P CONDUIT COUPLING ON UNIT Q1277B001A-A ONLY.

WJ 4-16-79

GROUP SUPV./DATE

(151)

P.E./A.P.E./DATE





SUPPLIER DRAWING
REVISION NOTICE

JOB NO.	DRAWING NO.	REV. NO.
5645	M-611.0-Q1277- 8001A-A-1.1.1-7	7
RN NO.	7	PAGE 2 OF 4
BY: P.J. ROMBOLD DATE APR. 16, 1979		

NOTES, CONTINUED


Att to JERRY
page 30 of 62

- C- HOLES SHALL NOT BE FLAME CUT; USE MECHANICAL METHOD - DRILLING OR SAWING.
- D- CONDUIT COUPLINGS TO BE MECHANICALLY INSTALLED, NOT WELDED
- E- DIMENSIONS AND LOCATIONS ARE SUGGESTED ONLY, FIELD TO LOCATE TO CLEAR ANY STIFFENERS OR BRACING INSIDE UNITS
- F- FIELD ENGINEERING TO SELECT APPROPRIATE WELDING PROCEDURES

152

CPO-13722-A 577

Existing - Use For
14 AWG Control
Cable

"A"  PAGE 3

NEW - REF: ITEM 1.

NEW 2" Ø -
TABLE FOR M

EXISTING - USE FOR
ANG POWER CAB

NEW 3/4" Ø - USE FOR
MOTOR HEATER

NEW 2" Ø - USE FOR
TRIPLEXED CABLE
FOR MOTOR

SEE NOTE B.

NEW-REF: ITEM 4.

CONTROL CABINET

Access Door

SEGD. SUGR. & EAT. DS.
AIR HANDLING UNIT

"A" —
NEW — ROTATE MOTOR
TERMINAL BOX 180°
FOR TOP ENTRY.

NEW- REF: ITEM 2:
EXISTING- USE FOR #2
MOTOR GROUND WIRE

2-1331"

N.O.M-611.0-Q1277 Page 3 of 4
8001A-4-1.1-1-7

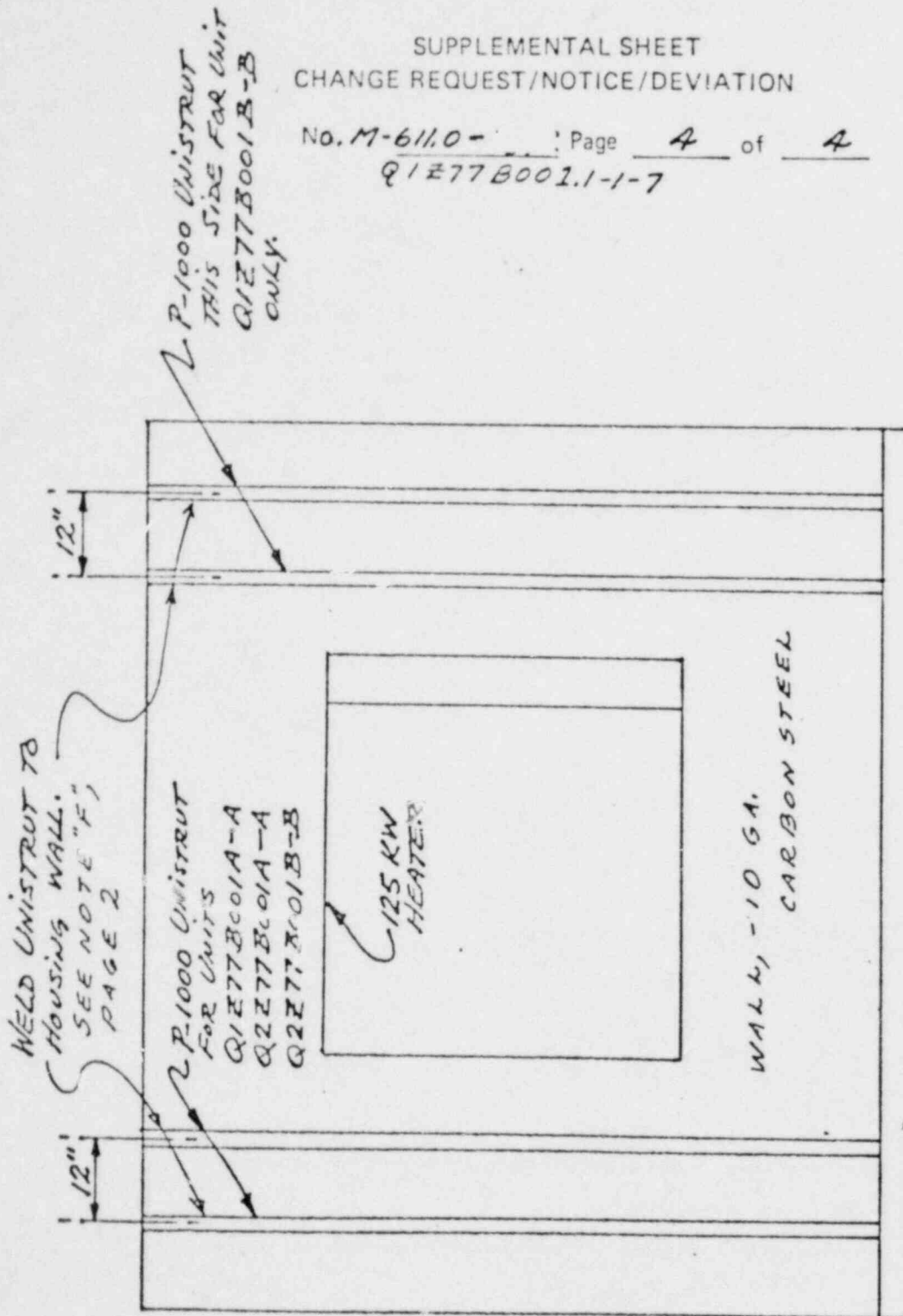
att 48 JER 14
page 31 of 62

INCLOSURE V PAGE 127

+26

SUPPLEMENTAL SHEET
CHANGE REQUEST/NOTICE/DEVIATION

No. M-611.0 - Page 4 of 4
Q1E77B001.1-1-7



NEW - ITEM 3
SECTION "A A"
(FROM PAGE 2)

254

REPROGRAPHICS

X-2003

X-2762

GRAND GULF
PROJECT ADM.

DELIVERIES

2 D - 11

A 42432

RC 01 3	2 CONTROL NO. 7	NO. OF RECORDS 8 9 12	DATE REQUESTED 11/30/79	ENTER # CODE 18 19 20	ORGANIZATION CODE 25 26 27	JOB OVERHEAD CODE 31 32	SUB JOB OR ACCOUNT 35 36	DATE REQUIRED MO DAY YR 11 17			
DESCRIPTION OF WORK BEING SUBMITTED CDT 4456 M-1110		DRAWING NO.		REVISION NO.		NO. OF ORIGINALS 2		NO. COPIES PER ORIGINAL 4		SIZE & TYPE PAPER REQUIRED 11x17 Legal	

CHECK SERVICE(S) REQUESTED		<input checked="" type="checkbox"/> MICROGRAPHICS		<input checked="" type="checkbox"/> DIAZO PRINTING		<input type="checkbox"/> OFFSET PRINTING		<input type="checkbox"/> COPY CENTER		<input type="checkbox"/> PHOTO LAB.		<input type="checkbox"/> VENDOR SERVICES	
MICROGRAPHIC BOND PRINTS <input type="checkbox"/> FOLD <input type="checkbox"/> ROLL <input type="checkbox"/> COLLATE		MICROGRAPHIC VELLUM PRINTS <input type="checkbox"/> FOLD <input type="checkbox"/> ROLL <input type="checkbox"/> COLLATE		ACETATE COVER		COLLATE		REPROGRAPHICS USE ONLY		CODE		ORIGS QUANTITY ORIG.	
35MM SILVER APERTURE CARD		35MM DIAZO DUPLICATE APERTURE CARD		DRILLING <input type="checkbox"/> 3 HOLE OR _____ HOLE(S)		FOLDING <input type="checkbox"/> MACHINE <input type="checkbox"/> HAND		40 42 43 46 47 52 53 54		<i>Att to JER14</i> <i>Page 33 of 62</i>			
SLAVE CARD				GBC BINDING (PLASTIC RING) SIZE _____									
35MM SILVER ROLL				STAPLE (UPPER LEFT)									
35MM DUPLICATE ROLL <input type="checkbox"/> DIAZO <input type="checkbox"/> SILVER				TRIM <input type="checkbox"/> PAD <input type="checkbox"/> BAND									
COMPUTER P.O. 16MM SILVER ROLL				PRINT <input type="checkbox"/> 1 SIDE <input type="checkbox"/> 2 SIDES									
COMPUTER P.O. 16MM DIAZO DUPLICATE ROLL				METAL PLATE <input type="checkbox"/> E <input type="checkbox"/> R									
16MM BOND PRINT				NEG. <input type="checkbox"/> FLAT <input type="checkbox"/> SCREEN <input type="checkbox"/> DBL. <input type="checkbox"/> STEP									
16MM SILVER <input type="checkbox"/> ROLL <input type="checkbox"/> CART				STRIP <input type="checkbox"/> BURN									
16MM DUP. <input type="checkbox"/> DIAZO <input type="checkbox"/> SILVER <input type="checkbox"/> ROLL <input type="checkbox"/> CART				<input type="checkbox"/> RING BINDING <input type="checkbox"/> PERFECT BINDING									
MICROFICHE/MICROJACKET BOND PRINT				<input type="checkbox"/> ACCO-FASTEN <input type="checkbox"/> CLIP									
MICROFICHE/MICROJACKET SILVER				COLOR WASH									
MICROFICHE/MICROJACKET DIAZO DUPLICATE				COMPOSITION									
BLUE LINE PRINT <input type="checkbox"/> FLAT <input type="checkbox"/> ROLL <input checked="" type="checkbox"/> FOLD		SEPIA PRINT <input type="checkbox"/> FLAT <input type="checkbox"/> ROLL <input checked="" type="checkbox"/> FOLD		PHOTOGRAPHY <input type="checkbox"/> B&W <input type="checkbox"/> COLOR									
DIAZO MYLAR .003 MIL (BLACKLINE)				NEGATIVES									
DIAZO MYLAR .002 - .0015 MIL (SEPIA)				FILM POSITIVES									
TRANSPARENCY DIAZO FOIL				PRINTS									
XEROX COPIES				<input type="checkbox"/> SLIDES <input type="checkbox"/> VUGRAPHS									
XEROX <input type="checkbox"/> COLOR COPIES <input type="checkbox"/> TRANSPARENCY				HALFTONES									
REDUCE TO _____ OR _____				WASH OFF MYLAR									
				AUTO POSITIVE									
				OTHER (SPECIFY)									

ADDITIONAL INSTRUCTIONS:

*Fold Originals**OK**to microfilm*REPROGRAPHICS
COMMENTS

NAME _____ HAS REQUESTED RUSH REPROGRAPHICS SERVICES AS DESCRIBED ABOVE NECESSITATING A SPECIAL HANDLING CHARGE OF \$ _____ DATE 1 / 17 x APPROVED BY: _____ PROJ. ENG. _____

REPROGRAPHICS USE ONLY	APPROVED BY:	
	OPERATOR/VENDOR	
	OTHER OPERATIONS/VENDORS	
REC'D BY		

REQUESTOR'S COPY

INCLOSURE V PAGE 129 + 28

DATE & TIME RECEIVED

GPD-0401 REV. 11/77

DATE & TIME COMPLETED

Att to JER 14
Page 34 of 62

SUPPLIER DRAWING
REVISION NOTICES
ONLY

PAGE
667

- c. The Group Supervisor shall decide if the design change requires the same level of approval as its associated drawing.
- d. Approve by signing on the specified line.
- e. Add names of other personnel under ADDITIONAL DISTRIBUTION that should be included in distribution of the particular DCN who are not on the master distribution list.

All DCNs shall be reproduced by Xerox or other black-and-white process. For distribution purposes, DCNs will be treated the same as drawings. For transmittal purposes, the DCN Form will serve as its own transmittal. When DCNs are issued, document control will enter the CDT number and date at the bottom of the DCN (Figure 4-3b). All DCNs will be filed in the Project files. A microfilm aperture card of outstanding DCNs shall be filed on project next to the microfilm of its related drawing revision.

Since DCNs are incorporated into the next revision of a drawing, only those DCNs pertaining to the current revision of the drawing need be filed with the drawing aperture card. The original of the DCN will be filed in the general subject files, file 0075. (effective 1-31-75 - retrofit not required). Figure 4-3d graphically illustrates this procedure. Each engineering discipline shall maintain a Drawing Change Notice Log, Figure 4-3c.

4.3.1.6.2 PIPING & INSTRUMENT DIAGRAM AND SYSTEM FLOW DIAGRAM REVISION

NOTICES (RN)

P&IDs and SFDs are revised without circling the revisions on the back of the tracing. To facilitate identifying and locating each change, a "Revision Notice" (Figure 4-3f) will accompany each issue subsequent to "Issue for Construction," when the revision block lacks adequate space to describe the change, and be part of the transmittal letter. (a) The notice will identify each change with a brief description of the revision and refer to its drawing location by use of zone coordinates. (b) The revision block of the drawing will refer to the Revision Notice, i.e., "See Revision Notice 9645-SFD-0035-1."

256

(c) Revision Notices are prepared by the engineer cognizant of the proposed revision and approved by the Group Supervisor, Project Engineer/Assistant P.E. (d) Revision Notices for Safety Related (Q) P&ID's and/or SFD's will be submitted with the P&ID's and SFD's to the cognizant discipline and ~~Nuclear~~ ~~Chief Engineer~~ for review and approval when the revision affects Design Criteria, SAR, or Codes and Standards (see DRN Procedure 6.3 of PEFM).

(e) In preparing the RN, the blanks at the top of the form are self-explanatory. "The Reason for Change" should be clearly stated in a few words to establish a historical record of why the change was made.

(f) The QA classification must be entered as "Q" or "N", and stamped "Q", when applicable, in the lower right corner. The "Q" entry is required when the drawing defines a Safety Related Equipment or Material included in the project Q-List. (g) The number of the RN must agree with the revision number of the drawing. (h) In no case will one RN cover changes relating to different drawings.

Examples of RN numbering are as follows:

<u>Drawing No.</u>	<u>RN No.</u>	<u>Applicable Dwg. Rev.</u>
M-0051	1	1
	2	2
	3	3
M-1051	1	1
	2	2
	3	3

(i) All RNs shall be reproduced by Xerox or other black-and-white process.

(251)

att to JER 14
page 36 of 62

SUPPLIER DRAWING
REVISION ONLY

~~6.1.1~~ The original of the RN will be filed in the general subject file (No. 0079). Effective Date 1-31-75 - Retrofit not required.

4.3.2 DRAWINGS AND DOCUMENTS BY VENDORS /SUBCONTRACTORS

4.3.2.1 GENERAL

The purchase order or subcontract specification contains the requirements for the engineering and quality verification and documentation, Appendix B, to be furnished by the seller or subcontractor.

4.3.2.2 RECEIVING, HANDLING, AND REVIEW OF VENDOR DRAWINGS/DOCUMENTS

A. DOCUMENT CONTROL

1. Upon Receipt (1st day)

a. Receive package and verify contents with transmittal letter and SED-1.

b. Apply Date Received Stamp to transmittal letter, SED-1, each sepia, print, aperture card, and document received.

c. Sort documents by discipline utilizing MPL or specification number.

d. Enter receipt of drawings/documents into the Automated Document Control Register.

e. Check standard VENDOR DRAWING/DOCUMENT DISTRIBUTION FOR REVIEW form for that specification (Figure 4-3h as filled in by the Responsible Engineer), determine copies needed and order from reproduction. (Note: If sufficient prints are received from Vendor, these will be distributed and the reproduction cycle will be bypassed.)

2. During Reproduction Cycle (2nd working day)

(The following steps must not interfere with the distribution of the drawings/documents.

4.3-20
Rev. 3
2-1-75

058

This drawing and the design it covers are the property of BECHTEL. They are merely loaned and on the borrower's express agreement that they will not be re-produced, copied, loaned, exhibited, or used except in the limited way and private use permitted by any written consent given by the lender to the borrower.



Att to SER 14
Page 37 of 62

SUPPLIER DRAWING
REVISION NOTICE

JOB NO.	DRAWING NO.	REV.
9645		
RN NO.	PAGE	OF
BY:	DATE	

REASON FOR CHANGE:

DESCRIPTION OF CHANGE

ZONE LOCATION

GROUP SUPV./DATE

P.E./A.P.E./DATE

Figure 4-3m
Rev. 0
7-8-77

TRANSMITTAL

Att to JER 14
Page 38 of 62BECHTEL POWER CORPORATION
GAITHERSBURG POWER DIVISION15740 Shady Grove Road
Gaithersburg, Maryland 20760

BECHTEL

TO: FIELD CONSTRUCTION
BECHTEL POWER CORPORATION
P. O. BOX 41
PORT GIBSON, MISSISSIPPI 39150

DATE: November 16, 1977 CDT- 77/4695

MIDDLE SOUTH ENERGY, INC.

BECHTEL JOB 9645

SPECIFICATION NO. 9645-J-700.0

ATTN: D. M. LAKE

BECHTEL FILE NOS. 0810/0081/J-700.0

1	Sepias	Encl. <input checked="" type="checkbox"/>	Under Sep. Cover	<input type="checkbox"/>
1	Prints	Encl. <input checked="" type="checkbox"/>	Under Sep. Cover	<input type="checkbox"/>
1	Microfilm	Encl. <input checked="" type="checkbox"/>	Under Sep. Cover	<input type="checkbox"/>
	Specs	Encl. <input type="checkbox"/>	Under Sep. Cover	<input type="checkbox"/>
	Vellums	Encl. <input type="checkbox"/>	Under Sep. Cover	<input type="checkbox"/>
1	Other	Encl. <input checked="" type="checkbox"/>	Under Sep. Cover	<input type="checkbox"/>

Revision Notice

ACTION NUMBER

1. Approved - Manufacturing may proceed.
2. Approved - Submit final dwg. - Mfg. may proceed.
3. Approved except as noted - Make changes and sub final dwg. - Mfg. may proceed as approved.
4. Not Approved - Correct and resubmit.
5. Review not required - Mfg. may proceed.
6. Comment/Approval Due Date _____
7. Information Only
8. Other _____

QA (IS NOT) APPLICABLE

Action No.	Vendor/Bechtel Document No.	Master Parts List Number	DESCRIPTION		Title
			Rev.	Date Issued	
1	20704	NS-1.2-2-B			Layout Radial Probe Installation 9645-M-007.0 Pump
		SDRN-NS-1.2-2-B			Supplier Drawing Revision Notice

Note: These are Supplier Documents that have been revised by Project Engineering and require action by Field Construction.

INSTRUCTIONAL NOTE: The action number assigned to the Bechtel-revised drawing/document must be the same action number that had been assigned to the latest Supplier drawing/document received.

Sample

LH/dn

cc: L. F. Dale 2w/1M
C. K. McCoy w/1M+1
W. L. Nail w/1M
T. F. Reaves w/o
Dr. D. C. Gibbs w/o

bcc: Resp. Engr.
Resp. Grp. Sup.
Proj. Expediter

Very truly yours,

for E. T. Elstner

Project Engineer

Figure 4-3
Rev. 2

Page 133

INCLOSURE V PAGE 134

TRANSMITTAL

att to JER 14
Page 39 of 62

BECHTEL POWER CORPORATION
GAITHERSBURG POWER DIVISION

Post Office Box 607
15740 Shady Grove Road
Gaithersburg, Maryland 20760



TO: FIELD CONSTRUCTION
BECHTEL POWER CORPORATION
P. O. BOX 41
PORT GIBSON, MISSISSIPPI 39150

DATE: 11-17-76 CDT - 76/3053

MIDDLE SOUTH ENERGY, INC.

BECHTEL JOB 9645

SPECIFICATION NO. 9645-M-141.1

ATTN: H. D. BRUNER

BECHTEL FILE NOS. 0810/M-141.1

_____ Sepias	Encl. <input type="checkbox"/>	Under Sep. Cover <input type="checkbox"/>
<u>1</u> Prints	Encl. <input checked="" type="checkbox"/>	Under Sep. Cover <input type="checkbox"/>
_____ Microfilm	Encl. <input type="checkbox"/>	Under Sep. Cover <input type="checkbox"/>
_____ Specs	Encl. <input type="checkbox"/>	Under Sep. Cover <input type="checkbox"/>
_____ Vellums	Encl. <input type="checkbox"/>	Under Sep. Cover <input type="checkbox"/>
_____ Other	Encl. <input type="checkbox"/>	Under Sep. Cover <input type="checkbox"/>

ACTION NUMBER

1. Approved - Manufacturing may proceed.
2. Approved - Submit final dwg. - Mfg. may proceed.
3. Approved except as noted - Make changes and submit final dwg. - Mfg. may proceed as approved.
4. Not Approved - Correct and resubmit.
5. Review not required - Mfg. may proceed.
6. Comment/Approval Due Date _____
7. Information Only
8. Other _____

QA (IS) NOT APPLICABLE

Action No.	Vendor/Bechtel Document No.	Master Parts List Number	DESCRIPTION		Title
			Rev.	Date Issued	
7					Quality Verification Documents (G-321-C)

NOTE: These documents were erroneously sent to Project Engineering. Project Engineering will not be maintaining a file copy.

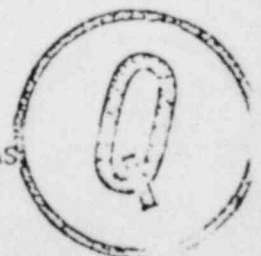
MN cyw
MN/ne

cc: J. P. McGaughy, Jr. 2w/o
W. L. Nail w/o
T. E. Reaves w/o
Dr. C. G. Chezem w/o
Document Control Register w/o

bcc: W. Stockton w/o
A. Menendez w/o
M. Nayyar w/o

Very truly yours,

T. W. HABERMAS
Project Engineer



att to JER 14
page 40 of 62

TA9#
SQ 1 1/2 - 000 PSV -
FOZ 9H

LETTER OF VERIFICATION

SUBJECT VALVES WERE MANUFACTURED IN ACCORDANCE WITH APPROVED
PROCEDURES AS FOLLOWS:

1. Cleaning & Packaging #CP-106, Rev. 8, Addendum 9,
Rev. 1 - Approved 9/10/76
2. Heat Treat Procedure #QAP-HT(P-1)-1 Approved 9/16/75
3. Hydro Test Procedure #T-110, Rev. 9 Approved 2/11/75
4. Wall Thickness #I-100, Rev. 2 Approved 9/1/75
- 5. Preservation, Packaging
& Marking #PS-101, Rev. 2 Approved 2/11/75

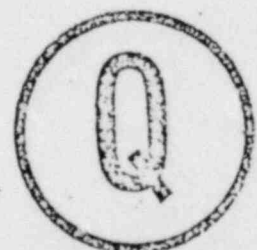
RECEIVED
309

J. Zuraski

J. Zuraski.
Quality Assurance Manager

J. E. Lonergan Company
P. O. Box 6167
Philadelphia, Pa. 19115

262



att # JZR14
page 41 of 62

TAG-5911/- DC.B PSU-F029

LETTER OF VERIFICATION

SUBJECT VALVES WERE MANUFACTURED IN ACCORDANCE WITH APPROVED PROCEDURES AS FOLLOWS:

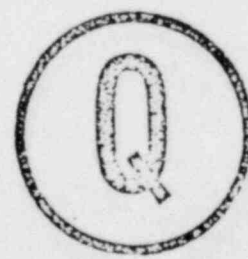
1. Cleaning & Packaging #CP-106, Rev. 8, Addendum 9,
Rev. 1 - Approved 9/10/76
2. Heat Treat Procedure #QAP-HT(P-1)-1 Approved 9/16/75
- 3. Hydro Test Procedure #T-110, Rev. 9 Approved 2/14/75
4. Wall Thickness #I-100, Rev. 2 Approved 9/3/75
5. Preservation, Packaging
& Marking #PS-101, Rev. 2 Approved 2/14/75

J. Zuraski

J. Zuraski
Quality Assurance Manager

J. E. Lonergan Company
P. O. Box 6167
Philadelphia, Pa. 19115

263



TEST REPORT

Att to JER 14
page 42 of 62

TEST PROC. NO. 7-110 REV. 9

LOHMEGAN ORDER NO. 501320-1

DATE 7-20-77

CUSTOMER Mississippi Power & Light

CUSTOMER ORDER NO. 9445-m-14

ITEM NO. 18

SPRING NO. _____

SIZE <u>1 1/2" x 2"</u>	MODEL <u>D-70 D/L3</u>
SET PRESSURE <u>1380</u>	Cold Diff. <u>1380</u> O-RING <u>D</u>
BACK PRESSURE <u>6</u>	CAP. <u>66.7</u> CFM AIR _____
<u>10% OVER-PRESS.</u>	LBS/HR STM _____
SERIAL NO. <u>18-1</u>	GPM WATER <u>✓</u>
TAG NO. <u>50-1 1/2 - DCB - PSV - F029A</u>	

	DURATION	INSP.	DATE	GAGE NO.
HYDRO TEST INLET <u>2079</u>	OF TEST <u>10 min</u>	(JEL 2)	<u>7-21-77</u>	<u>15</u>
HYDRO TEST OUTLET <u>425</u>	OF TEST <u>10 min</u>	(JEL 2)	<u>7-21-77</u>	<u>14</u>
HYDRO TEST BURNET (BELLOWS VALVE) <u>✓</u>	OF TEST <u>✓</u>	<u>✓</u>	<u>✓</u>	<u>✓</u>
AIR TEST BELLOWS <u>✓</u>	OF TEST <u>✓</u>	<u>✓</u>	<u>✓</u>	<u>✓</u>
SEAT TEST PRESSURE <u>1242</u>	DURATION OF TEST <u>1 min</u>	(JEL 3)	<u>7-21-77</u>	<u>15</u>
ALLOWABLE SEAT LEAKAGE <u>5 DROPS FOR 1 min.</u>				DROPS <u>✓</u>
ACTUAL SEAT LEAKAGE <u>0/Drops</u>	TIME <u>1 min</u>			BUBBLES <u>✓</u>
ACTUAL RESEAT PRESSURE <u>N/A</u>				

CAP. TYPE <u>Sealed</u>	CUSTOMER INSPECTORS <u>J. H. ... 7/27/77</u>
SERVICE <u>H2O</u>	TESTERS <u>Miller 7-26-77</u>
O RING NO. <u>N/A</u>	<u>(264)</u>

This requirement is Engineering and Construction verification documents. Any failure to comply with this requirement may result in a deficiency being identified. The following are the requirements for compliance with this requirement.

1. Document Category Number	2. Specification Paragraph Reference	3. Kind of Control	4. Engineering Documents		5. Quality Verification Documents								12. Remarks
			4.1. Quantity Required	4.2. Quantity Required	5.1. For All the Documents	5.2. For the Documents	6.1. Distribution Code	6.2. Distribution Code	6.3. Distribution Code	6.4. Distribution Code	6.5. Distribution Code	6.6. Distribution Code	
20.1	7.2, 7.1	Repro	-	-	-	-	1	b-1					
20.2	7.2.3, 7.1	Repro	-	-	-	-	1	b-1					
21.0	7.3, 7.1	Repro	1	4	X	-	1	b-1					
22.0	7.4, 7.1	Repro	1	4	X	-	1	b-1					
24.0	7.8, 7.1	Repro	4	4	X	-	1	b-1					
25.0	7.7	Repro	4	4	X	-	3	b-1					
26.0	7.9.1	Repro	4	4	X	-	-	-					
26.1	7.9.1	Repro	-	-	-	-	5	a-2					
27.0	5.2.4	Repro	4	4	X	-	-	-					
28.0	8.0	Repro	4	4	X	-	3	b-1					

Att to JER 14
page 43 of 62

SOME AS 24

If Applicable



13. Supplier's Order No. _____ 14. Supplier's Part No. _____ 15. Supplier's Part Name _____ 16. Quantity _____

17. Supplier's Request No. (U. 2. 2.) _____ 18. Supplier's Request Tag or Code No. _____ 19. Supplier's Part Name _____ 20. Technical Drawing _____

21. Supplier's Performance Statement: The quality of the final work and required documents meet the requirements of the preceding documents. *Signature: J. Z. Kiaraki* *Date: 8-4-77*

22. Inspection Statement: Work was referred based on satisfactory transmission of inspection and review of documentation. *Signature: J. Z. Kiaraki* *Date: 8-4-77*

23. Engineering Review Statement: The Quality Verification Documents submitted to Engineering with this form have been reviewed for conformance to the specified requirements and are acceptable. *Signature: J. Z. Kiaraki* *Date: 8-4-77*

24. FOC Check-in Statement: This form and the Quality Verification Documents referenced herein have been received and their responsibility to the hardware items verified. *Signature: J. Z. Kiaraki* *Date: 8-4-77*


25. QAE Audit Statement: The Quality Verification Documents furnished with this form have been audited. *Signature: J. Z. Kiaraki* *Date: 8-4-77*

After FOCs Check-in Distribute to: Project Engineering, Procurement Manager, and Construction Manager, and all Suppliers.



AD INSTRUCTION ON QUALITY VERIFICATION

These instructions apply to the preparation and submission of Quality Verification Documents (QVDs) for the purpose of ensuring that the work is done in accordance with the requirements of the contract and the specifications of the project. The QVD is a document which is used to verify that the work has been done in accordance with the requirements of the contract and the specifications of the project. The QVD is a document which is used to verify that the work has been done in accordance with the requirements of the contract and the specifications of the project.

1. Item Number	2. Specification Paragraph Reference	3. Kind of Error	4. Quantity		5. Date		6. Date		7. Date		8. Date		9. Date		10. Date		11. Date		12. Remarks
			1. Item No.	2. Item No.	1. Item No.	2. Item No.	1. Item No.	2. Item No.	1. Item No.	2. Item No.	1. Item No.	2. Item No.	1. Item No.	2. Item No.	1. Item No.	2. Item No.	1. Item No.	2. Item No.	
1.2	10.0	Repro	2	2	X	-	-	-	-	-	-	-	-	-	-	-	-	-	att to JER14 pag 44 of 62
2.0	10.0	Microfilm	2	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
3.0	10.0, App. Q	Repro	4	4	-	X	-	-	-	-	-	-	-	-	-	-	-	-	
5.0	10.0	Microfilm	-	-	-	X	-	-	-	-	-	-	-	-	-	-	-	-	
6.0	13.0, App. C	Repro	-	1	X	-	-	-	-	-	-	-	-	-	-	-	-	-	
7.0	5.2.4	Microfilm	-	-	-	X	-	-	-	-	-	-	-	-	-	-	-	-	
12.0	6.4.2	Repro	1	4	X	-	1	b-1	11/1/72	-	-	-	-	-	-	-	-	-	
13.0	6.4.2	Microfilm	-	-	-	X	-	b-1	11/1/72	-	-	-	-	-	-	-	-	-	
14.0	6.4.2	Repro	4	4	X	-	3	b-1	11/1/72	-	-	-	-	-	-	-	-	-	
15.0	3.0	Microfilm	-	-	-	X	-	c-2	11/1/72	-	-	-	-	-	-	-	-	-	
16.0	6.5	Repro	1	4	X	-	1	b-1	11/1/72	-	-	-	-	-	-	-	-	-	
17.1	6.2	Microfilm	-	-	-	-	-	b-1	11/1/72	-	-	-	-	-	-	-	-	-	
18.0	4.1(b)	Repro	-	-	-	-	2	b-2	11/1/72	-	-	-	-	-	-	-	-	-	
20.0	7.2, 7.1	Microfilm	-	-	-	X	-	-	11/1/72	-	-	-	-	-	-	-	-	-	
		Repro	1	4	X	-	-	-	11/1/72	-	-	-	-	-	-	-	-	-	

1. Project Name	2. Project Number	3. Project Title	4. Project Location
5. Project Description	6. Project Status	7. Project Date	8. Project Author
9. Project Reviewer	10. Project Approver	11. Project Date	12. Project Location
13. Project Description	14. Project Status	15. Project Date	16. Project Author
17. Project Reviewer	18. Project Approver	19. Project Date	20. Project Location
21. Project Description	22. Project Status	23. Project Date	24. Project Author
25. Project Reviewer	26. Project Approver	27. Project Date	28. Project Location
29. Project Description	30. Project Status	31. Project Date	32. Project Author
33. Project Reviewer	34. Project Approver	35. Project Date	36. Project Location
37. Project Description	38. Project Status	39. Project Date	40. Project Author
41. Project Reviewer	42. Project Approver	43. Project Date	44. Project Location
45. Project Description	46. Project Status	47. Project Date	48. Project Author
49. Project Reviewer	50. Project Approver	51. Project Date	52. Project Location
53. Project Description	54. Project Status	55. Project Date	56. Project Author
57. Project Reviewer	58. Project Approver	59. Project Date	60. Project Location
61. Project Description	62. Project Status	63. Project Date	64. Project Author
65. Project Reviewer	66. Project Approver	67. Project Date	68. Project Location
69. Project Description	70. Project Status	71. Project Date	72. Project Author
73. Project Reviewer	74. Project Approver	75. Project Date	76. Project Location
77. Project Description	78. Project Status	79. Project Date	80. Project Author
81. Project Reviewer	82. Project Approver	83. Project Date	84. Project Location
85. Project Description	86. Project Status	87. Project Date	88. Project Author
89. Project Reviewer	90. Project Approver	91. Project Date	92. Project Location
93. Project Description	94. Project Status	95. Project Date	96. Project Author
97. Project Reviewer	98. Project Approver	99. Project Date	100. Project Location

G-331C
GS 10
3-2-72

MISSISSIPPI POWER & LIGHT COMPANY
GRAND GULF NUCLEAR STATION UNITS 1 AND 2
GRAND GULF, MISSISSIPPI
PRESIDENT

FORM 105
SPEC. NO. 105

APPROVED
REVISION 0

TRANSMITTAL

Att to Jerry
Page 45 of 62BECHTEL POWER CORPORATION
GAITHERSBURG POWER DIVISION15740 Shady Grove Road
Gaithersburg, Maryland 20880TO: FIELD CONSTRUCTION
BECHTEL POWER CORPORATION
P. O. BOX 41
PORT GIBSON, MISSISSIPPI 39150DATE: September 22, 1977 CDT- 77/3736

MIDDLE SOUTH ENERGY, INC.

BECHTEL JOB 9645

SPECIFICATION NO. 9645-M-141.1

ATTN: D. M. LAKE

BECHTEL FILE NOS. 0810/M-141.1

<u> </u> Sepias	Encl. <input type="checkbox"/>	Under Sep. Cover <input type="checkbox"/>
<u> </u> Prints	Encl. <input type="checkbox"/>	Under Sep. Cover <input type="checkbox"/>
<u> </u> Microfilm	Encl. <input type="checkbox"/>	Under Sep. Cover <input type="checkbox"/>
<u> </u> Specs	Encl. <input type="checkbox"/>	Under Sep. Cover <input type="checkbox"/>
<u> </u> Vellums	Encl. <input type="checkbox"/>	Under Sep. Cover <input type="checkbox"/>
<u> 1 </u> Other	Encl. <input checked="" type="checkbox"/>	Under Sep. Cover <input type="checkbox"/>

ACTION NUMBER

1. Approved - Manufacturing may proceed.
2. Approved - Submit final dwg. - Mfg. may proceed.
3. Approved except as noted - Make changes and submit final dwg. - Mfg. may proceed as approved.
4. Not Approved - Correct and resubmit.
5. Review not required - Mfg. may proceed.
6. Comment/Approval Due Date _____
7. Information Only
8. Other _____

OA (IS) (IS NOT) APPLICABLE

Action No.	Vendor/Bechtel Document No.	Master Parts List Number	DESCRIPTION		Title
			Rev.	Date Issued	
7					Pressure Test Report and letter of Verification.
7					Letter of Verification for Preservation and Storage and Marking.

Enclosed for your use is Quality Verification Documentation from J. E. Lonergan Company for the Pressure Relief Valves-Nuclear Service. These documents satisfy categories 24.0, 26.0 and 28.0.

In accordance with the Form G-321C, Rev. 7 (Appendix B of Spec. Rev. 10, dated July 15, 1977), there are no verification reports which require engineering review or approval for these items. Therefore, enclosed documentation should not have been sent to engineering by the Vendor and neither review nor approval of these is required by engineering. Project Engineering will not maintain a file copy.

SKB
SKB/Jr 20cc: J. P. McGaughy, Jr. 2w/ o
W. L. Nail w/ o
T. E. Reaves w/ o
Dr. T. W. Schnatz w/o
Document Control Register w/obcc: S. Bagai w/o
J. Williams w/o

Very truly yours,

EJE

T. W. Habermas
Project Engineer

INCLOSURE V PAGE 14/ 740

J. E. ~~Longman~~ COMPANY

MANUFACTURERS OF SAFETY-RELIEF VALVES

RED LION ROAD WEST OF VERREE ROAD PHILADELPHIA, PA. 19115
P. O. BOX 6167 215 677-1710 TELEX 845-131

RECEIVED NOV 12 1976

November 6, 1976

*Att to JER14
Page 4658 62*

BEHNTEN POWER CORPORATION
P. O. BOX 607
SAINT LOUIS, MO. 63166

Attention: Mr. J. J. Checik, Project Engineer, Job No. 9645

Subject : Transmittal of Verification Documentation
Mississippi P. & L. Co. P.O. #9645-M-141.1
Grand Gulf Nuclear Station Units 1 and 2
(J. E. Longman Shop Order #500320-1 & 2)

Dear Sir :

Enclosing herewith 1 copy of G-321-C Form; 2 copies of pressure tests and letter of verification; and 2 copies of letter of verification for preservation and storage on subject order as required by specifications.

Very truly yours

J. E. LONGMAN COMPANY

J. Zuraski

J. Zuraski
Quality Assurance Manager

0827/4-141.1

(267)

SUPPLIER DRAWING REVISIONS BE CHECKED
 1. UTILIZE REVISIONS DRAWINGS NOTED ON SDRS NOTED
 ON PAGE 6 VERIFY COMPLIANCE TO 4.3.2.6.1.
 BG #1
 L. ZARANSKI, D.
 VERIFIED (initials)

DRAWING #	REV.	SDR #	4.3.2.6.1			4.3.1.2.3			4.3.2.6.1			T. SPART-D.		
			A.	C.		(a)	(b)	(c)	D	E				
				1. 2. 3.					1. 2. 3. 4. 5					
SDR Q5P418001A-1.3-30-1		→						OK						
(OK) M-015.1		→												
SDR-Q12773001A-A-1.1-1.7		→						OK						
M-611.0		→												
SDR-Q1T91E001-N-1.1-2.5		→						OK						
OK M-062.0		→												
SDR-N1-1.4-6-3		→						OK						
M242.0/4-241.0 4/10/79		→												
OK		→												
SDR-Q1.1.2-106-3		→						OK						
OK M-242.0 4/11/79		→												
SDR-Q1R21A004-1.1-1.6		→						OK						
OK		→												
SDR-Q1R20540A-1.4-2.4		→						OK						
OK		→												
OK 017.0		→												
SDR-Q1R205500A-1.1-2.4		→						OK						
OK		→												
OK 018.0		→												
SDR-Q1P01N004-1.1-3-5		→						OK						
OK		→												
OK 5-391.0		→												

att. to JER14
 page 47862

6/21/79

att & JER 14
page 48 of 62

COMMENTS (PAGES):

No COMMENTS.

D. H. Deeno
6/21/79

BCA#7

269

att to JER 14
page 49 of 62

SUPPLIER DRAW.
REVISION ONE

Matters which cannot be agreed upon by the various project disciplines, will be resolved by the Project Engineer/Assistant Project Engineer and/or the discipline Chief Engineers.

After the drawings have been signed and released by the Project Engineer/Assistant Project Engineer, the coordinating prints may be destroyed.

4.3.1.2.3 BECHTEL REVIEW AND APPROVAL

Standard Bechtel practices provide for several levels of review and approval of design work. These include: (a) Checking and sign-off within the discipline design group by qualified personnel; (b) review and approval by the responsible Group Supervisor; and (c) review and approval by the Project Engineer/Assistant Project Engineer. The Project Engineer is responsible, but may delegate authority to a representative, (Asst. Project Engineer) for accomplishing:

- a. Assuring complete sign-offs.
- b. General quality of drawings.
- c. Compliance with contract requirements.
- d. Release of drawings.

The Discipline Group Supervisor is responsible, but may delegate authority to the Group Leader, for:

- a. Completion of design work on drawings.
- b. Engineering check for conformance of drawings to design calculations.
- c. Technical adequacy and feasibility of design, including access for inspection and maintenance.
- d. Conformance to project design criteria, including codes, standards, and SAR commitments.
- e. Coordination with other disciplines and departments, including their design interfaces.

270

4.3-7
Rev. 2
7-26-76

att to JER 14
Page 50 of 62

- f. Conformance to technical standards and engineering design principles, including suitability of materials.
- g. Completion of review requirements.
- h. Conformance to Engineering Registration Laws.
- i. Obtaining Chief Engineer's approval when applicable.

~~OK Safety Related Drawings (Q) will be submitted to the cognizant Discipline and~~

^{OUT}
~~Nuclear Chief Engineer~~ for review and approval as required by the Design Control Check Lists (DCCL), prior to issuing drawings for construction. (Final review in accordance with use/definition noted on DCCL.)

This review process is initiated by the preparation and submission of a "Design Review Notice." (See Section 6, Engineering Quality Control, for instructions.) Drawings not requiring the Chief Engineer's approval shall have N/R entered in the applicable signature block(s) for initial issue and all subsequent revisions, effective 7/1/75, - retrofit not required - (NOTE: Block on extreme right for Chief Engineer's initials.)

~~Final review by the Chief Engineers includes evaluation of evidence of correct approach and method, general professional quality, completeness of work and~~

~~Required reviews, and incorporation of appropriate QA/QC requirements. However, the scope and depth of review is left to the discretion of the Chief Engineer(s) based upon their knowledge of the design criteria and approach, previous experience with the selected approach, extent and completeness of the design analysis and checks.~~

The Quality Assurance documentation of the review and approval of Safety Related Drawings commences with "Issue for Construction" and applies to all subsequent revisions affecting Design Criteria, SAR, or Codes & Standards.

4.3-8
Rev. 4
8-4-75

att 2 JER 14
page 52 of 62

Bechtel Power Corporation

Engineers—Constructors

15740 Shady Grove Road
Gaithersburg, Maryland 20760
301-948-2700



June 1, 1979

RECEIVED

JUN 11 1979

CCRS PROJECT
M.P. & L. CC.

Gould, Inc.
Switchgear Division
P.O. Box 486
Fort Washington, Pa. 18936

Attention: Mr. E. Rhoads
QA Manager

Mr. W. C. McKay
Technical Services Manager

Dear Mr. Rhoads and Mr. McKay:

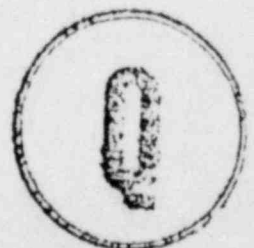
Nuclear QA Is Applicable
Middle South Energy, Inc.
Grand Gulf Nuclear Station
Bechtel Job No. 9645
File 0266/E-009.1/E-009.2
Resolution of NRC Audit Findings
VB-79/0220

During a recent audit of the Bechtel-Gaithersburg Power Division, by the Nuclear Regulatory Commission (NRC), our Grand Gulf Project/Job 9645 was cited for approving Gould drawings with insufficient sign-off denoting approval. The NRC citation identified that Gould drawing changes were not being processed in accordance with Gould's QA Manual requirement for revisions to receive the same review and approval as the initial issue.

During the course of this audit, our investigation determined that the Bechtel audit of your facility on December 21, 1977 also identified the same problem in QAF No. 2. Your corrective action to prevent recurrence in QAF No. 2 was accepted by Bechtel and the QAF was closed-out by our letter dated June 21, 1978.

However, further investigation by the NRC auditor revealed that your corrective action to prevent recurrence was not being followed. Gould drawings 33-50469E132

273



att to JER 14
page 53 of 62

Bechtel Power Corporation

Gould, Inc.
Bechtel Job No. 9645

-2-

June 1, 1979
VB-79/0220

Rev. 5 dated August 17, 1978, also Rev. 6 dated October 31, 1978 and 33-50470E53 Rev. 6 dated August 4, 1978 also Rev. 7 dated November 13, 1978 were identified with sign-off denoting approval with less than the original issue. You are requested to provide remedial and preventative corrective action to resolve this problem. Your remedial and preventive action is required by June 29, 1979.

Very truly yours,

A. Zaccaria

A. Zaccaria
Project Engineer

JA:as

cc: J. P. McGaughy, Jr.
L. F. Dale, 2
C. K. McCoy
W. L. Nail
T. E. Reaves
Dr. D. C. Gibbs
J. N. Ward
R. A. O'Neil
H. H. Weber
R. L. Scott
D. M. Lake
D. E. Trapold

274

0

BOB PEND

Bechtel Power Corporation

Engineers—Constructors

15740 Shady Grove Road
Gaithersburg, Maryland 20760
301-948-2700



May 11, 1979

att to JER 14
page 54 of 62

American Air Filter Co., Inc.
215 Central Avenue
Louisville, Kentucky 40201

Attention: Mr. Ben Franklin

Dear Mr. Franklin:

Nuclear QA Is Applicable
Middle South Energy, Inc.
Grand Gulf Nuclear Station
Bechtel Job No. 9645
File: 0266/8245/M-611.0
Field Change-Safeguard Switchgear &
Battery Rooms Air Handling Units
VB-79/0187

The enclosed revision notice shows the supports for conduits and cables that we intend to install inside units Q1Z77B001A-A, B-B and Q2Z77B001A-A, B-B as discussed in our letter of April 23, 1979 (VB-79/0151).

Please inform us of any comments you may have on these modifications, particularly in regards to the seismic qualification of the units, by May 24, 1979.

Very truly yours,

A. Zaccaria
Project Engineer

PJR:rm

Enclosure: Supplier Drawing Revision Notice For Vendor Drawing
9645-M-611.0-Q1Z77-B001A-A-1.1-1

cc: J. P. McGaughy, Jr., w/1	J. N. Ward, w/o
L. F. Dale, 2w/2	R. A. O'Neil, w/1
C. K. McCoy, w/1	H. H. Weber, w/1
W. L. Nail, w/1	R. L. Scott, w/1
X. E. Reaves, w/1	D. M. Lake, w/1
Dr. D. C. Gibbs, w/1	D. E. Trapold, 2w/2

225

0

att to JER 14
Page 55 of 62



SUPPLIER DRAWING
REVISION NOTICE

JOB NO.	DRAWING NO.	REV. NO.
9645	M-611.0-Q1277- B001A-A-1.1-1-7	7
RN NO.	X 7 ^{4/16/79} PAGE 1 OF 4	
BY: P.J. ROMBOLD DATE APR. 16 1979		

REASON FOR CHANGE: FCR - M642

SEE BELOW

DESCRIPTION OF CHANGE

ZONE LOCATION

ITEM 1. - PROVIDE ADDITIONAL ELECTRICAL PENETRATIONS IN UNIT HOUSINGS WITH PROCEDURE FOR CUTTING & WELDING. VENDOR SUPPLIED PENETRATIONS ARE INADEQUATE. SEE PAGE 3 AND NOTES "C", "D", AND "E"

ITEM 2. - USE EXISTING PENETRATION FOR MOTOR GROUNDING. SEE PAGE 3

ITEM 3. - PROVIDE PROCEDURE FOR INSTALLING SUPPORTS FOR CONDUITS & CABLES INSIDE UNIT HOUSINGS. NO PROVISIONS FOR THIS SUPPORT SUPPLIED WITH THE UNITS. SEE PAGE 4 AND NOTE "F"

ITEM 4. - RELOCATE CONTROL CABINET TO OPPOSITE SIDE OF UNIT HOUSING ON UNIT Q1277B001B-B ONLY. INTENDED LOCATION INTERFERES WITH SPOOL #NSP48G050 13-25A - REF: DRAINAGE PIPING PLAN No. M-0225 REV. 4.

NOTES: A. - ITEMS 1, 2, & 3 APPLY TO UNITS Q1277B001A-A, B-B, AND Q2277B001A-A, B-B.

B. - SEE NCR #3468 FOR UNAUTHORIZED WELDING OF 2" P CONDUIT COUPLING ON UNIT Q1277B001A-A ONLY.

WJ 4-16-79

Signature
DATE

176

M.D. Anderson
DATE



SUPPLIER DRAWING
REVISION NOTICE

JOB NO.	DRAWING NO.	REV. NO.
9645	M-611.0-Q1277- 8001A-A-1.1.1-7	7
RN NO.	7	PAGE 2 OF 4
BY: P.J. ROMBOLD DATE APR. 16, 1979		

NOTES, CONTINUED

- C- HOLES SHALL NOT BE FLAME CUT; USE MECHANICAL METHOD - DRILLING OR SAWING.
- D- CONDUIT COUPLINGS TO BE MECHANICALLY INSTALLED, NOT WELDED
- E- DIMENSIONS AND LOCATIONS ARE SUGGESTED ONLY, FIELD TO LOCATE TO CLEAR ANY STIFFENERS OR BRACING INSIDE UNITS
- F- FIELD ENGINEERING TO SELECT APPROPRIATE WELDING PROCEDURES

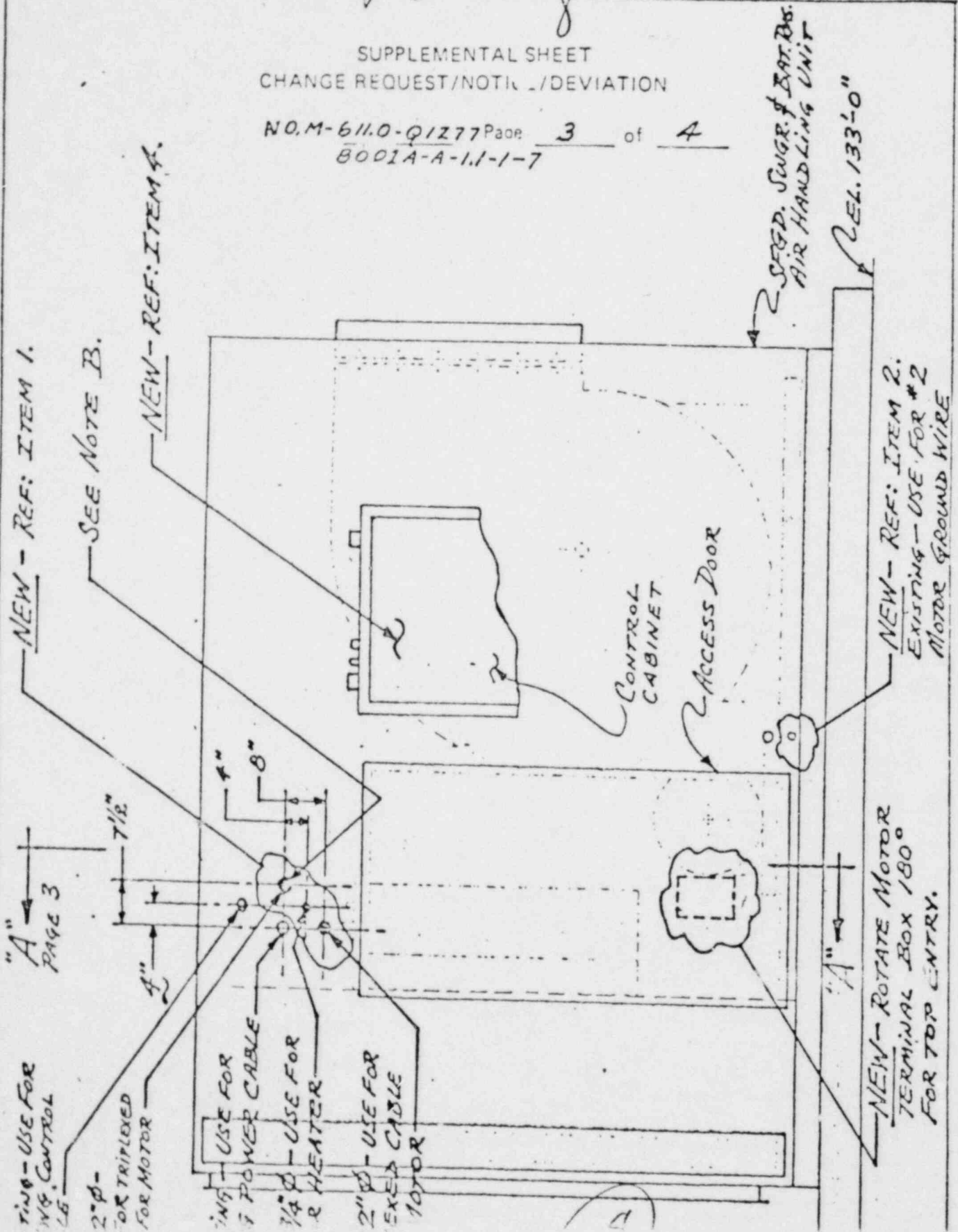
277

att to JER 14
page 57 of 62

SUPPLEMENTAL SHEET
CHANGE REQUEST/NOTICE/DEVIATION

N.O.M-611.0-Q1277 Page 3 of 4
8001A-A-1.1-1-7

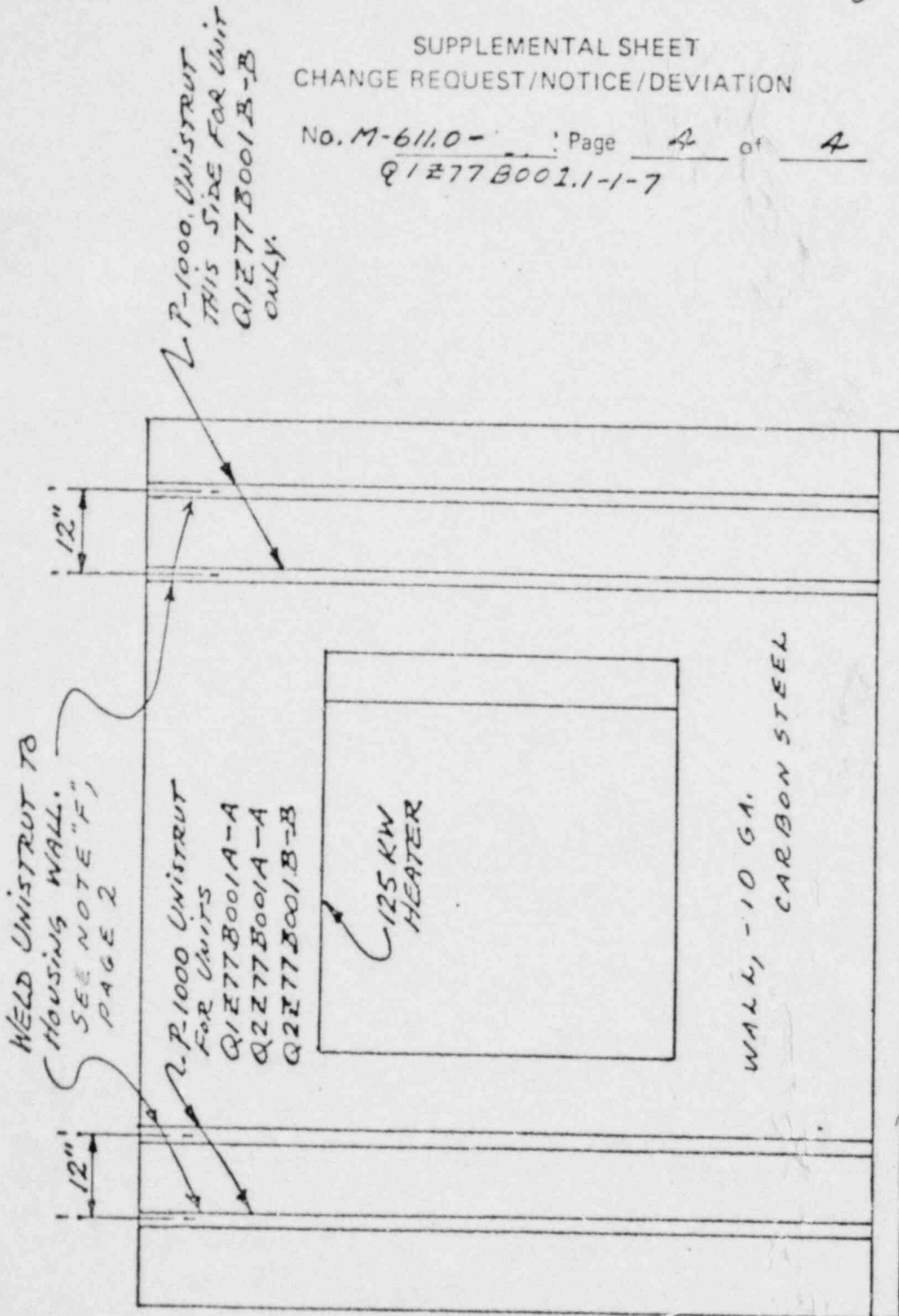
PROVIDE NEW PENETRATIONS ON POSITIVE SIDE
FOR UNIT Q12778001A-B ONLY



att d JER 14
page 58 of 62

SUPPLEMENTAL SHEET
CHANGE REQUEST/NOTICE/DEVIATION

No. M-611.0 - Page 4 of 4
Q1Z77B001.1-1-7



WELD UNISTRUT TO
HOUSING WALL.
SEE NOTE "F",
PAGE 2

2 P. 1000 UNISTRUT
FOR UNITS
Q1Z77B001A-A
Q2Z77B001A-A
Q2Z77B001B-B

2 P. 1000 UNISTRUT
THIS SIDE FOR UNIT
Q1Z77B001B-B
ONLY.

NEW - ITEM 3

SECTION "H A"
(FROM PAGE 2)

PD-1342-A 5/77

279

att to JER 14
page 59 of 62

FOR 15G 10F 2
FPG 60F 9
Bechtel Power Corporation

Engineers—Constructors

15740 Shady Grove Road
Gaithersburg, Maryland 20760
301-948-2700

RECEIVED



June 4, 1979

GGNS PROJECT
M. P. & L. CO.

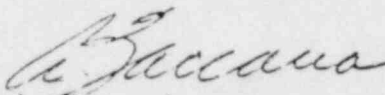
Ceramic Cooling Tower Company
P. O. Box 425
Fort Worth, Texas 76101

Dear Mr. Daley:

Nuclear QA Is Applicable
Middle South Energy, Inc.
Grand Gulf Nuclear Station
Bechtel Job No. 9645
File: 0266/M-015.1
Motor and Gear Reducer
Mounting Modifications
VB-79/0224

The efforts involved to install the cooling tower fan motors and gear reducers have been reason for us to propose a change to the General Installation Details of Mechanical Equipment shown on a Ceramic Cooling Tower Company drawing. The proposed change is shown on Bechtel change request FCR-M-648 (copy enclosed). We request that you review the proposed change and provide your comments/approval to our Gaithersburg Engineering Office by June 18, 1979.

Very truly yours,

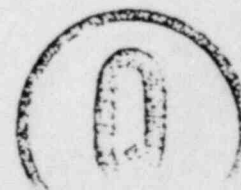

A. Zaccaria
Project Engineer

SLJ:vr

Enclosures: FCR-M-648

cc: J. P. McGaughy, Jr., w/1
L. F. Dale, 2w/2
C. K. McCoy, w/1
W. L. Nail, w/1
T. E. Reaves, w/1
Dr. D. C. Gibbs, w/1
J. N. Ward, w/o
H. H. Weber, w/1
R. L. Scott, w/1
D. M. Lake, w/1
D. E. Trapold, 2w/2

250



att to JER 14
page 60 of 62

MPL = N/A Vendor Draw

CHANGE REQUEST/NOTICE

QX
NO



JOB NO. 9645

CR/N# FCR-M-648

PAGE 1 OF 3

REF. DWG. OR SPEC. 945-M-0151-QSP41B001A-122 REV. 3

TITLE Standby Service Water Cooling Towers

REASON FOR CHANGE/EXISTING CONDITION

Equipment Nos. QSP41B001A+QSP41B001B

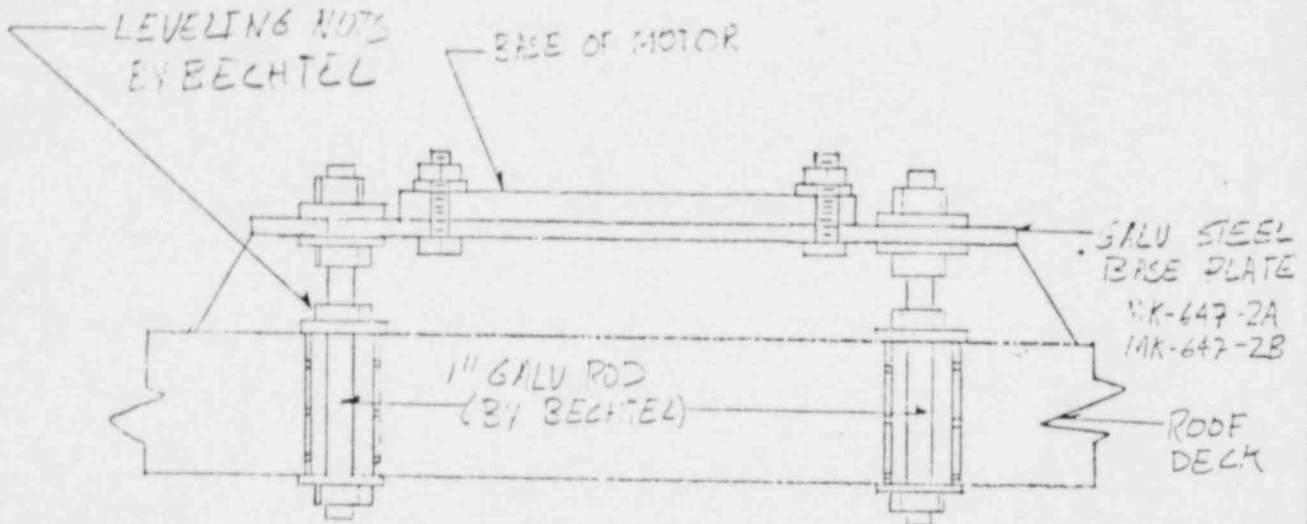
Improve Anchor bolt Design to

General Installation Details of Mech Eqp't

Avoid Compressive Load in Bolts and Assure that Mounting Bolts do not
Turn when Loosened after Frictioning.

CHANGE REQUEST/SKETCH (IF NECESSARY)

OLD



③ MOTOR MOUNTING

RECEIVED
APR 04 1979

BECHTEL POWER CORP.

JOB No. 9645

PREPARED BY: L. M. Pasley DATE 3/27/79

ACTION BY ENGINEERING - DESCRIPTION OF CHANGE -

PFE APPROVED FCR - SUBMIT TO PROJECT ENG. ☒

PFE APPROVED FCN - PROCEED WITH WORK ☐

PFE DISAPPROVED ☐

PFE: C. D. Miller DATE 3/27/79

THIS IS: DCN # _____ DATE _____

TO DWG. _____ REV. _____

PAGE _____ OF _____

DEVIATION # D _____

DATE _____

PAGE _____ OF _____

REMARKS _____

RESPONSIBLE ENGR.: _____ DATE _____

GROUP SUPV. _____ DATE _____

PQE _____ DATE _____

PROJECT ENGR. APPROVAL YES ☐ NO ☐

CHIEF ENGINEER _____ DATE _____

DISCIPLINE QUALITY ENGR. _____ DATE _____

SAR CHANGES YES ☐ NO ☐

CDT - _____ DATE _____

FILE 0080/

D. M. Lyle; L. F. Dole; C. K. McCoy; T. E. Reeves

INCLOSURE V PAGE 155

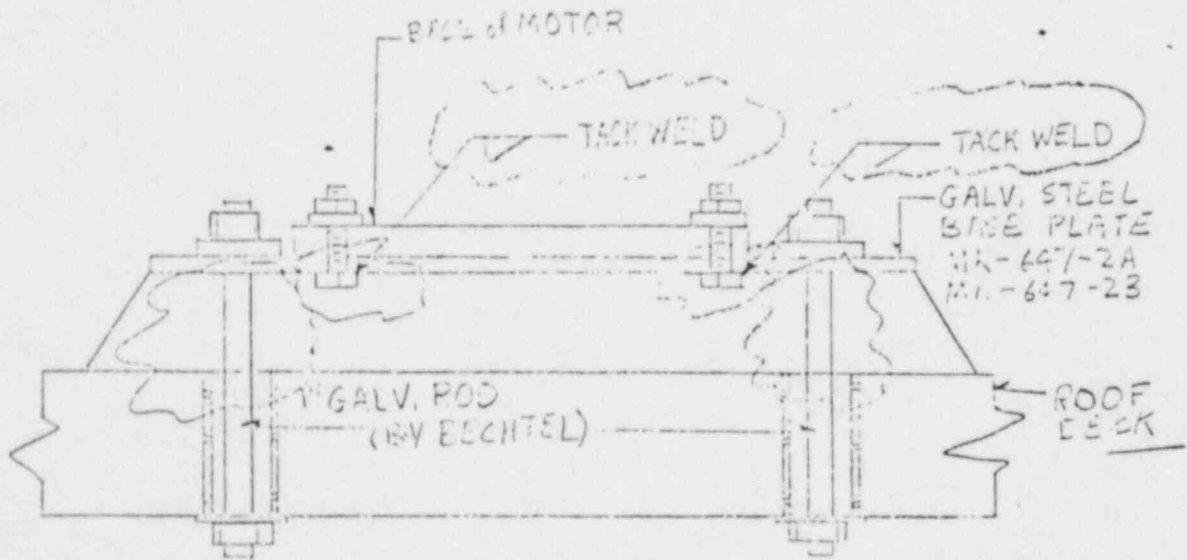
454

att to JER 14
page 61 of 2

SUPPLEMENTAL SHEET
CHANGE REQUEST/NOTICE/DEVIATION

Number FCR-M-648 Page 2 of 3

NEW



③ MOTOR MOUNTING

Q

282

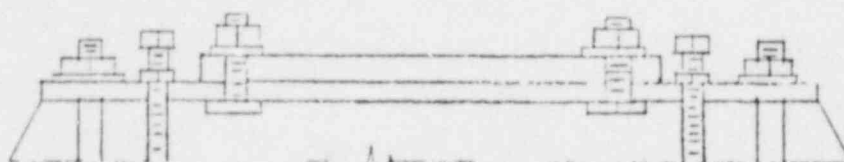
GPD-13222-A 5/77

att to JER 14
page 62 of 62

SUPPLEMENTAL SHEET
CHANGE REQUEST/NOTICE/DEVIATION

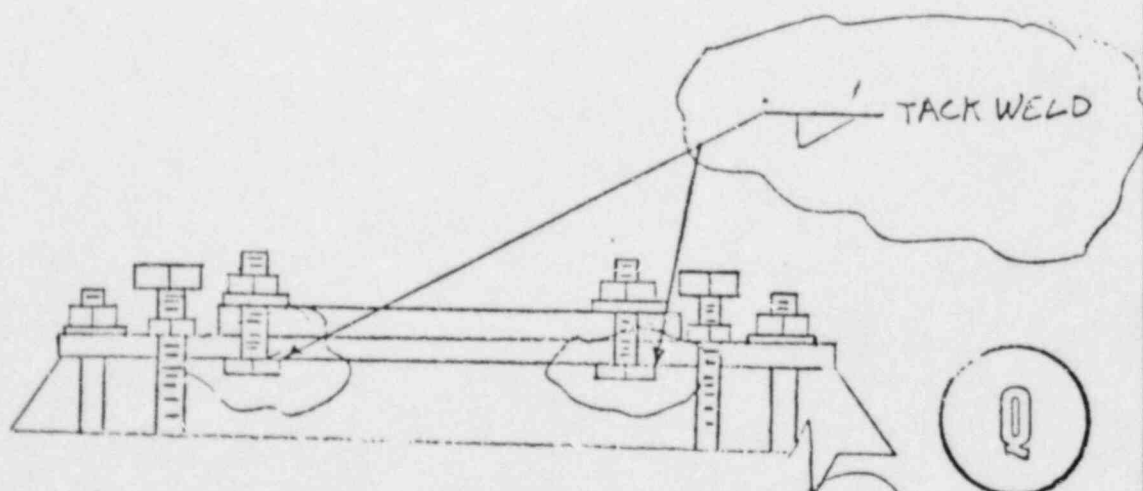
Number FCR-M-648 Page 3 of 3

OLD



④ GEAR REDUCER MOUNTING

NEW



④ GEAR REDUCER MOUNTING

GPO-13222-A 5/77

MISSISSIPPI POWER & LIGHT COMPANY

AUDIT CHECKLIST

Classification (*)
Appendix B of 10CFR50 Criteria(n) XVII
ANSI N45.2 (Sections) or Reg. Guide

Audit Number 7
BECHTEL GAITHERSBURG

DESIGN OFFICE RECORDS
(Subject of Commitment)

Persons Contacted:
SEE ATTACHED CHECKLISTS
JER-25-A, B, C, D, E & F

A. COMMITMENT: NQAM QGG 17.1
(Reference) REV. 1, 10/78

SEE ATTACHED PAGE 1

B. METHOD OF VERIFICATION EXAMINE DOCUMENTATION
FOR COMPLIANCE WITH PARAGRAPH 3.4.

C. FINDINGS*(Classification):

SEE ATTACHED CHECKLISTS JER-25-
A, B, C, D, E & F

*Classification:

C- Conformance
N- Nonconformance
A- Not Audited
NC- Nonconformance Corrected

Completed By: _____

Date: _____

Initials of Originator

-Checklist Number JER-25

GRAND GULF NUCLEAR STATION
NUCLEAR QUALITY ASSURANCE MANUAL

GAITHERSBURG
POWER DIVISION

DESIGN OFFICE RECORDS

POLICY
NO. DGG-17.1 REV. 1
DATE October 1978
PAGE 1 OF 2

1.0 PURPOSE

To define the requirements for controlling and maintaining design office records and turn-over of design office records to the Client (MP&L).

2.0 APPLICABILITY

This policy applies to design activities on Q-List items.

3.0 POLICY

- 3.1 Design documentation and records which provide objective evidence of the design and review process performed in accordance with applicable requirements and quality assurance records dealing with home office procurement shall be collected, stored, and maintained in accordance with written procedures. Engineering shall be responsible for providing these procedures for the records they retain. Environmental protection requirements shall be applied to the maintenance and control of completed lifetime or nonpermanent design documents and records. The records shall be available for Bechtel and MP&L audits. If completed copies of such records are retained in job site quality record files, requirements for environmental protection need not be applied to those copies retained by engineering. If engineering delegates any design responsibilities, including preparation of any design or installation documents, to field engineering, engineering shall specify the retention and turnover requirements to field engineering.
- 3.2 Design output documents such as drawings, specifications, revisions thereto and associated documents, including process flow diagrams, system descriptions and design calculations, shall be identifiable and retrievable. Where computer calculations are employed, records shall include computer code inputs and results and the identification of the computer code used.
- 3.3 Records of commentaries made during the initial design review process and before final issue need not be maintained after final approval has been documented. However, evidence of final approvals including minutes of review meetings, where applicable, shall be maintained.
- 3.4 Records designated as quality assurance records shall be legible, reproducible, and complete. These records may be either the original or reproduced copy. Correction or supplements to quality assurance records shall be accomplished by lining out the original entry and entering the correction or supplement. The date and identification of the person making the change shall be indicated adjacent to the change.

MISSISSIPPI POWER & LIGHT COMPANY

AUDIT CHECKLIST

Classification (* C)
Appendix B of 10CFR50 Criteria(n) XVII
ANSI N45.2 (Sections) or Reg. Guide

Audit Number 7
BECHTEL GAITHERSBURG

DESIGN OFFICE RECORDS
(Subject of Commitment)

Persons Contacted:
W. TURNER - PQE
B. SCOTT - PQAM

- A. COMMITMENT: NQAM QGG 17.1
(Reference) REV. 1, 10/78

SEE ATTACHED PAGE 1

- B. METHOD OF VERIFICATION EXAMINE DOCUMENTATION
FOR COMPLIANCE WITH PARAGRAPH 3.4.

- C. FINDINGS*(Classification): SEE ATTACHED MATRIX TO
CL # JCR-25.

*Classification:

C- Conformance
N- Nonconformance
A- Not Audited
NC- Nonconformance Corrected
During Audit

Completed By: J. J. LeJone

Date: 6/21/79

Initials of Originator
- Checklist Number JCR-25-A

MATRIX: C/L # IER-25

BECHTEL-GANTHERSBURG AUDIT #17

DESIGN OFFICE RECORDS - NQAM, QGG-17.1

AUDITOR: J.T. LEGRAS

NOTE: EVALUATION OF RECORDS INDICATED ON THIS MATRIX WERE PRIMARILY THE RECORDS & DOCUMENTATION REVIEWED DURING THE COURSE OF THE AUDIT.

NQAM, QGG-17.1, PARA. 3.4 1) OBSERVED RECORDS ARE LEGIBLE, REPRODUCIBLE, & COMPLETE. 2) CORRECTIONS/SUPPLEMENTS ACCOMPLISHED IN ACCORD WITH PROCEDURE.	<u>YES/NO</u> YES N/A	<u>COMMENTS:</u> 1. RECORDS REVIEWED WERE LEGIBLE, REPRODUCIBLE & COMPLETE. 2. NO CORRECTED OR SUPPLEMENTED RECORDS WERE OBSERVED.
PPM, PARA. 2.7.2 (SEE C/L # IER-02) RECORDS ARE COLLECTED, IDENTIFIED & COLLATED BY QUALITY ENGINEERING IN THE DESIGN OFFICE	<u>YES/NO</u> No (see IER-02)	<u>COMMENTS:</u> RECORDS ARE NOT COLLECTED, IDENTIFIED & COLLATED BY QUALITY ENGINEERING IN THE HOME OFFICE. (SEE IER-02) QER 7/4/95 REV. 1, DRAFT A, OF THE PPM PROPOSES THE FOLLOWING: "..... COLLECTED, IDENTIFIED & COLLATED IN ACCORDANCE WITH REQUIREMENTS OF THE GGNS - NQAM".
PPM, PARA. 2.7.5 (3) (SEE C/L # IER-01) BOP QUALITY RECORDS ARE PROCESSED & FILED ACCORDING TO APPROVED PROCEDURES.	<u>YES/NO</u> YES	<u>COMMENTS:</u> BOP QUALITY RECORDS ARE PROCESSED & FILED IN THE SAME MANNER AS "Q" RECORDS.

(427)

J. J. LeGras

MISSISSIPPI POWER & LIGHT COMPANY

AUDIT CHECKLIST

Classification (* C)
Appendix B of 10CFR50 Criteria(n) XVII
ANSI N45.2 (Sections) or Reg. Guide

Audit Number 7
BECHTEL GAITHERSBURG

DESIGN OFFICE RECORDS
(Subject of Commitment)

Persons Contacted:
NA

- A. COMMITMENT: NQAM QGG 17.1
(Reference) REV. 1, 10/78

SEE ATTACHED PAGE 1

- B. METHOD OF VERIFICATION EXAMINE DOCUMENTATION
FOR COMPLIANCE WITH PARAGRAPH 3.4.

- C. FINDINGS*(Classification): CONFORMANCE

Review of records examined when conducting
audit in other areas REVEAL CONFORMANCE
with policy.

See checklists JER-03, JER-04, JER-17, JER-18
& JER-23

*Classification:
C- Conformance
N- Nonconformance
A- Not Audited
NC- Nonconformance Corrected
During Audit
ND- Nonconformance Documented by
Audited Organization

Completed By: AL Ramsey
Date: 6/21/79
Initials of Originator
- Checklist Number JER-25-B

428

- 2

Quality Assurance Form 18.10(T)

Rev. 3, 5/11/79

MISSISSIPPI POWER & LIGHT COMPANY

AUDIT CHECKLIST

Classification (* 2)
Appendix B of 10CFR50 Criteria(n) XVII
ANSI N45.2 (Sections) or Reg. Guide

Audit Number 7
BECHTEL GAITHERSBURG

DESIGN OFFICE RECORDS
(Subject of Commitment)

Persons Contacted:
DAVE TRAPOLD - Supplies Q.M.
NORA EGART
RAY SIPE - QAE

- A. COMMITMENT: NQAM QGG 17.1
(Reference) REV. 1, 10/78

SEE ATTACHED PAGE 1

- B. METHOD OF VERIFICATION EXAMINE DOCUMENTATION
FOR COMPLIANCE WITH PARAGRAPH 3.4.

- C. FINDINGS*(Classification): CONFORMANCE (SEE
MATRIX ATTACHED TO C/L # JER-26)

*Classification:

- C- Conformance
- N- Nonconformance
- A- Not Audited
- NC- Nonconformance Corrected
During Audit
- ND- Nonconformance Documented by
Audited Organization

Completed By: J. A. Hendrix

Date: 6/2/79

Initials of Originator

-Checklist Number JER-25-C

429

21

MISSISSIPPI POWER & LIGHT COMPANY

AUDIT CHECKLIST

Classification (* C)
Appendix B of 10CFR50 Criteria(n) XVII
ANSI N45.2 (Sections) or Reg. Guide

Audit Number 7
BECHTEL GAITHERSBURG

DESIGN OFFICE RECORDS
(Subject of Commitment)

Persons Contacted:

A. COMMITMENT: NQAM QGG 17.1
(Reference) REV. 1, 10/78

SEE ATTACHED PAGE 1

B. METHOD OF VERIFICATION EXAMINE DOCUMENTATION
FOR COMPLIANCE WITH PARAGRAPH 3.4.

C. FINDINGS*(Classification): SEE C/L #5 JER-04
JER-11, JER-12, JER-13, JER-25.
RP 6/21/79 RP 6/21/79 14 JEP
6/21/79

*Classification:

C- Conformance
N- Nonconformance
A- Not Audited

NC-Nonconformance Corrected
During Audit

ND-Nonconformance Documented by
Audited Organization

Completed By: J. E. Leno

Date: 6/21/79

Initials of Originator

-Checklist Number JER-25-D

430

MISSISSIPPI POWER & LIGHT COMPANY

AUDIT CHECKLIST

Classification (* C)
Appendix B of 10CFR50 Criteria(n) XVII
ANSI N45.2 (Sections) or Reg. Guide

Audit Number 7
BECHTEL GAITHERSBURG

DESIGN OFFICE RECORDS
(Subject of Commitment)

Persons Contacted:

A. COMMITMENT: NQAM QGG 17.1
(Reference) REV. 1, 10/78

SEE ATTACHED PAGE 1

B. METHOD OF VERIFICATION EXAMINE DOCUMENTATION
FOR COMPLIANCE WITH PARAGRAPH 3.4.

C. FINDINGS*(Classification):

All records examined during course of
audit on checklists JER-07, 23, & 24 were
in compliance with QGG 17.1 paragraph 3.4

*Classification:

C- Conformance
N- Nonconformance
A- Not Audited
NC-Nonconformance Corrected
During Audit
ND-Nonconformance Documented by
Audited Organization

Completed By: J. K. Kearn

Date: 6/21/79

Initials of Originator

-Checklist Number JER-25-E

(431)

MISSISSIPPI POWER & LIGHT COMPANY

AUDIT CHECKLIST

Classification (* C)
Appendix B of 10CFR50 Criteria(n) XVII
Appendix N45.2 (Sections) or Reg. Guide

Audit Number 7
BECHTEL GAITHERSBURG

DESIGN OFFICE RECORDS
(Subject of Commitment)

Persons Contacted:
A. ZACCARIA - Project Engr
J. ARBAIZA - QA E
S. MARTIN - QE

A. COMMITMENT: NQAM QGG 17.1
(Reference) REV. 1, 10/78

SEE ATTACHED PAGE 1

B. METHOD OF VERIFICATION EXAMINE DOCUMENTATION
FOR COMPLIANCE WITH PARAGRAPH 3.4.

C. FINDINGS*(Classification):

Records examined during audit
were in compliance

(Checklist # JER-08)

*Classification:

C- Conformance
N- Nonconformance
A- Not Audited
NC-Nonconformance Corrected
During Audit

ND-Nonconformance Documented by

Completed By: [Signature]

Date: 9-10-79

Initials of Originator

-Checklist Number JER-25-F

1177

MP&L AUDIT OF BECHTEL-GAITHERSBURG
JANUARY 5-9, 1981

SUMMARY OF ATTACHED CHECKLISTS APPLICABLE TO DESIGN CONTROL OR DESIGN INTERFACE

<u>CHECKLIST NUMBER</u>	<u>SUBJECT</u>	<u>NONCONFORMANCE IDENTIFIED</u>
ATR-09	Field Disposition Instruction (FDI) Field Deviation Disposition Instructions (FDDR)	CAR 289
ATR-15	Review of Safety Related Equipment for Protection Against Exposure to Adverse Environments	CAR 290

NONCONFORMANCES IDENTIFIED DURING
MP&L QA AUDIT OF BECHTEL GAITHERSBURG
JANUARY 5-9, 1981

CAR Number 289

1. COMMITMENT: Bechtel Nuclear Quality Assurance Manual (NQAM), Policy QGG-3.2, Paragraph 5.1, specifies that Project Engineering Procedures shall provide for incorporation of design information transmitted between interfacing organizations in design documents.
2. FINDING: Contrary to the provisions of Paragraph 5.1, NQAM, Policy QGG-3.2, Project Engineering Procedures did not provide for incorporation of design information in regard to core drilling operations transmitted by Civil Field Engineering to Project Engineering.

3. CORRECTIVE ACTION:

Project Engineering Procedures Manual (PEPM) Change Notice 168 was issued on May 8, 1981, adding PEPM Sections 4.3.1.6.3.d.1, 4.3.1.6.3.d.3 and 4.3.1.6.3.d.5 to provide procedures for incorporation of core drilling information.

NONCONFORMANCES IDENTIFIED DURING
MP&L QA AUDIT OF BECHTEL GAITHERSBURG
JANUARY 5-9, 1981

CAR Number 290

1. COMMITMENT: Bechtel Nuclear Quality Assurance Manual (NQAM) Policies require that errors and design deficiencies identified by design verification after the design is released shall be documented and processed in accordance with design change requirements.
2. FINDING: Project Engineering Procedure Manual (PEPM) procedure 3.2.6 (Procedure for Review of Safety Related Equipment for Protection against Exposure to Adverse Environments) makes no provisions for evaluation of hazardous conditions identified on the Engineering Review Team (ERT) Report.
3. CORRECTIVE ACTION:

PEPM Change Notice 171 dated July 17, 1981, was issued requiring that design errors found during the ERT Review, and which are outside the scope of the ERT Criteria, be reviewed for reportability.

MISSISSIPPI POWER & LIGHT COMPANY

FIELD DISPOSITION

Classification (NC/NC/ND)
 Appendix E of 10CFR50 Criteria(n) III
 ANSI N45.2 (Sections) or Reg. Guide
FIELD DISPOSITION INSTRUCTIONS (FDI)
AND FIELD DEVIATION DISPOSITION REQUESTS (FDDR)
 (Subject of Commitment)
 Audit Number 9
BECHTEL GAITHERSBURG
 Person Conducted:
 NANCY Lee - Doc. Control Supv.
 J. Anhaiza - PGE
 D.B. Quattrocchi - Elec. Group Supv.
 D. Denison - Mech. Group Supv.

A. COMMITMENT: PEPM, SECTION 4.2.18
 (Reference) 7/7/80

SEE ATTACHED Pages 1-6 of PEPM CHANGE NOTICE #129

B. METHOD OF VERIFICATION REVIEW FDI & FDDR LOGS, SELECT A SAMPLING OF FDIs & FDDRs which affect scope of work AS NOTED IN PARAGRAPH 2.0 AND VERIFY COMPLIANCE TO PARAGRAPH 4.0

C. FINDINGS*(Classification): NI - Nonconformance
NC - Nonconformance corrected during Audit
ND - Nonconformance documented by the Audited organization

(SEE Attachment to checklist ATK-09 for details)

N - Bechtel Related Work (BRW) Forms are being used that are not the same as shown in the procedure.

*Classification:
 C- Conformance
 N- Nonconformance
 A- Not Audited
 NC- Nonconformance Corrected During Audit
 ND- Nonconformance Documented by Audited Organization
 (More than one classification can be used)

Completed By: S. L. Jones
 Date: 1/8/11

Initials of Originator
 - Checklist Number ATK-09

Page 1 of 1

Rev. 4
 5/11/96

C05.10
 C05.20
 C05.30

78



PEPM CHANGE NOTICE

PROJECT NO. 9645

1. PAGE 1 OF 7

2. CHANGE NOTICE
NO 129

ATTACHMENT

YES ☐ NO ☒

3. DATE 7 7 80
MO DAY YR

4. PROCEDURE NO.

4.2.18

5. TITLE

FIELD DISPOSITION INSTRUCTIONS (FDI)
AND FIELD DEVIATION DISPOSITION REQUESTS (FDDR)

6. EXISTING CONDITION -

PROCEDURE 4.2.18

7. CHANGE TO READ

PROCEDURE 4.2.18 REVISED AND REWRITTEN (PAGES 2 THRU 7)

8.

Prepared by Pence C. Stanchfield DATE 7/7/80
PREPARED BY R.L. Scott DATE 8/28/80
POAE CONCURRENCE EC Pratt for DATE

POE CONCURRENCE William M. Scott DATE 7/7/80
PROJ ENGR. APPROVAL William M. Scott DATE 7/7/80

INCLOSURE VI PAGE 5

4.2.18 FIELD DISPOSITION INSTRUCTIONS (FDI) AND FIELD DEVIATION DISPOSITION REQUESTS (FDDR)

1.0 PURPOSE

To identify the interface requirements for the review, and disposition of General Electric Company (GE) originated Field Disposition Instructions and Field Deviation Disposition Requests.

2.0 SCOPE

This Instruction covers changes to engineering requirements recorded and issued by the NSSS Supplier (General Electric) and the interface responsibilities of Project Engineering when these changes:

- (a) Do not affect Bechtel engineering documents or drawings or require rework for GE.
- (b) Affect Bechtel engineering documents or drawings.
- (c) Impact Section XI ASME Code requirements.

3.0 DEFINITIONS

- (a) The Field Disposition Instructions (FDI), a document similar to the Bechtel Drawing Change Notice, is used by the NSSS Supplier during installation to record and issue revisions of engineering requirements that originate in GE's San Jose office.
- (b) The Field Deviation Disposition Request (FDDR), a document similar to Bechtel Field Change Request/Field Change Notice, is used by the NSSS Supplier during installation to record and issue deviations from engineering requirements that originate at the jobsite.

4.0 PROCEDURE

In the following sequences of action FDIs shall be processed the same as FDDRs except that FDIs and FDDRs shall each be logged separately and FDDRs shall be filed in project file 0205 with FDIs in file 0206. In accordance with project procedures copies of FDI/FDDR are forwarded to Bechtel for information or for action. The copy forwarded to the Lead Resident Engineer at the jobsite shall cause initiation of the following actions by Project Engineering:

Proprietary note

These procedures are the property of Bechtel Power Corporation and are to be returned upon request. Where inamed it is on the express agreement that they will not be used in whole or in part except for the limited private use permitted by the Corporation. The Division Manager of Engineering will stipulate the required degree of proprietary control and will obtain acknowledgement from recipients as a condition of transmittal.

Responsibility

Lead Resident Engineer (LRE)

[If an LRE is not assigned, the assigned resident engineer shall perform these functions.]

Action

1. Receives FDI/FDDR; date stamps; applies FDI usage stamp (Exhibit A) to appropriate GE drawings, enters information in FDI/FDDR log.
2. Reviews FDI/FDDR; prepares a Bechtel Related Work (BRW) document, (Exhibit B); checks Paragraph A1 or A2 or A3 on the BRW form, as appropriate:
 - a. If A1 is checked, complete Step 3 through Step 7 below.
 - b. If A2 is checked, complete Step 8 through Step 19 below.
 - c. If A3 is checked, complete Step 20 through Step 27 below.
3. (NO BECHTEL ENGINEERING DOCUMENTS OR DRAWINGS AFFECTED/REWORK FOR GENERAL ELECTRIC)

On BRW form writes NOT APPLICABLE in Paragraph B; signs and dates paragraph C1; writes 'N/A' in Paragraph C2.
4. Makes distribution of FDI/FDDR and BRW to Field Construction Manager, Lead Field Mechanical Engineer, and Project Engineering (DCC), complete log entry (FDI or FDDR).
5. Receives FDI/FDDR and BRW form; date stamps; logs in appropriate FDI or FDDR log.
6. Routes to Project Engineer for appropriate routing.
7. Upon completion of routing, files FDI/FDDR and BRW form in project file (0205 or 0206). completes log entry (FDI or FDDR).

Document Control Center (DCC)

61

<u>Responsibility</u>	<u>Action</u>
Document Control Center (DCC)	18. Types transmittal with input from cognizant. Group Supervisor, as necessary; enters completion date in FDI/FDDR log.
Lead Resident Engineer	19. Makes distribution of FDI/FDDR package to the Bechtel Field Construction Mgr., GE Site Mgr., MP&L Proj. Mgr. and the Lead Resident Engineer; files FDI/FDDR in appropriate file (0205 or 0206).
	20. (IMPACT SECTION XI, ASME CODE) On BRW form, checks A-3, signs and dates Paragraph C1; forwards original of FDI or FDDR package to Project Engineering (DCC) for processing; completes FDI or FDDR log entry.
Document Control Center (DCC)	21. Date stamps FDI or FDDR.
	22. Makes entry in applicable log.
Project Engineer/Assistant Project Engineer (PE/APE)	23. Place copy in suspense file, attach routing slip to FDI/FDDR package and forward to PE/APE.
Cognizant Group Supervisor/ Responsible Engineer	24. Reviews package; routes to cognizant discipline Group Supervisor for action and to others as appropriate.
	25. Reviews the proposed field modifications; coordinates with other disciplines as required; drafts letter response to MP&L listing documents involved, background information, recommendations, and other pertinent information; routes to Project Engineer/Assistant Project Engineer.
Project Engineer/Assistant Project Engineer (PE/APE)	26. Approves package; forwards package to Project Administrator.
Project Administrator	27. Types transmittal letter, forwards transmittal letter to LRE and package to MP&L; files copy of FDI package in project file 0206 FDDR package in project file 0205; completes applicable log entry.

<u>Responsibility</u>	<u>Action</u>
Lead Resident Engineer	8. (BECHTEL ENGINEERING DOCUMENTS/DRAWINGS AFFECT On BRW form, checks A-2, signs and dates Paragraph C1; completes log entry (FDI or FDDR).
	9. Forwards FDI/FDDR with attachments and BRW for to Project Engineering (DCC) for processing.
Document Control Center (DCC)	10. Date stamps FDI/FDDR.
	11. Logs FDI/FDDR in appropriate log, place copy in suspense file, attach routing slip to FDI/FDDR package and forward to Project Engineer/Assistant Project Engineer.
Project Engineer/Assistant Project Engineer (PE/APE)	12. Reviews FDI/FDDR package; routes to cognizant discipline Group Supervisor, E.I. to others as appropriate.
Cognizant Group Supervisor/ Responsible Engineer (GS/RE)	13. Revises affected drawings or documents as appropriate.
	14. On BRW form completes Paragraph B listing all affected engineering documents such as schematic diagrams, circuit diagrams, external connection diagrams, etc.
	15. Makes reference in the revision block or elsewhere on the affected documents to the originating FDI/FDDR; attaches revised documents if available to the BRW and the FDI/FDDR.
	16. Forwards FDI/FDDR, BRW and attachments to the PE/APE for approval.
Project Engineer/Assistant Project Engineer (PE/APE)	17. Reviews and approves FDI/FDDR signs and dates Paragraph C2 of the BRW form; prepares draft transmittal letter if necessary; forwards to the DCC.

DOCUMENT TO BE USED WITH	
FDI _____	REV. _____ ONLY
BY _____	DATE _____
RESIDENT ENGINEER	
BECHTEL JOB 9645	

EXHIBIT A

FDI Usage Stamp

PROJECT FORM



GRAND GULF NUCLEAR STATION

FDI/FDDR

BECHTEL RELATED WORK



Bechtel Related Work
to General Electric

FDI/FDDR No. _____

ISSUE DATE _____

A. Resident Engineer Disposition

(Check one)

- _____ 1. No Bechtel Engineering Documents/Drawings Affected/Rework for GE
Route to Project Construction Manager and Project Engineer for
information.
- _____ 2. Bechtel Engineering Documents/Drawings Affected. Route to Project
Engineer for disposition.
- _____ 3. Impact Section XI ASME Code. Route to Project Engineer for disposition.

B. Project Engineering Disposition

(List Document/Drawings Affected by Change)

C. Approvals

1. _____
Lead Resident Engineer / Date
2. _____
Project Engineer / Date

EXHIBIT B

Bechtel Related Work (BRW) Document

PROJECT FORM

ENCLOSURE VI PAGE //

Q5

PROCEDURE NO.

ENCLOSURE VI PAGE 12

46

Auditor V. F. Jarama Date 1/8/81

Don "1"

Page 2 of 84
SF 1/8/81

PARAGRAPH NO. AUDITED

PROCEDURE NO.

ITEM	Resident Engineer Approves BRW	Dec Dates & Standby	Dec Logs FBI/FBIR in Appropriate Log	PE/ABE Reviews & Routes	Revises Documents on Bugs.	Lists Documents on BRW	Makes Reference in Rev. Blot on affected Doc.	PE/ABE Approves BRW	Finding Code COMPLIANCE YES/NO/NA REMARKS
FDDR-781-858	YES	YES	YES	YES	N/A	N/A	N/A	N/A	
FDDR-781-853 ^{833 SF}	YES	YES	YES	YES	N/A	N/A	N/A	N/A	
FDDR-781-853	YES	YES	YES	YES	YES	YES	YES	NO	DCN see note 6
FDDR-781-847 ^{Rev.}	YES	YES	YES	YES	YES	YES	YES	NO	DCN see note 6
FDDR-781-845	YES	YES	YES	YES	YES	YES	YES	NO	DCN see note 6
FDDR-781-834	YES	YES	YES	YES	YES	YES	YES	NO	DCN see note 6
FDDR-781-828	YES	YES	YES	YES	YES	YES	see note 3 NO	NO	DCN see note 6
FDI-WAMW	YES	YES	YES	YES	see note 1	YES	N/A	YES	
FDI-WBPF	YES	YES	YES	YES	N/A	N/A	N/A	YES	
FDI-26/42382	YES	YES	NO *	YES	N/A	N/A	N/A	N/A	
FDI-59/42382	YES	YES	NO *	YES	N/A	N/A	N/A	N/A	
FDI-23/42382	YES	YES	YES	YES	N/A	N/A	N/A	YES	
FDI-WAKQ	YES	YES	YES	YES	see note 1	see note 1	N/A	YES	
FDI-WBPF	YES	YES	YES	YES	N/A	N/A	N/A	YES	
SF 1/8/81 NOTES: FDI-WALD	YES	YES	YES	YES	N/A	N/A	N/A	YES	

NOTES: SEE PAGE 3

* Connected during audit - NO
N-Nonconformances are identified by NO.

BGA#9

Attachment to Checklist-ATR-09

Page 3 of 3

SH/1/8/81

NOTES:

1. Documents have not been revised due to clarifications on additional info is needed from General Electric. Reference letters GEB 80/308 AND MPB-80/0580. Satisfactory and Conforming - C
2. The revisions to the affected documents were issued prior to the receipt of the FDDR by Project Engineering. No further action is required. C - Conforming.
3. BECHTEL Audit PQAG #92 QAF's 1 & 2 documented this problem AND appears to be tracking this problem satisfactorily to resolution. ND - Nonconformance documented by the audited organization.
4. This is a Unit 2 item. Documents have not been revised. SEE NOTE 5 for finding on "control".
5. Procedure does not provide controls to assure that changes resulting from FDI/FDDR's are in fact incorporated into the affected Bechtel design documents. N - Nonconformance
6. DCN's ARE being issued as a result of P&CC related FDDR's AND the BRW does not reflect the correct action to be taken. Block A.1 is marked in lieu of Block A.2. The DCN is referenced in the margin AND not in Block B. AND the Project Engineer is therefore not approving the BRW Form. N - Nonconformance
(SEE PAGE 4 for listing of DCN vs. FDDR) SH/1/8/81

S. F. Lamm

1/8/81

88

BCA #9

Attachment to Checklist
ATR-09 page 4 of 4

FDDR #

JB1-1018 Rev.1

JB1-1025

JB1-998

JB1-997

JB1-853

JB1-847 Rev.1

JB1-845

JB1-834

JB1-828

DCN # issued

DCN #1 on E-1181-67 and E-1181-68

DCN #1 on E-1160-52

DCN #1 on E-1181-80

DCN #2 on E-1181-68

DCN #1 on E-0115-14

DCN #4 on E-0131-01

DCN #3 on ~~E-1181~~ E-1225-01.

DCN #1 on E-1141-32

DCN #1 on J-0306-03

S. F. Lanner

1/8/81

Aud. ton

2nd

89

MISSISSIPPI POWER & LIGHT COMPANY

SAFETY CHECKLIST

Classification (* N)

Appendix E of 10CFR20 criteria III, VI

ANSI N45.2 (Sections) or Reg. Guide
REVIEW OF SAFETY-RELATED EQUIPMENT FOR
PROTECTION AGAINST EXPOSURE TO ADVERSE
(Subject or Equipment) ENVIRONMENTS

Audit Number 9
BECHTEL GAITHERSBURG

Persons Conducted:

6. COMMITMENT: PERM, SECTION 3.2.6.
(Reference) REV 1, 8/8/77

SEE ATTACHED PAGES 3.2-5 THRU 3.2-8

NOTE: THE ABOVE REVISION HAD BEEN SUPERSEDED BY
PERM CHANGE NOTICE #145 DATED 11/10/80
THEREFORE THIS CHECKLIST WAS AMENDED TO
REFLECT THE REQUIREMENTS OF THE NEW
PROCEDURE.

3. METHOD OF VERIFICATION EXAMINE A SAMPLING OF DOCUMENTATION
FOR COMPLIANCE WITH PARAGRAPHS 3.2.6.1, 3.2.6.2,
3.2.6.4(A,B,C,D) & 3.2.6.5

- C. FINDINGS*(Classification): N
Procedure had been implemented only in the preliminary
phase of walkdown.

Reviewed ERT Report Numbers OC605-E-1
and found them to be in OC605-E-2
compliance with procedure. OC702-PD-1 thru 4
OC702-E-1 THRU 5

However, The procedure did not
contain any provisions for
screening significant
deficiencies. This is documented
on CAR 290.

IA120-E-1
IA120-PD-1 thru 3
IA120-PD-1 thru 7
IA401-PD-1 thru 2
IA401-E-1 thru 7
IA401-E-1 thru 7

*Classification:

C- Conformance
N- Nonconformance
A- Not Audited

X- Nonconformance Corrected
During Audit

ND- Nonconformance Documented by
Audited Organization

(More than one classification can be used)

Completed By:

Date:

Initials of Originator

- Checklist Number ATR-15

Page 1 of 1

S.V. 4
8/11/86



PEPM CHANGE NOTICE

PROJECT NO. 9645

1. PAGE 1 OF 13

ATTACHMENT:

YES ☐ NO ☒

2. CHANGE NOTICE NO. 145

3. DATE 11 10 MO DAY

4. PROCEDURE NO.

3.2.6

5. TITLE PROCEDURE FOR REVIEW OF SAFETY RELAT
EQUIPMENT FOR PROTECTION AGAINST EXPOSURE TO
ADVERSE ENVIRONMENTS

6. EXISTING CONDITION:-

PROCEDURE 3.2.6

7. CHANGE TO READ

PROCEDURE 3.2.6 - Revised and rewritten (Pages 2 thru 13).

8.

B.C. Stanchfield
PREPARED BY

11/10/80
DATE

E.C. Pratt for
PQAE CONCURRENCE

R.L. Scott
12/1/80
DATE

William M. Pinner
PQAE CONCURRENCE

DATE

Al. J. J. J.
PROJ. ENGR. APPROVAL

12/2/80

DATE

GPO-13153 4/77

3.2.6 ENGINEERING REVIEW TEAM (ERT)

1.0 PURPOSE

To describe the formation and responsibilities of the ERT and the subsequent corrective actions resulting from their review.

2.0 SCOPE

This team shall review the installation of all safety-related equipment for possible exposure to conditions or hazards that may affect the ability of the equipment to perform its safety function.

3.0 GENERAL

3.1 EXTENT AND FREQUENCY OF REVIEW

Safety-related installations in the containment, control, auxiliary, turbine, and diesel generator buildings, and the standby service water pump house shall be reviewed. These buildings and structures shall be reviewed on a room-by-room basis at 90 percent construction complete (Preliminary Review) and after turnover to the Checkout and Turnover Organization (CTO) (Final Review). A walkdown package (Exhibit E) shall be prepared describing the review made of each room.

Field Engineering shall monitor any changes made after final review and will notify the Plant Design Layout Group Supervisor of any significant changes made in rooms already reviewed. He shall determine the need for additional review and process it in accordance with this procedure.

3.2 CONDITIONS OR HAZARDS (CRITERIA FOR REVIEW)

The following conditions or hazards shall be considered:

- a. Failure of Seismic II equipment which may strike safety-related equipment during a seismic event
- b. High energy pipe whip

- c. Jet impingement from pipe break
- d. Missiles generated from failure of pressurized components or rotating equipment (less turbine-generator)
- e. Compartment environmental conditions resulting from failure of pressurized components or pipe
- f. Flooding or spray wetting resulting from pipe failure or activation of fire suppression system
- g. Separation of redundant safety-related off-line instruments.

3.3 BASES FOR REVIEW

The specifications and guides to be used as the bases for review are listed in Exhibit A.

3.4 COMPOSITION OF TEAM

The ERT may be composed of representatives from the Mechanical, Electrical, Control Systems, Plant Design, Light Structures Group, Field Engineering, MP&L Plant Staff Engineering, CTO, and/or other disciplines as determined by the ERT Coordinator.

The team efforts will be coordinated by a Team Leader appointed by the Plant Design Layout Group Supervisor or ERT Coordinator.

3.5 ENGINEERING RESPONSIBILITIES

The work of the ERT shall not relieve Project Engineering or Field Engineering of assigned design responsibilities assigned to them.

4.0 PROCEDURE

Responsibility

Action

ERT Coordinator

1. Identify rooms to be reviewed: initiate equipment list, Exhibit C; and walkdown cover sheet, Exhibit E
2. Organize team from affected disciplines; assign responsibilities; appoint leader
3. Coordinate team effort

103

Team Member(s)

Team (under direction
of Team Leader)

Team Leader

ERT Coordinator

4. Develop equipment list Exhibit C for each room; identify safety equipment; identify criteria for review; obtain copies of current drawings, etc., required to support review
5. Review each room using equipment list of Step 4.
6. Record adverse conditions (findings) on ERT Report Exhibit D; the report may be supported by photographs, sketches, etc.; sign and date by reporting member
7. Recommend disposition; sign and date by person recommending disposition; assign for corrective action to responsible organization (Field Engineering or Project Engineering)
8. Obtain all ERT member signatures, discipline, and date on Walkdown package Exhibit E
9. Summarize review in accordance with Walkdown Package cover sheet Exhibit E ; record ERT Report(s); attach equipment lists and ERT Report(s); identify references;
10. Route Walkdown Package to ERT Coordinator
11. Record Walkdown Package information on log Exhibit B and maintain status
12. If Field is assigned responsibility draft transmittal Exhibit F; detach ERT Reports; place remainder of package in file 1079
13. Route transmittal and ERT Reports to Project Administrator (Step 31)

Discipline Group Supervisor

Responsible Engineer

Group Supervisor

PD Layout Group Supervisor

ERT Coordinator

14. If Engineering is assigned responsibility detach ERT Report(s) place remainder of package in file 1079
15. Attach routing slip to ERT Reports; attach to red resolution card
16. Route to affected discipline Group Supervisor (block 10 of ERT Report)
17. Take action as Responsible Engineer or as to Responsible Engineer
18. Review ERT Report; complete block 13 show final disposition; provide rationale if condition can be justified; sign and date "Dispositioned By"; record drawing or DCN and process in accordance with applicable procedures (Reference ERT Report in revision block of changed documents); N/A unused blocks
19. Route to Group Supervisor
20. Review, sign and date
21. Return to Plant Design Layout Group Supervisor
22. Review; determine need for ERT review and indicate; sign and date
23. Route to ERT Coordinator
24. If ERT review is required, schedule review hold ERT Report for future processing
25. If final ERT review, notify Field Engineering
26. Route to Project Engineer/Assistant Project Engineer

105

Project Engineer/APE

ERT Coordinator

Project Administrator

27. Review, sign and date
28. Return to ERT Coordinator
29. Close out log (Exhibit B)
30. File Engineering ERT Reports in file 1079 with Walkdown cover sheet
31. Receive package from ERT Coordinator (Step 13); have transmittal typed; obtain signature; send original to Construction; distribute copies and file as noted on transmittal

(NOTE: Field Engineering will follow applicable field procedures, i.e., FCR/FCN, WP&IR, etc., to correct findings. Disagreements on disposition will be resolved by the Team Leader. Field Engineering will complete its portion of the report (item 13 and lower right block) and return the original to the Project Administrator, (Step 32)

P.D. Layout Group Supervisor

ERT Coordinator

32. Receive Field Engineering ERT Report(s); date stamp; attach routing slip; attach to red resolution card
33. Route to Plant Design Layout Group Supervisor
34. Review and initial in Field Engr. block
35. Route to ERT Coordinator
36. Record in log (Exhibit B)
37. If additional ERT review is required, schedule for review; hold ERT Report - for future processing
38. If final ERT review, notify Field Engineering
39. File with Walkdown cover sheet in file 1079

106

Specifications and Guides


- A. Specification M-195.0, Protection against dynamic effects associated with the postulated rupture of piping.
- B. NRC Regulatory Guide 1.29, Seismic design classification.
- C. Mechanical Standard MS-13, Criteria for supports to prevent failure of non-seismic piping over essential equipment.
- D. Design Guide M-1398, Office and Field Engineering users manual for routing and supporting two-inch and under piping.
- E. Specification M-618.1, Ductwork (non-safety related).
- F. Specification M-624.1, Ductwork (safety related).
- G. Drawing E-0725, Raceway notes and details.
- H. Specification J-701.0, Instrument installation requirements.
- I. Specification J-702.0, Nuclear instrument installation requirements.
- J. Design Guide N2.1.9, Separation practices for nuclear safety systems.
- K. Design Criteria Manual, Part B.VI, Guidelines for handling non-seismic hazardous items.
- L. Topical Report BP-TOP-1, Seismic analysis of piping systems.
- M. Grand Gulf FSAR, Sections 3.5 and 3.6, Missile protection and protection against the dynamic effects associated with the postulated rupture of piping.

[illegible]

PEPM CN #145
Page 9

Exhibit C
Page 1 of 1

Page _____ of _____



Safety-Related Equipment List MANDATORY FORM

INCLOSURE VI PAGE 25

109

From page one

[illegible]

sequentially
number each
entry

ERT Report
Supplement

INCLOSURE VI
MANDATORY FORM

PAGE 26

110

From Equipment List Exhibit C

Provide clear description

BECHTEL

ENGINEERING REVIEW TEAM
WALKDOWN PACKAGE
COVER SHEET
GRAND GULF NUCLEAR STATION - UNIT 1

MLP

Job No. 9645

Page 1 of

ROOM NUMBER:
&
DESCRIPTION

DATE(S) OF WALKDOWN: ☐ PRELIMINARY ☐ FINAL

ERT Reports and Attachments:

References:

List supporting documents

List ERT Reports; identify Equipment Lists and attach

Use supplemental sheet, page 2 of 2, if necessary

Each team member to complete

WALKDOWN TEAM MEMBERS:

Name (print)	Signature/Date	Discipline

ENGINEERING REVIEW TEAM
WALKDOWN PACKAGE
COVER SHEET SUPPLEMENT

Room No. 1
Page of

From page one

Q

GPO 1361 C Rev 3/79

TRANSMITTAL

BECHTEL POWER CORPORATION
GAITHERSBURG POWER DIVISION

15740 Shady Grove Road
Gaithersburg, Maryland 20760



Assigned by Project Administrator

TO: FIELD CONSTRUCTION
BECHTEL POWER CORPORATION
P. O. BOX 41
PORT GIBSON, MISSISSIPPI 39150

DATE _____ CDT- _____

MIDDLE SOUTH ENERGY, Inc.
BECHTEL JOB 9645
SPECIFICATION NO. _____

ATTN: D. M. LAKE

BECHTEL FILE NOS. 0840/1079/

_____ Sepias	Encl. <input type="checkbox"/>	Under Sep. Cover	<input type="checkbox"/>
_____ Prints	Encl. <input type="checkbox"/>	Under Sep. Cover	<input type="checkbox"/>
_____ Microfilm	Encl. <input type="checkbox"/>	Under Sep. Cover	<input type="checkbox"/>
_____ Specs	Encl. <input type="checkbox"/>	Under Sep. Cover	<input type="checkbox"/>
_____ Vellums	Encl. <input type="checkbox"/>	Under Sep. Cover	<input type="checkbox"/>
_____ Other	Encl. <input type="checkbox"/>	Under Sep. Cover	<input type="checkbox"/>

ACTION NUMBER

1. Approved. Manufacturing may proceed.
2. Approved. Submit final dwg. Mfg. may proceed.
3. Approved except as noted. Make changes and submit final dwg. Mfg. may proceed as approved.
4. Not Approved. Correct and resubmit.
5. Review not required. Mfg. may proceed.
6. Comment: Approval Due Date _____
7. Information Only.
8. Other _____ For Disposition

QA (ISI) ~~RE-NOTE~~ APPLICABLE

DESCRIPTION

Action No.	Vendor/Bechtel Document No.	Master Parts List Number	Rev.	Date Issued	Title
8	ERT Report No. (From block 3 of ERT Report)			From Block 7	Brief Description of Hazardous Condition (From block 6)

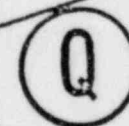
NOTE

cc: Project Field Engineer w/o
Resident Assistant Project Engineer w/o
L. Anderson w/l

bcc: Mech. Group Supervisor w/o
Electrical Group Supervisor w/l
Control Systems Group Supervisor w/l

Very truly yours

A. Zaccaria
Project Engineer



Signature of Project Engineer or Resident

Transmittal Form

SAMPLE FORM

INCLOSURE VI PAGE 29

113

CN
145

3.2.6 PROCEDURE FOR REVIEW OF SAFETY-RELATED EQUIPMENT FOR PROTECTION AGAINST EXPOSURE TO ADVERSE ENVIRONMENTS

3.2.6.1 PURPOSE

To establish an Engineering Review Team (ERT) and to provide them with instructions for conducting a review in the field of all installed safety-related equipment for possible exposure to adverse environments. Adverse environment is defined as any condition or hazard that may affect the ability of the equipment to perform its safety function under a design basis event. The ERT review is to supplement home-office reviews in order to ensure that all hazards have been considered in the design and installation of safety-related equipment and licensing commitments satisfied.

3.2.6.2 SCOPE

The ERT will be made up of Project Engineering personnel. A member of the Plant Design Discipline will act as team leader to coordinate the effort. The team will establish an on-going program during the latter stage of construction of the plant, as safety-related systems are being installed in the Containment, Control, Auxiliary, and Diesel-Generator Buildings.

As a minimum, the ERT will determine whether or not the necessary provisions have been included in the design and installation of safety-related systems to mitigate the following hazards:

- A. During a seismic event, failure of nonseismic Category I equipment which may strike safety-related equipment.
- B. High energy pipe whip.
- C. Jet impingement from pipe break.
- D. Missiles generated from pressurized component failures or rotating equipment (less turbine-generator missiles).
- E. Compartment environmental conditions from a pressurized component or pipe failure.

114

- F. Flooding or spray wetting effects from a pipe failure, or actuation of fire suppression systems.

The work performed by the ERT does not relieve any engineering responsibilities assigned to each home office design group for considering such items as the non-seismic over seismic evaluations, high energy line break review, etc.

3.2.6.3 REFERENCES

The latest revision of the below specifications and guides will be used.

- A. Grand Gulf Specification 9645-M-195.0, "Protection Against Dynamic Effects Associated With the Postulated Rupture of Piping."
- B. NRC Regulatory Guide 1.29, "Seismic Design Classification."
- C. Grand Gulf Mechanical Standard 9645-MS-13, "Criteria for Supports to Prevent Failure of Non-seismic Piping Over Essential Equipment."
- D. Bechtel Design Guide M-18, "Office and Field Engineering Users Manual for Routing and Supporting Two-Inch and Under Piping."
- E. Grand Gulf Specification 9645-M-613.0, "Ventilation Ductwork."
- F. Grand Gulf Drawing 9645-E-0725, "Raceway Notes and Details."
- G. Grand Gulf Specification 9645-J-701.0, "Instrument Installation Requirements."
- H. Grand Gulf Specification 9645-J-702.0, "Nuclear Instrument Installation Requirements."
- I. Nuclear TPO Design Guide N2.1.9, "Separation Practices for Nuclear Safety Systems."
- J. Grand Gulf Project Design Criteria Manual, Part B.VI, "Guidelines for Handling of Nonseismic Hazardous Items."

MP&L AUDIT OF BECHTEL-GAITHERSBURG
July 13-17, 1981

SUMMARY OF ATTACHED CHECKLISTS APPLICABLE TO DESIGN CONTROL OR DESIGN INTERFACE

<u>CHECKLIST NUMBER</u>	<u>SUBJECT</u>	<u>NONCONFORMANCE IDENTIFIED</u>
BGA-81/15-04	Automated Document Control Register	None
BGA-81/15-05	Automated Document Control Register	None
BGA-81/15-06	Responsibilities & Interface of Resident Engineer	None
BGA-81/15-07	Design Freeze	None
BGA-81/15-09	Pipe Support Design	None
BGA-81/15-12	Identification & Control of Design Interfaces	None
BGA-81/15-14	Identification & Control of Design Interfaces	None
BGA-81/15-15	Responsibilities & Interface of Resident Engineer	None
BGA-81/15-18	Design Interface Control	None
BGA-81/15-19	Project Design Criteria Manual	None
BGA-81/15-20	Procedures for Coordination of Drawings/Documents	None
BGA-81/15-21	Coordination, Review, & Approval of Design Specifications	None
BGA-81/15-29	DCCL	None
BGA-81/15-31	Field Disposition Instructions/ Field Deviation Disposition Instructions	None
BGA-81/15-38	Design Change Approval	None
BGA-81/15-53	GGNS Quenchers Design	None

AUDIT CHECKLIST

MAP REF.	COMMITMENT	METHOD OF VERIFICATION	FINDINGS/ COMMENTS	*CLASSIFICATION CODE
C06.10	PEPM, Appendix D.	Examine selected documentation for compliance to pp. 3-9 of Attachment A. ① Reviewed 35 Bechtel drawings, and 7 vendor documents in the hard copy file and/or the aperture card file and compared the latest revision in the file with the ADCR. ② Reviewed 16 Bechtel drawings in the aperture card file and compared the latest revision to the ADCR listing. (See Attachment B)	5 5/12/10 ① Found 6 conflicts on "Q" vs. "Non-Q" designation and "I" conflict on document title. These items were corrected during the audit. ② All found conforming	C, NC(1) (6 en) ② C

*Classification Code:

C=Conformance

N=Nonconformance

NC=Nonconformance Corrected during audit

ND=Nonconformance Documented by audited organization

A=Not Audited

V=Verified Corrective Actions

(More than one classification can be used)

PERSONS CONTACTED:

NANCY Lee - Doc. Cont. Supv.

COMPLETED BY:

S. F. Janner

DATE:

7/14/81

CHECKLIST NUMBER:

BGA 81/15-04

(By Audit No.)



PEPM CHANGE NOTICE

PROJECT NO. 9645

1. PAGE 1 OF 8

2. CHANGE NOTICE
NO. 150

ATTACHMENT:

YES ☐ NO ☒

3. DATE 12 24 80
MO DAY Y

4. PROCEDURE NO.

Appendix D

5. TITLE

Automated Document Control Register

6. EXISTING CONDITION -

Appendix D

7. CHANGE TO READ

Appendix D - Revised and Rewritten (Pages D-1 thru D-6)

Checklist Number

BGA 8/15-04

Attachment A

Page 2 of 9

8.

E.T. Elstner 12-24-80
PREPARED BY DATE

EC for R.L. Scott
2/22/01

William Whina 12/24/80
FOR CONCURRENCE DATE

R.S. Tiel

AUTOMATED DOCUMENT CONTROL REGISTERPurpose

The purpose of the Automated Document Control Register (ADCR) is: To record the status of Bechtel design documents and Supplier documents processed by Project Design Engineering; To provide a means to furnish status reports of these documents to Project personnel for administrative control purposes: To provide a listing of appropriate additional equipment numbers and additional document categories to which supplier documents apply. (The term "documents" as used herein includes drawings.)

The ADCR is used as the Control Log for Bechtel Drawings and Specifications and also for Supplier Documents.

Time of entry of data into the ADCR

Bechtel design documents should be entered as they are issued.

Supplier documents should be entered upon receipt or as soon as they are properly identified; the entry should be updated when the document is transmitted from Bechtel.

Documents to be entered into the ADCR

1. Bechtel Design Engineering Documents
 - a. Drawings
 - b. Drawing Change Notices
 - c. Deviations
 - d. Systems Descriptions/Design Requirements
 - e. Specifications
 - f. Specification Change Notices
2. Bechtel Field Change Requests/Notices
3. Supplier Documents
 - a. All Supplier documents submitted to Bechtel Design Engineering in response

Checklist Number
BGA 8/15-01
 Attachment A
 Page 3 of 9

submitted for "information only" purposes.

b. Drawing Change Notices

c. Deviations

d. Supplier Deviation Disposition Requests

4. Appropriate additional equipment numbers and additional document categories to which Supplier documents apply will also be entered.

Description of the ADCR Data Input Form

General:

The preprinted data input form contains 40 lines, each line containing blocks across, numbered 1 through 80, and 12 through 71. The blocks are grouped under preprinted headings. The design of the system requires that the entry of each document occupies two lines, labeled 01 and 02, to the left of the form. This arrangement is to provide for an input capability to the master file by either key punched cards or data terminal. (Figure D-1)

When punched cards are utilized they can accommodate a maximum of 80 columns per card, therefore each document entered would require a minimum of two punched cards. No entries should be made in the shaded areas of the lines on the form.

Card No. 1

Column Headings

Column 1-ACT (Action)

This is a computer transaction code. It identifies the entry as a new item (add), a change (including corrections), or a deletion. No entry is made in Column 1 unless it is a change or deletion to a previous entry.

Columns 2 and 3-CARD No. This indicates the card number when punched cards are utilized.

Columns 4 through 11-Client Document Number. The client document number is a sequential number assigned by Bechtel to identify each entry in the ADCR as a unique entry. The first entry starts with 00000001. Each subsequent entry will be assigned the next

Columns 12 through 16-Bechtel File Number. For supplier documents, these columns contain the specification number to which that document relates ie: A4500, (A-450.0), C1311 (C-131.1) etc.

General subject or Technical Subject file numbers must be right justified. A correct entry for file number 0075 would be 00075.

The entry in these columns for certain Bechtel design drawings is the drawing number.

Columns 17 and 18-MFG CODE (Manufacturer's Code)

These columns identify the originator of the document and the type of document, as follows:

Column 17 entry

A - Allis-Chalmers (TG)
B - Bechtel
C - Bechtel Construction
G - General Electric (NSSS)
Z - All other suppliers

Column 18 entry

D - Document/Drawing
H - Hardware - Additional equipment numbers or additional document categories to which a supplier document applies.
S - Specification, to include standard spendi to specifications, Specification Change Notices, deviations, Mechanical Standards, FCR/FCN & SDDR

Columns 19 through 30-Manufacturer's Document Number

For Supplier documents, these columns contain the number that a manufacturer assigns to his documents.

For Bechtel documents, these columns contain the Bechtel drawing number, specification number, system description number, etc.

Columns 31 and 32-VI (Vendor Identification)

Vendor identification will normally be 01. When a purchase order or sub-contract has been issued to more than one Supplier under the same specification number, i.e. 9645-C-011.0A and 9645-C-011.0-B, the letter A indicates Vendor 1 under that particular specification, B indicates Vendor 2, etc. The entry in column 32 would be A,B etc.

Column 31 would be blank.

Columns 33 through 54 - Total Plant Ident Number

Column 33 QN. This column contains the Nuclear Safety Related Classification, whether the item is Q or Non-Q.

Column 34 UT - Unit. This column contains the station or unit indicator

1 - Unit 1

2 - Unit 2

S - Unit 1 and 2 or Shared

Columns 35 through 43-MPL No- Master Parts List Number. These columns contain the Master Parts List Number when one has been assigned.

Column 44 contains a dash.

Columns 45 through 48-DOC CAT. - Document Category. These columns contain the document category applicable to Supplier documents (Column 47 contains a period).

Column 49 contains a dash.

Columns 50 and 51 Seq. - Sequence. These columns contain the sequence number applicable to a Supplier document.

Column 52 contains a dash.

Columns 53 and 54 Rev. Revision. These columns contain the revision identification for documents i.e.: A,B,C... Z...AA...ZZ. or 0...1...2... etc. (Numeric revisions will be entered as 00,01, etc.) Entries are from right to left.

Columns 55 through 78-Comments. These columns contain appropriate pertinent information i.e.. Bechtel Revision (to identify Supplier Documents revised by Bechtel), Continuation of document title, if necessary, transmittal letter number, etc.

Columns 79 and 80-SH No. Used as appropriate to identify drawing sheet numbers.

Card No. 2

Card number 2 begins with column 12, as columns 1 through 11 on card number 2 will be the same as on card number 1.

Checklist Number

86A 9/115-04

Columns 12 through 17-Date Received/Issue Date (Received for all documents other than Bechtel-Issued for all Bechtel documents). The date issued for Bechtel documents is the date that is typed or stamped on the document.

YY - Year (last two digits 71, 72...80)

MM - Month (two digits, 01, 02...10, 11, 12)

DD - Day (two digits, 01, 02...28, 29, 30, 31)

Columns 18-ACT-Action. This card contains the action code assigned to Supplier Documents. An "X" in this column signifies no action required or other superseding events.

Columns 19 through 24-Date Transmitted. The date will be entered in these columns when documents are transmitted.

YY - Year (last two digits)

MM - Month (two digits, 01... etc.)

DD - Day (two digits, 01... etc.)

Column 25.- MR-Microfilm Reproduction. This column is no longer utilized.

Columns 26 through 57-Document Title. These columns contain the title of the document.

Columns 58 through 71 are for internal Bechtel use only.

Figure D-2 is a sample page of an ADCR report.

Checklist Number
704 0/115-01

[illegible]

Figure D-1

SH CLIENT NO DOC.	BECHT MF FILE CD	MANUFACTURERS DOCUMENT	TOPLAN IDENTIFICATION QS MPL NO. DOC. SEQ	DOCUMENT TITLE	DATE RECD ISSD	A C T	DATE XMIT	M R	COMMENTS
NUMBER	NUMBER	NUMBER	VI NU REV						
00209205M0025	BD	M-0025	01 NSA112195M - . -	-08 EQUIP LOC FIRE WTR PUMP HOUSE	770112				CDT0187
00223850M0025	BD	M-0025	01 NSA112195M - . -	-09 EQUIP LOC FIRE WTR PUMP HOUSE	770315				CDT1092
00250107M0025	BD	M-0025	01 NSA112195M - . -	-09 DCN#1	770707				CDT2832
00268308M0025	BD	M-0025	01 NSA112195M - . -	-10 EQUIP LOC FIRE WTR PUMP HOUSE	771104				CDT4682
00394677M0025	BD	M-0025	01 NSA112195M - . -	-12 EQUIP LOC FIRE WTR PUMP HOUSE	790301				CDT1712
00448383M0025	BD	M-0025	01 NSA112195M - . -	-12 DCN#2	800321				CDT2487
00456334M0025	BD	M-0025	01 NSA112195M - . -	-13 EQUIP LOC FIRE WTR PUMP HOUSE	800604				CDT6255
00012194M0026	BD	M-0026	01 NSA112205M - . -	- A EQUIP LOC PLANT SERVICE WTR	740416				MPT0157
00014641M0026	BD	M-0026	01 NSA112205M - . -	- B EQUIP LOC PLANT SERVICE WTR	740530				MPT0227
00159835M0027	BD	M-0027	01 NSA112215M	- A EQUIP LOC RADIAL WELL	760615				MPT1278
00170997M0027	BD	M-0027	01 NSA112215M	-00 EQUIP LOC RADIAL WELL SWGRHSE	760723				CDT1843
00205420M0027	BD	M-0027	01 NSA112215M	-01 EQUIP LOC RADIAL WELL SWGRHSE	761217				CDT3447
00336685M0027	BD	M-0027	01 NSA112215M	-02 EQUIP LOC RADIAL WELL SWGRHSE	780810				CDT4957
00000905M0030	BD	M-0030A	01 NSA211015M - . -	- B P&ID LEGEND	730122				MPT0005
00001267M0030	BD	M-0030A	01 NSA211015M - . -	- C P&ID LEGEND	730405				MPT0023
00002116M0030	BD	M-0030A	01 NSA211015M - . -	-00 P&ID LEGEND	730622				MPT0077
00341300M0030	BD	M-0030A	01 NSA211015M - . -	-01 DCN#1	731129				
00028503M0030	BD	M-0030A	01 NSA211015M - . -	-01 P&ID LEGEND	731207				
00034066M0030	BD	M-0030A	01 NSA211015M - . -	-02 P&ID LEGEND	751009				CDT1133
00145935M0030	BD	M-0030A	01 NSA211015M - . -	-03 P&ID LEGEND	760422				CDT0954
00163778M0030	BD	M-0030A	01 NSA211015M - . -	-04 P&ID LEGEND	760624				CDT1598
00326493M0030	BD	M-0030A	01 NSA211015M - . -	-05 P&ID LEGEND	780705				CDT5339
00372961M0030	BD	M-0030A	01 NSA211015M - . -	-06 P&ID LEGEND	781228				CDT0043
00430725M0030	BD	M-0030A	01 NSA211015M - . -	-07 P&ID LEGEND	791003				CDT8095
00455320M0030	BD	M-0030A	01 NSA211015M - . -	-08 P&ID LEGEND	800529				CDT6157

INCLOSURE VII PAGE 10

Checklist Number
MSA 01115-011

Figure D-3

PEPM CN #150 Page 8

Case 1				Case 2				Attachment 8 to BGA 8/15-04	
Class →	4 through 11	19 through 30	33	34	35 through 43	53 and 54	26 through 57	PAGE 1 of 7	Class: (Previous)
Class →	Class 1 Document Number	Class 2 Document Number	Q/N	UT (UNIT)	MP No. Number List Number	Revision	Document Title		
	00312021	M-00318	Q	S	P661015M	05	PSTD Document with System		C
	N/A	YES	YES	YES	YES	YES			
	00323716	M-00348	Q	S	P661015M	05	DCN #2		C
	N/A	YES	YES	YES	YES	YES			
	00324642	M-00348	N	S	P661015M	05	DCN #3		C
	N/A	YES	YES	YES	YES	YES			
	00418699	M-00348	Q	S	P661015M	16	PSTD DOMESTIC AUTR. SYS.		C
	N/A	YES	YES	YES	YES	YES			
	00444631	M-0204	Q	S	Z108285M	11	HVAC CONTROL BLD SEC F DET		C
	N/A	YES	YES	YES	YES	YES			
	00291500	M-0841-34	Q	S	V109015M	00	DCN #1		NC
	N/A	YES	NO	N/A	N/A	YES			
	00488082	M-10938	Q	1	P811015M	04	PSTD Diagram DTC GEN Sys.		C
	N/A	YES	YES	YES	YES	YES			

Code:

YES - INDICATES DOCUMENT AND
ADCR ENTRY NOOE

NO - INDICATES A COMPLAINT
BETWEEN DOCUMENT
AND AOCR ENTRY

N/A - INDICATES THIS PARTICULAR
ENTRY IS NOT APPLICABLE
OR NOT PERTINENT FOR
THIS AUDIT REQUEST.

C -
N -
NC -
NO -
N/A -

SEE "Classification Code"
on Project Charter

S. J. Lamm 7/16/01

Audited Date

Column Title →	4 through 11 Drawing Number	19 through 30 Mechanical Drawing Number	Case 1		Case 2		Attachment Classification (Previous)	Attachment Classification (Previous)
			33	34	35 through 43 MPJ No. Serial No. List Number	44 through 57 Revision	Document Title	
✓	492248	M-1270	Q	1	T106255M	02	AKEN PNG COMP Aux Bldg	C
	N/A	YES	YES	YES	YES	YES	YES	
	482193	M-1358D	Q	1	P114095M	14	SYS PNG ISO STABLY SYE WIRLDB	C
	N/A	YES	YES	YES	YES	YES	YES	
✓	327545	M-1349E	N	1	E124095M	10	SYS PNG ISO THRE HT EXCHANGE	NC
	N/A	YES	NO	YES	YES	YES	YES	
✓	366197	M-1348E	N	1	E124095M	11	SYS PNG ISO KMC HT EXCHANGE	NC
	N/A	YES	NO	YES	YES	YES	YES	
	479122	M-1348E	Q	1	E124095M	18	SYS PNG ISO RAE HT EXCHANGE	C
	N/A	YES	YES	YES	YES	YES	YES	
	474176	M-13498	Q	1	E224095M	15	SYS PNG ISO MRC CTMT TO RDV	C
	N/A	YES	YES	YES	YES	YES	YES	
✓	496628	M-1350A	Q	1	E214095M	20	SYS PNG ISO LACS PMP DISCH AUX	A
	N/A	YES	YES	YES	YES	YES	YES	
	N/A	This Drawing was in reproduction therefore it was dropped from the sample.						

Dropped from the sample.

S. J. Lamm
Date 7/16/81

C. -
N-
NC-
NO-
A-
SEE "Classification Code"
on Audit Checklist

N/A - Ind. is this particular
entry is not applicable
OR NOT PERTINENT FOR
THIS AUDIT CHECKLIST.

Code:
YES - Indicates Document AND
AOKR ENTRY NOOE

NO - Indicates N. ENRUIT
BETWEEN DOCUMENT
AND AOKR ENTRY

Group →	Column →	1 through 11	12 through 30	31	32	33	34	35 through 43	44 through 54	55 through 64	65 through 75	76 through 85	86 through 95	96 through 105	106 through 115	116 through 125	126 through 135	136 through 145	146 through 155	156 through 165	166 through 175	176 through 185	186 through 195	196 through 205	206 through 215	216 through 225	226 through 235	236 through 245	246 through 255	256 through 265	266 through 275	276 through 285	286 through 295	296 through 305	306 through 315	316 through 325	326 through 335	336 through 345	346 through 355	356 through 365	366 through 375	376 through 385	386 through 395	396 through 405	406 through 415	416 through 425	426 through 435	436 through 445	446 through 455	456 through 465	466 through 475	476 through 485	486 through 495	496 through 505	506 through 515	516 through 525	526 through 535	536 through 545	546 through 555	556 through 565	566 through 575	576 through 585	586 through 595	596 through 605	606 through 615	616 through 625	626 through 635	636 through 645	646 through 655	656 through 665	666 through 675	676 through 685	686 through 695	696 through 705	706 through 715	716 through 725	726 through 735	736 through 745	746 through 755	756 through 765	766 through 775	776 through 785	786 through 795	796 through 805	806 through 815	816 through 825	826 through 835	836 through 845	846 through 855	856 through 865	866 through 875	876 through 885	886 through 895	896 through 905	906 through 915	916 through 925	926 through 935	936 through 945	946 through 955	956 through 965	966 through 975	976 through 985	986 through 995	996 through 1005	1006 through 1015	1016 through 1025	1026 through 1035	1036 through 1045	1046 through 1055	1056 through 1065	1066 through 1075	1076 through 1085	1086 through 1095	1096 through 1105	1106 through 1115	1116 through 1125	1126 through 1135	1136 through 1145	1146 through 1155	1156 through 1165	1166 through 1175	1176 through 1185	1186 through 1195	1196 through 1205	1206 through 1215	1216 through 1225	1226 through 1235	1236 through 1245	1246 through 1255	1256 through 1265	1266 through 1275	1276 through 1285	1286 through 1295	1296 through 1305	1306 through 1315	1316 through 1325	1326 through 1335	1336 through 1345	1346 through 1355	1356 through 1365	1366 through 1375	1376 through 1385	1386 through 1395	1396 through 1405	1406 through 1415	1416 through 1425	1426 through 1435	1436 through 1445	1446 through 1455	1456 through 1465	1466 through 1475	1476 through 1485	1486 through 1495	1496 through 1505	1506 through 1515	1516 through 1525	1526 through 1535	1536 through 1545	1546 through 1555	1556 through 1565	1566 through 1575	1576 through 1585	1586 through 1595	1596 through 1605	1606 through 1615	1616 through 1625	1626 through 1635	1636 through 1645	1646 through 1655	1656 through 1665	1666 through 1675	1676 through 1685	1686 through 1695	1696 through 1705	1706 through 1715	1716 through 1725	1726 through 1735	1736 through 1745	1746 through 1755	1756 through 1765	1766 through 1775	1776 through 1785	1786 through 1795	1796 through 1805	1806 through 1815	1816 through 1825	1826 through 1835	1836 through 1845	1846 through 1855	1856 through 1865	1866 through 1875	1876 through 1885	1886 through 1895	1896 through 1905	1906 through 1915	1916 through 1925	1926 through 1935	1936 through 1945	1946 through 1955	1956 through 1965	1966 through 1975	1976 through 1985	1986 through 1995	1996 through 2005	2006 through 2015	2016 through 2025	2026 through 2035	2036 through 2045	2046 through 2055	2056 through 2065	2066 through 2075	2076 through 2085	2086 through 2095	2096 through 2105	2106 through 2115	2116 through 2125	2126 through 2135	2136 through 2145	2146 through 2155	2156 through 2165	2166 through 2175	2176 through 2185	2186 through 2195	2196 through 2205	2206 through 2215	2216 through 2225	2226 through 2235	2236 through 2245	2246 through 2255	2256 through 2265	2266 through 2275	2276 through 2285	2286 through 2295	2296 through 2305	2306 through 2315	2316 through 2325	2326 through 2335	2336 through 2345	2346 through 2355	2356 through 2365	2366 through 2375	2376 through 2385	2386 through 2395	2396 through 2405	2406 through 2415	2416 through 2425	2426 through 2435	2436 through 2445	2446 through 2455	2456 through 2465	2466 through 2475	2476 through 2485	2486 through 2495	2496 through 2505	2506 through 2515	2516 through 2525	2526 through 2535	2536 through 2545	2546 through 2555	2556 through 2565	2566 through 2575	2576 through 2585	2586 through 2595	2596 through 2605	2606 through 2615	2616 through 2625	2626 through 2635	2636 through 2645	2646 through 2655	2656 through 2665	2666 through 2675	2676 through 2685	2686 through 2695	2696 through 2705	2706 through 2715	2716 through 2725	2726 through 2735	2736 through 2745	2746 through 2755	2756 through 2765	2766 through 2775	2776 through 2785	2786 through 2795	2796 through 2805	2806 through 2815	2816 through 2825	2826 through 2835	2836 through 2845	2846 through 2855	2856 through 2865	2866 through 2875	2876 through 2885	2886 through 2895	2896 through 2905	2906 through 2915	2916 through 2925	2926 through 2935	2936 through 2945	2946 through 2955	2956 through 2965	2966 through 2975	2976 through 2985	2986 through 2995	2996 through 3005	3006 through 3015	3016 through 3025	3026 through 3035	3036 through 3045	3046 through 3055	3056 through 3065	3066 through 3075	3076 through 3085	3086 through 3095	3096 through 3105	3106 through 3115	3116 through 3125	3126 through 3135	3136 through 3145	3146 through 3155	3156 through 3165	3166 through 3175	3176 through 3185	3186 through 3195	3196 through 3205	3206 through 3215	3216 through 3225	3226 through 3235	3236 through 3245	3246 through 3255	3256 through 3265	3266 through 3275	3276 through 3285	3286 through 3295	3296 through 3305	3306 through 3315	3316 through 3325	3326 through 3335	3336 through 3345	3346 through 3355	3356 through 3365	3366 through 3375	3376 through 3385	3386 through 3395	3396 through 3405	3406 through 3415	3416 through 3425	3426 through 3435	3436 through 3445	3446 through 3455	3456 through 3465	3466 through 3475	3476 through 3485	3486 through 3495	3496 through 3505	3506 through 3515	3516 through 3525	3526 through 3535	3536 through 3545	3546 through 3555	3556 through 3565	3566 through 3575	3576 through 3585	3586 through 3595	3596 through 3605	3606 through 3615	3616 through 3625	3626 through 3635	3636 through 3645	3646 through 3655	3656 through 3665	3666 through 3675	3676 through 3685	3686 through 3695	3696 through 3705	3706 through 3715	3716 through 3725	3726 through 3735	3736 through 3745	3746 through 3755	3756 through 3765	3766 through 3775	3776 through 3785	3786 through 3795	3796 through 3805	3806 through 3815	3816 through 3825	3826 through 3835	3836 through 3845	3846 through 3855	3856 through 3865	3866 through 3875	3876 through 3885	3886 through 3895	3896 through 3905	3906 through 3915	3916 through 3925	3926 through 3935	3936 through 3945	3946 through 3955	3956 through 3965	3966 through 3975	3976 through 3985	3986 through 3995	3996 through 4005	4006 through 4015	4016 through 4025	4026 through 4035	4036 through 4045	4046 through 4055	4056 through 4065	4066 through 4075	4076 through 4085	4086 through 4095	4096 through 4105	4106 through 4115	4116 through 4125	4126 through 4135	4136 through 4145	4146 through 4155	4156 through 4165	4166 through 4175	4176 through 4185	4186 through 4195	4196 through 4205	4206 through 4215	4216 through 4225	4226 through 4235	4236 through 4245	4246 through 4255	4256 through 4265	4266 through 4275	4276 through 4285	4286 through 4295	4296 through 4305	4306 through 4315	4316 through 4325	4326 through 4335	4336 through 4345	4346 through 4355	4356 through 4365	4366 through 4375	4376 through 4385	4386 through 4395	4396 through 4405	4406 through 4415	4416 through 4425	4426 through 4435	4436 through 4445	4446 through 4455	4456 through 4465	4466 through 4475	4476 through 4485	4486 through 4495	4496 through 4505	4506 through 4515	4516 through 4525	4526 through 4535	4536 through 4545	4546 through 4555	4556 through 4565	4566 through 4575	4576 through 4585	4586 through 4595	4596 through 4605	4606 through 4615	4616 through 4625	4626 through 4635	4636 through 4645	4646 through 4655	4656 through 4665	4666 through 4675	4676 through 4685	4686 through 4695	4696 through 4705	4706 through 4715	4716 through 4725	4726 through 4735	4736 through 4745	4746 through 4755	4756 through 4765	4766 through 4775	4776 through 4785	4786 through 4795	4796 through 4805	4806 through 4815	4816 through 4825	4826 through 4835	4836 through 4845	4846 through 4855	4856 through 4865	4866 through 4875	4876 through 4885	4886 through 4895	4896 through 4905	4906 through 4915	4916 through 4925	4926 through 4935	4936 through 4945	4946 through 4955	4956 through 4965	4966 through 4975	4976 through 4985	4986 through 4995	4996 through 5005	5006 through 5015	5016 through 5025	5026 through 5035	5036 through 5045	5046 through 5055	5056 through 5065	5066 through 5075	5076 through 5085	5086 through 5095	5096 through 5105	5106 through 5115	5116 through 5125	5126 through 5135	5136 through 5145	5146 through 5155	5156 through 5165	5166 through 5175	5176 through 5185	5186 through 5195	5196 through 5205	5206 through 5215	5216 through 5225	5226 through 5235	5236 through 5245	5246 through 5255	5256 through 5265	5266 through 5275	5276 through 5285	5286 through 5295	5296 through 5305	5306 through 5315	5316 through 5325	5326 through 5335	5336 through 5345	5346 through 5355	5356 through 5365	5366 through 5375	5376 through 5385	5386 through 5395	5396 through 5405	5406 through 5415	5416 through 5425	5426 through 5435	5436 through 5445	5446 through 5455	5456 through 5465	5466 through 5475	5476 through 5485	5486 through 5495	5496 through 5505	5506 through 5515	5516 through 5525	5526 through 5535	5536 through 5545	5546 through 5555	5556 through 5565	5566 through 5575	5576 through 5585	5586 through 5595	5596 through 5605	5606 through 5615	5616 through 5625	5626 through 5635	5636 through 5645	5646 through 5655	5656 through 5665	5666 through 5675	5676 through 5685	5686 through 5695	5696 through 5705	5706 through 5715	5716 through 5725	5726 through 5735	5736 through 5745	5746 through 5755	5756 through 5765	5766 through 5775	5776 through 5785	5786 through 5795	5796 through 5805	5806 through 5815	5816 through 5825	5826 through 5835	5836 through 5845	5846 through 5855	5856 through 5865	5866 through 5875	5876 through 5885	5886 through 5895	5896 through 5905	5906 through 5915	5916 through 5925	5926 through 5935	5936 through 5945	5946 through 5955	5956 through 5965	5966 through 5975	5976 through 5985	5986 through 5995	5996 through 6005	6006 through 6015	6016 through 6025	6026 through 6035	6036 through 6045	6046 through 6055	6056 through 6065	6066 through 6075	6076 through 6085	6086 through 6095	6096 through 6105	6106 through 6115	6116 through 6125	6126 through 6135	6136 through 6145	6146 through 6155	6156 through 6165	6166 through 6175	6176 through 6185	6186 through 6195	6196 through 6205	6206 through 6215	6216 through 6225	6226 through 6235	6236 through 6245	6246 through 6255	6256 through 6265	6266 through 6275	6276 through 6285	6286 through 6295	6296 through 6305	6306 through 6315	6316 through 6325	6326 through 6335	6336 through 6345	6346 through 6355	6356 through 6365	6366 through 6375	6376 through 6385	6386 through 6395	6396 through 6405	6406 through 6415	6416 through 6425	6426 through 6435	6436 through 6445	6446 through 6455	6456 through 6465	6466 through 6475	6476 through 6485	6486 through 6495	6496 through 6505	6506 through 6515	6516 through 6525	6526 through 6535	6536 through 6545	6546 through 6555	6556 through 6565	6566 through 6575	6576 through 6585	6586 through 6595	6596 through 6605	6606 through 6615	6616 through 6625	6626 through 6635	6636 through 6645	6646 through 6655	6656 through 6665	6666 through 6675	6676 through 6685	6686 through 6695	6696 through 6705	6706 through 6715	6716 through 6725	6726 through 6735	6736 through 6745	6746 through 6755	6756 through 6765	6766 through 6775	6776 through 6785	6786 through 6795	6796 through 6805	6806 through 6815	6816 through 6825	6826 through 6835	6836 through 6845	6846 through 6855	6856 through 6865	6866 through 6875	6876 through 6885	6886 through 6895	6896 through 6905	6906 through 6915	6916 through 6925	6926 through 6935	6936 through 6945	6946 through 6955	6956 through 6965	6966 through 6975	6976 through 6985	6986 through 6995	6996 through 7005	7006 through 7015	7016 through 7025	7026 through 7035	7036 through 7045	7046 through 7055	7056 through 7065	7066 through 7075	7076 through 7085	7086 through 7095	7096 through 7105	7106 through 7115	7116 through 7125	7126 through 7135	7136 through 7145	7146 through 7155	7156 through 7165	7166 through 7175	7176 through 7185	7186 through 7195	7196 through 7205	7206 through 7215	7216 through 7225	7226 through 7235	7236 through 7245	7246 through 7255	7256 through 7265	7266 through 7275	7276 through 7285	7286 through 7295	7296 through 7305	7306 through 7315	7316 through 7325	7326 through 7335	7336 through 7345	7346 through 7355	7356 through 7365	7366 through 7375	7376 through 7385	7386 through 7395	7396 through 7405	7406 through 7415	7416 through 7425	7426 through 7435	7436 through 7445	7446 through 7455	7456 through 7465	7466 through 7475	7476 through 7485	7486 through 7495	7496 through 7505	7506 through 7515	7516 through 7525	7526 through 7535	7536 through 7545	7546 through 7555	7556 through 7565	7566 through 7575	7576 through 7585	7586 through 7595	7596 through 7605	7606 through 7615	7616 through 7625	7626 through 7635	7636 through 7645	7646 through 7655	7656 through 7665	7666 through 7675	7676 through 7685	7686 through 7695	7696 through 7705	7706 through 7715	7716 through 7725	7726 through 7735	7736 through 7745	7746 through 7755	7756 through 7765	7766 through 7775	7776 through 7785	7786 through 7795	7796 through 7805	7806 through 7815	7816 through 7825	7826 through 7835	7836 through 7845	7846 through 7855	7856 through 7865	7866 through 7875	7876 through 7885	7886 through 7895	7896 through 7905	7906 through 7915	7916 through 7925	7926 through 7935	7936 through 7945	7946 through 7955	7956 through 7965	7966 through 7975	7976 through 7985	7986 through 7995	7996 through 8005	8006 through 8015	8016 through 8025	8026 through 8035	8036 through 8045	8046 through 8055	8056 through 8065	8066 through 8075	8076 through 8085	8086 through 8095	8096 through 8105	8106 through 8115	8116 through 8125	8126 through 8135	8136 through 8145	8146 through 8155	8156 through 8165	8166 through 8175	8176 through 8185	8186 through 8195	8196 through 8205	8206 through 8215	8216 through 8225	8226 through 8235	8236 through 8245	8246 through 8255	8256 through 8265	8266 through 8275	8276 through 8285	8286 through 8295	8296 through 8305	8306 through 8315	8316 through 8325	8326 through 8335	8336 through 8345	8346 through 8355	8356 through 8365	8366 through 8375	8376 through 8
------------	-------------	--------------	---------------	----	----	----	----	---------------	---------------	---------------	---------------	---------------	---------------	----------------	-----------------	-----------------	-----------------	-----------------	-----------------	-----------------	-----------------	-----------------	-----------------	-----------------	-----------------	-----------------	-----------------	-----------------	-----------------	-----------------	-----------------	-----------------	-----------------	-----------------	-----------------	-----------------	-----------------	-----------------	-----------------	-----------------	-----------------	-----------------	-----------------	-----------------	-----------------	-----------------	-----------------	-----------------	-----------------	-----------------	-----------------	-----------------	-----------------	-----------------	-----------------	-----------------	-----------------	-----------------	-----------------	-----------------	-----------------	-----------------	-----------------	-----------------	-----------------	-----------------	-----------------	-----------------	-----------------	-----------------	-----------------	-----------------	-----------------	-----------------	-----------------	-----------------	-----------------	-----------------	-----------------	-----------------	-----------------	-----------------	-----------------	-----------------	-----------------	-----------------	-----------------	-----------------	-----------------	-----------------	-----------------	-----------------	-----------------	-----------------	-----------------	-----------------	-----------------	-----------------	-----------------	-----------------	-----------------	-----------------	-----------------	------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	-------------------	----------------

Scheme No. →	Client Designation Type	Project Description Nature	CHS 1		CHS 2		Classification (Findings)	Code:
			9 through 11	12 through 30	31 through 43	44 through 57		
			Q N	UT (UNIT)	MP No. Major Parts List Number	Revision	Document Title	
490131	E-1111-000	Q	1	P751025E	12	STBY DIESEL GEN SYS DIA I	C	YES - INDICATES DOCUMENT AND ADCR ENTRY AGREE
N/A	YES	YES	YES	YES	YES	YES	C	NO - INDICATES A DISCREPANCY BETWEEN DOCUMENT AND AOCR ENTRY
490147	E-1111-024	Q	1	P751025E	04	SCHEMATIC DIAGRAM	C	N/A - INDICATES THIS PARTICULAR ENTRY IS NOT APPLICABLE OR NOT PERTINENT FOR THIS AUDIT CHECKLIST
N/A	YES	YES	YES	YES	YES	YES	C	
485191	E-1112-000	Q	1	P811015E	06	SCHEMATIC DIAG MAKEUP WTR TREATMENT	NC	
N/A	YES	YES	YES	YES	YES	NO	NC	
482978	E-1160-046	Q	1	B211025E	03	NUCLEAR STEAM SUPPLY SYSTEM	C	
N/A	YES	YES	YES	YES	YES	YES	C	
493954	E-1160-058	Q	1	B211025E	03	DCN #1	C	
N/A	YES	YES	YES	YES	YES	YES	C	
485207	E-1169-014	Q	1	CH11015E	03	STANDBY LIQUID CONT SYSTEM	C	
N/A	YES	YES	YES	YES	YES	YES	C	
491795	E-1177-011	N	1	D171015E	02	DCN #1	C	
N/A	YES	YES	YES	YES	YES	YES	C	

Attachment 8 to BGA 8115-04
PAGE 4 of 7

Code:
YES - INDICATES DOCUMENT AND
ADCR ENTRY AGREE
NO - INDICATES A DISCREPANCY
BETWEEN DOCUMENT
AND AOCR ENTRY
N/A - INDICATES THIS PARTICULAR
ENTRY IS NOT APPLICABLE
OR NOT PERTINENT FOR
THIS AUDIT CHECKLIST

C -
N -
NC -
NO -
A -
V -
SEE "Classification Code"
on Audit Checklist

S. F. Lerner
Audited Date 7/16/81

Column Title →	Client Document Number	Manufacturer Document Number	Q/N	UT (UNIT)	MP No. Master Parts List Number	Revision	Document Title	Classification (Finnish)
✓	414441	19444430	33	34	35444443	53444444	264444457	Attachment 8 to BGR/115-04
	487627	E-1363	Q	1	B334015E	11	DCN #1	C
	N/A	YES	YES	YES	YES	YES	YES	Code: YES - Indicates Document and ADCR ENTRY NO. 00
	481616	E-1364	Q	1	C114015E	12	Connection Diagram	C
	N/A	YES	YES	YES	YES	YES	YES	NO - Indicates N. Entry Between Document and APCR ENTRY
	479421	E-1364	N	1	C114015E	12	DCN #3	C
	N/A	YES	NO	YES	YES	YES	YES	N/A - Indicates this particular entry is not applicable or not pertinent for this audit checklist.
✓	490063	E-1366	Q	1	C114015E	13	Connection Diagram	C
	N/A	YES	YES	YES	YES	YES	YES	C - N - NC - ND - R - V - SEE Classification Code on Audit Checklist
✓	494541	E-1504	Q	1	H13415E	09	Connection Diagram Terminal Cabinet	C
	N/A	YES	YES	YES	YES	YES	YES	
	411354	E-1571- 011	Q	1	R204245E	00	Wiring Diagram Relay Components	C
	N/A	YES	YES	YES	YES	YES	YES	
✓	495144	E-1707	Q	1	M912075E	19	TRAY CMT BLD MISC SEC DET AR 11	C
	N/A	YES	YES	YES	YES	YES	YES	S. J. Lamm Date 7/16/81

Attachment B to BGA 81/15-04							
PAGE 6 of 7							
Column No. →	9 through 11	19 through 30	33	34	35 through 43	53 through 57	26 through 57
Column Title →	Client Document Number	Manufacturer's Document Number	Q/N	UT (UNIT)	MPL No. NUMBER PARTS LIST NUMBER	REVISION	Document Title
Classification (Findings)							
P.O. No. J-203.0	222946	W99X0582D Skt. 01	Q	1	H22 P150	02	WIRING DIAGRAMS (SHOI-12) (VDT 0377)
	N/A	YES	YES	YES	YES	YES	YES
P.O. No. J-203.0	7000B3	M99X0583D Skt. 02	Q	X2	H22 P150	01	Remote Shutdown Control Panel (VDT 1577)
	N/A	YES	YES	YES	YES	YES	YES
P.O. No. J-203.0	240533	(06.0 01) 3	Q	S	H22 P150 N/A	03	QA MANUAL (VDT 1946)
	N/A	YES	YES	YES	YES	YES	YES
P.O. No. C-151.0	110575	323 (01.3 00)	Q	1	M10 V001	04	PENETRATION ASSEMBLY (VDT 3592)
	N/A	YES	YES	YES	YES	YES	YES
P.O. No. C-151.0	257546	QC27 (0506.0 24)	Q	S	N/A	00	QA MANUAL (VDT 2487)
	N/A	YES	YES	YES	YES	YES	YES
P.O. No. C-151.0	257933	CTE5B (0506.0 24)	Q	S	N/A	08	QA MANUAL (VDT 2550)
	N/A	YES	YES	YES	YES	YES	YES
P.O. No. C-151.0	253545	(0506.0 27)	Q	S	N/A	01	QA MANUAL (VDT 2290)
	N/A	YES	YES	YES	YES	YES	YES

CODE:
YES - INDICATES DOCUMENT AND ADR ENTRY AGREE

NO - INDICATES A CONFLICT BETWEEN DOCUMENT AND ADR ENTRY

N/A - INDICATES THIS PARTICULAR ENTRY IS NOT APPLICABLE OR NOT PERTINENT FOR THIS AUDIT CHECKLIST.

C- }
N- } SEE "Classification Code"
NC- }
ND- }
A- }
V- }

S. I. Lanner 7/16/81
Audited Date

<u>Finding</u>	<u>Client Doc. No.</u>	<u>MPL No.</u>	<u>Drawing</u>	<u>Rev.</u>	<u>DCN (if applicable)</u>
C	476685	QSR204175E	E-0560-039	03	-
C	465042	QSR282585E	E-0658-141	05	-
C	486824	QIT917505C	C-1423E	06	-
C	475263	QSY402015C	C-1730	09	-
C	487807	QIM917015C	C-1016	10	10
C	485545	QIE121015M	M-1085A	17	46
C	490890	NIN641015M	M-1092B	13	16
C -	494350	QIP601015M	M-1099	07	-
C	434791	NIN224045M	M-1334H	03	-
C	479121	QIB334045M	M-1341	04	-
C	445684	QIG414045M	M-1351D	13	-
C	254320	NIN714045M	M-1360D	05	-
C	484488	QITS11205J	J-1235-000	03	-
C	481603	QIE311205J	J-1250-000	07	-
C	445790	QI2771205J	J-1259-000	06	-
C	478099	QIG361205J	J-1277-000	06	-

The above drawings were reviewed in the aperture card file and verified against the ADCR. All Areas found to be conforming.

S. F. Jamm 2/16/81

Attn: (D. W. S. Foxman) Good Luck

ENCLOSURE VII PAGE 18

Quality Assurance
Verification Evidence

Finding/Document requiring verification CAR No. 212

METHOD OF VERIFICATION

(Note - include identification of documents reviewed or hardware checked)

REMEDIAL ACTION - A SAMPLE (AS INDICATED ON THE ATTACHED COPY OF THE CAR) OF THE ITEMS LISTED ON THE CAR WERE AUDITED TO CHECK REMEDIAL ACTION. THE ITEMS WERE CHECKED TO THE FILM CHIP, APERTURE CARD HEADING, AND ADCR ENTRY. THEY NOW MATCH INDICATING THAT REMEDIAL ACTION IS COMPLETE.

NOTE: A BECHTEL LETTER (MPB-79/0020, 1/10/79) TO LFDAL MP&L ASST. PROT. MGR., RECOMMENDED REDUCING THE SCOPE OF THE ADCR BY ELIMINATING - CORRESPONDENCE, P&S, SUBCONTRACTS, ETC. FROM THE SYSTEM. THE BECHTEL DRAWINGS, SPECS, VENDOR DOCUMENTATION, AND Q RESPONSE REQUIRED CORRESPONDENCE WOULD BE THE ONLY ITEMS IN THE SYSTEM. MP&L APPROVED THIS ACTION 2/16/79 WITH LETTER BMP-79/67.

ACTION TO REDUCE THE ADCR COVERAGE AS RECOMMEND WAS CHECKED AND FOUND TO BE COMPLETE. (SEE ATTACHED IOMs & NOTES).

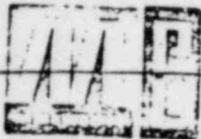
NOTE: THE CONTINUING PROCESS OF CHECKING FILM CHIPS, APERTURE CARD HEADINGS, AND ADCR PRINT OUT OF PREVIOUSLY ISSUED DRAWINGS WAS AUDITED. 40,000 OF APPROXIMATELY 84,000 HAVE BEEN CHECKED TO DATE (4/2/79). THE MECHANICAL, ARCHITECT, ELECTRICAL, AND CONTROL SYSTEMS ARE FINISHED. CIVIL IS IN PROCESS. HANGERS TO FOLLOW.

TO CHECK THE PROCESS, 15 OUT OF THE MOST RECENT 90 CORRECTED CARDS WERE CHECKED AND NO DISCREPANCIES WERE NOTED. THE PROCEDURE IS CONSIDERED AS BEING ADEQUATELY IMPLEMENTED.

Verification performed by Blaise

Date 4/2/79

INCLOSURE VII PAGE 19



MISSISSIPPI POWER & LIGHT COMPANY
Helping Build Mississippi
P. O. BOX 1640, JACKSON, MISSISSIPPI 39205

OCT 2 1978

PRODUCTION DEPARTMENT

October 24, 1978

TO GC 0265
FROM GC 0275

Mr. R. L. Scott
Project Quality Assurance Manager
Bechtel Power Corporation
Post Office Box 41
Port Gibson, Mississippi 39150

Dear Bob:

SUBJECT: Grand Gulf Nuclear Station
Bechtel Job No. 9645
File 0272/0490/0038/15830
Issuance of CAR No. 212
ADCR Concerns
PMI 78/1095
BCQM-78/148

As a result of review of the Bechtel Automated Document Control Register System, Mississippi Power & Light is issuing Corrective Action Request (CAR) Number 212.

Please respond to this item by November 27, 1978.

Yours truly,

T. E. Reaves, Jr.
Manager of Quality Assurance

WEE;lb
Attachment

cc: Dr. T. W. Schnatz
Mr. J. N. Ward
Mr. A. Zaccaria
Mr. D. M. Lake
Mr. P. R. Britnell
Mr. N. L. Stampley
Mr. J. P. McGaughy, Jr.
Mr. C. K. McCoy
Mr. P. W. Sly
Mr. B. E. Ballard
CAR File
File

SEE
MPB-79/0020
ELSTNER/WARD RESPONSE
(RECOMMENDATION)

INCLOSURE VII PAGE 20

CAR File

(1) Issued To Mr. R. L. Scott, PQAM
Audit/Insp.No. NA
 Person Contacted Mr. R. L. Scott, PQAM

(2) Number 212
Date Due 11/27/78
Unit No. 1 & 2
PRD Form 16.20(A)
Initiated? Yes No X
PRD No. NA



See Attachment A

W.E. Edge 10/23/78 J. Kewer Jr. 10/24/78
Initiator Date Manager of Quality Assurance Date

Bechtel to Determine

CORRECTIVE ACTION TAKEN: (4b)

Possible Supervisor/Manager Date

(5) Corrective Action Verified By: _____
Quality Assurance _____ Date _____

NONCONFORMANCE (3)

1. A. Commitment

NQAM QADP 2.4 Rev. 1 Paragraph 2.0 states:

"Project Quality Assurance audits shall be scheduled to provide comprehensive audit coverage of project activities from commencement through completion to assure that the work is performed in conformance with the QA Program requirements."

B. Finding:

A review of the Project QA Master Audit Schedule Rev. 12 10/12/78, PQAE Audit Reports 42 through 60 and discussion with QA personnel indicates audits have not covered the ADCR System comprehensively enough to assure that the work is performed in conformance with the QA Program requirements. PQAE Reports 52 and 60 did address portions of the ADCR System but verification of ADCR entries, data input, aperture card entries, etc. was not included.

2. A. Commitment:

PEPM APPENDIX D, Rev. 2, states in part:

-Procedures for Making Entries into ADCR-

(1) Page D-3 "Objectives"

The objectives of the Automated Document Control Systems are to register the transmittal and receipt of project documents and to furnish records of these documents to project personnel for administrative control purposes."

(2) Page D-7 "Column 33 contains the Nuclear Safety Related Classification (S.R.C.L.), whether the item is Q or Non-Q. If S.R.C.L. has not been determined, enter 0 in column 33. If S.R.C.L. has been determined, enter Q or N in column 33."

(3) Page D-7 "Column 34 contains Station or Unit Indicator to be entered as follows:

Enter:

For:

1

Unit 1

2-

Unit 2

S-

Shared"

2. A. (Continued)

Attachment A to CAR 212
Page 2 of 5

- (4) Page D-7 "Columns 35 through 43 contain the Master Parts List (MPL) number from the Total Plant Numbering System (TOPLAN)."
- (5) Page D-9 "Columns 26 through 57 contain the Document Title. In the case of correspondence enter the subject of the correspondence. Abbreviate only when necessary."
- (6) Page D-10 "Drawings are entered into the Automated Document Control Register utilizing either the transmittal or the actual drawing. When drawings consist of more than one sheet, enter each sheet separately."
-EXPLANATION OF DOCUMENT CONTROL REGISTER PRINTOUT-
- (7) Page D-12 "The next eight spaces contain the Client sequential document number assigned by Document Control as each document is entered into the system."
- (8) Page D-14 "Q/N is the safety related classification. If SRCL has been determined, Q or N will be entered. If it has not been determined, 0 will be entered."
- (9) Page D-14 "UT (Col. 34) - indicates unit number as follows:
 - 1- Unit 1
 - 2- Unit 2
 - S- Shared
 - D- Duplicate (Unit 1 and Unit 2)"
- (10) D-14 "The MPL Number is self-explanatory."
- (11) D-16 "Document Title is self-explanatory."
- (12) D-19 "Column 42-43 Revision"

2. B. Findings: Examples of typical Findings are listed below, but do not include all items identified. Numbering is the same as under item 2.A, above

OK (1) See Attachment B which lists drawings received but not on current ADCR and other ADCR errors.

(2)	<u>Client Doc. No.</u>	<u>Dwg. No.</u>	<u>ADCR</u>	<u>Film</u>	<u>Aperture Card</u>
	277964	E-1228-014 Rev. 3	Q	N	N
	142843	M0850 -007	Q	-	N
OK ✓	53227	M-850 -007	N	-	Q N
	94070	M0850 -007	N	-	Q
OK ✓	120480	M0850 -007	Q N	-	N

Additional examples of items 2.B (2) and (3) are in Client Document Numbers 52463, 42259, 254812, 144809, 46201, 89152, 50938, 187931, 85305, 52464, 60933, 89170, and 65517.

(3)	Client Doc.No.	Dwg.No.	ADCR	Film	Aperture Card
	53227	M-0850			
		-007	-	1	S
	94070	M-0850	-	0	S
		-007			
	53221	M-0850	-	1	S 1
		-006			
	53220	M-0850	-	1	S
		-005			
	53219	M-0850	-	1	S
		-004			
	53218	M-0850	-	1	S 1
		-003			
	94069	M-0850	-	0	S
		-003			
	53217	M-0850	-	1	S
		-002			
	94067	M-0850	-	0 1	S
		-001			

(4)	Client Doc.No.	Dwg.No.	ADCR	Film	Aperture Card
	118901	SFD-0051A	U671025M	Y671025M	Y671025M
	99161	SFD-0051B	U671025M	Y671025M	Y671025M
	268760	E-1774-001	C711055E	C711060	-
	(Doc. No. 266638 dwg. E-1817-001 MPL No. C711055E- This dwg. indicates E-1817-001 supercedes E-1774-001)				

(5)	231555	E-0725-005	DCN#1 to Rev. 4 of Rev. 4 Dwg.	
	238894	E-0725-005	DCN#1 to Rev. 5 of Rev. 5 Dwg.	
(6)	334763	-	Sheet 08	Sheet 07
	(Should be client document No. 334762)			

334762	Not Listed	Sheet 08
(Should be client document No. 334763)		

334762	E-1222	Sheet 07	Sheet 06
(Sheet 6 not listed on ADCR)			

74214	NBC01045	-	Film Blank
-------	----------	---	------------

Client Doc.No.	Dwg.No.	ADCR	Aperture Card
(6) 156910	E-1264	27(Delete)	28
316426	E-1271	28(Rev. 1) 28(Rev. 1)	28(Rev. 1.) 28(Rev. 2)
✓ 307778	M-1358	Sheet G Rev. 9	M-3000- N2P43G004H291
(7) 75865		M300 NSP64G008H02 NSP64G008H23	
OK ✓ 75865		C1091 Q1M239035C C-1091B	

Same Client Doc. No. according to ADCR.

311042	Q1P444045H06 HL-1331F
311042	N171G013R 01 N1P716013 R082

Same Client Doc. No. according to ADCR.

- (8) Same as Item (2)
 (9) Same as Item (3)
 (10) Same as Item (4)
 (11) Same as Item (5)

(12) Client Doc. No.	Dwg.	Revision ADCR	Aperture Card
332351	E-1228-018 Rev. 3	Rev. 3 not on ADCR	Rev. 3
117919	A-1110	Rev. 0	Rev. 1
OK ✓ 316332	E-1220 Sheet 2	Rev. 4	Rev. 5
219146	M-3000	Rev. 2	Rev. 1

3. A.. Commitment:

Bechtel letter MPB-78/0491 dated September 18, 1978, A. Zaccaria to L. Dale stated in part:

"This is to advise you that we are in the process of verifying the accuracy of information in the microfilm aperture card headers with the film chip and the associated ADCR entry on all Bechtel design drawings.

As discrepancies are identified, corrections are made and corrected diazo duplicate aperture cards are forwarded to MP&L. This program will continue until all microfilm aperture cards for Bechtel design drawings have been reviewed and discrepancies corrected. Further, additional checks are being made on current issue of Bechtel drawings to improve the error rate."

B. Finding:

Five recent transmittals of corrected aperture cards were examined for errors as follows:

	<u>Transmittal</u>	<u>Date</u>	<u>Number of Cards</u>	<u>Errors</u>
a.	MPT-78/1811	9/29/78	78	11
b.	MPT-78/1809	9/28/78	94	3
c.	MPT-78/1559	8/21/78	139	3
d.	MPT-78/1880	10/6/78	136	1
e.	MPT-78/1876	10/5/78	51	11
		Total	<u>498</u>	<u>29</u>

Note this is a 7% error rate in corrected aperture cards with just a cursory review of about 353 of the cards. A more detailed review performed on transmittals MPT-78/1811 and MPT-78/1876 indicates some 22 errors in just 145 cards. This is a 15% error in corrected aperture cards.

2.B(1)

(a) ITEMS NOT LISTED ON ADCR BUT RECEIVED

E1220 - ✓136983, Sheet 7, Rev. 2
- ✓136984, Sheet 8, Rev. 2
- ✓136985, Sheet 9, Rev. 2
- ✓136986, Sheet 10, Rev. 1
- ✓137987, Sheet 11, Rev. 1

E1221-141174, Sheet 16

E1222-337594, Sheet 0

-337595, Sheet 7

-337596, Sheet 15

✓E1228-230535, Sheet 17

✓94591, Sheet 13

E1234-12428 - ✓12442

✓E1232-343120-343123, Sheets 0-3, Rev. 1

✓E1240-229122-Sheet 5, Rev. 0

✓E1257-70304, Sheet 00, Rev. 0

✓305, Sheet 0A, Rev. 0

✓306, Sheet 0B, Rev. 0

✓307, Sheet 01, Rev. 0

✓308, Sheet 02, Rev. 0

✓309 - 70323

✓137005-137006, Sheets 18-19

✓E1266-309740, Sheet 12, Rev. 3

✓E1267 200220-200227, Sheets 3-9 and 11

✓E1269 137724, Sheet 0, Rev. 2

✓E0728

✓E0701, Rev. 6 (Doc. No. 271520)

✓E-1011, Rev. 0

✓E-0712, Rev. 1

→ E-0725, Several sheets missing — PAGE 987 + 989

✓E-2675, Rev. 0

E-0024, Sheet 2

E-0020, Rev. 3

MOVED TO OTHER

(b) OTHER ADCR PROBLEMS

	Drawing No.	Revision	Comment
a.	E-0702	✓ Rev. 6	Listed three times on ADCR <u>CLEARED!</u>
b.	E-2285-047	-	OK ✓ Should be E-1172-047
c.	E-2310G	-	Film and aperture card have C-2310G
d.	SFD-0036	Rev. 1	Listed as Client Doc. No. 28146, not received by MP&L.
e.	A-1107	Rev. 3	Client Doc.No. 325571 on ADCR but not received by MP&L.

MISSISSIPPI POWER & LIGHT COMPANY
INSTRUCTION TO RESPONSIBLE ORGANIZATION
FOR
COMPLETING CORRECTIVE ACTION REQUEST (CAR)

I. GENREAL

- A. All entries shall be typed or made in reproducible ink.
- B. Return the CAR original to MP&L Quality Assurance.
Please keep neat.
- C. When there is insufficient space in Block (4) of the CAR to complete the information required, the additional information shall be placed on an attachment to the CAR. The attachment shall reference the CAR Number and the applicable block of the CAR. The attachment shall be numbered by the alphabet (i.e. Attachment A, B, etc.). The CAR shall reference the attachment letter in Block (4). Page numbering on the attachment should be in numerical sequence (i.e. Page 1 of 3, Page 2 of 3, etc.).
- D. Corrective Action Taken shall include: 1. action taken to correct the noted nonconformance and 2. action taken to prevent recurrence.
- E. In the event that corrective action cannot be completed prior to Date Due, submit an interim report by letter, memorandum or telecon indicating current status of the nonconformance(s), estimated date of completion and justification for requested extension.
- F. Description of entries:

<u>BLOCK NO.</u>	<u>ENTRY</u>
4a	<ul style="list-style-type: none">• Enter a description of action to be taken.• Contact/Submit to MP&L QA for concurrence.
4b	<ul style="list-style-type: none">• Enter a concise description of action taken to correct the nonconformance and action taken to prevent recurrence.• Enter signature and date. This signature indicates that the action noted in Block (4) has been completed.• Return to MP&L QA for verification.

Quality Assurance Form 16.10(B)

Rev. 2



BECHTEL POWER CORPORATION
GAITHERSBURG POWER DIVISION
BECHTEL JOB NO. 9645



THIS PROJECT
RECEIVED

TCE-78/113

THIS PROJECT
RECEIVED

COPY TO: MP&L A. Ramey

ATTN:

W. Edge

TELEPHONE CALL

BY Phil Britnell OF Bechtel QA ROUTE R. L. Scott

TO Art Ramey OF MP&L QA CONTINUED J. N. Ward

DATE March 9, 19 79 TIME 9:40 AM MAR 10 1979 A. Zaccaria

SUBJECT CAR 212 Extension Request THIS PROJECT RECEIVED W. M. Turner

NUCLEAR QA (IS) APPLICABLE E. T. Elstner

ACTION REQUIRED

XXXX (YES) BY 4/27/79
(DATE)

FILE NOS. 0750/0494

Agreement was reached to extend the completion date for corrective action
on CAR 212 to 4/27/79. The additional time is required to evaluate the
corrective action initiated by Project Engineering.

PRB

Checklist Number
PGAR/15-05
Attachment A
Page 1 of 31

RECEIVED

GENS PROJECT
M.P. & L. CO.

Bechtel Power Corporation

Engineers — Constructors

Post Office Box 607
15740 Shady Grove Road
Gaithersburg, Maryland 20760
301-948-2700



April 3, 1979

Mr. T. E. Reaves, Jr.
Manager of Quality Assurance
Mississippi Power & Light Company
P. O. Box 1640
Jackson, Mississippi 39205

Dear Mr. Reaves:

Nuclear QA Is Applicable
Middle South Energy, Inc.
Grand Gulf Nuclear Station
Bechtel Job No. 9645
File: 0262/0494/16830
Completed Corrective Action
for CAR 212
Ref: BCQM-78/148
MQBC-79/035

Attached for your review and acceptance is our completed corrective action for MP&L CAR 212. This action was discussed with your Mr. A. Ramey on March 9, 1979.

I trust you will find our corrective action acceptable and look forward to your acceptance.

Very truly yours,

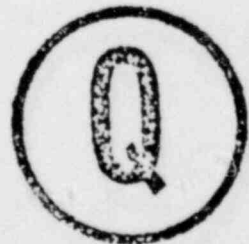
R. L. Scott
for R. L. Scott
Project QA Manager

RLS:RGS:sj

Attachments

cc: J. P. McGaughy, Jr., w/att
W. L. Nail, w/att
N. L. Stampley, w/o
L. F. Dale, w/att
C. K. McCoy, w/att
G. E. Osborne, w/o
P. W. Sly, w/att

D. C. Gibbs, w/o
J. N. Ward, w/o
A. Zaccaria, w/o
D. Lake, w/o
J. H. McCarty, w/o



Checklist Number

PCA 81/15-05

CORRECTIVE ACTION REQUEST
(CAR)

(1) Issued To Mr. R. L. Scott, POAM
Audit/Insp.No. NA
Person Contacted
Mr. R. L. Scott, POAM



(2) Number 212
Date Due 11/27/78
Unit No. 1 & 2
PRD Form 16.20(A)
Initiated? Yes No X
PRD No. NA

NONCONFORMANCE: (3)

See Attachment A

W. E. Edge
Initiator

10/23/78
Date

R. L. Scott
Manager of Quality Assurance

10/24/78
Date

RECOMMENDED CORRECTIVE ACTION: (4a)

Bechtel to Determine

CORRECTIVE ACTION TAKEN: (4b)

Nonconformance Item 1

Attachment A is the Quality Assurance response to this item and a description of the action taken to verify Project Engineering Corrective Action for Item 2.

Nonconformance Item 2

Attachment B describes Project Engineering corrective and preventative actions.

R. L. Scott for R. L. Scott
Responsible Supervisor/Manager

4/2/79
Date

(5) Corrective Action Verified By: _____

Quality Assurance

_____ Date

ATTACHMENT A
NONCONFORMANCE ITEM 1
CAR NO. 212

The remedial action on the findings of CAR No. 212 has been completed and the corrections entered into the ADCR system. This action has been verified by QA with a sampling of the corrections. No discrepancies were found in the check of film chip, aperture card, and ADCR printout and the remedial action is considered complete.

Note that in correspondence (MPB-79/0020 and BMP-79/67) between Bechtel and MP&L it was recommended and approved to stop recording correspondence, purchase orders, subcontracts, telecons, etc., in the ADCR system. Action to do this has been completed and verified by QA.

- ① The processes to implement this change will be subject to QA audit after the Project Engineering Procedures Manual is revised to describe them.
- ② Auditing of the ADCR system will be scheduled in the audits of Design Control.
- ③ The process of reviewing and correcting all previously issued Bechtel drawings that were entered into the ADCR system is continuing. It is approximately 50% complete with only Civil and Hanger drawings to be checked. A sample of 16 of 90 of the most recently corrected film chips, aperture cards, and ADCR entries was audited by QA and found to be correct. This process is considered to be adequately implemented.

It is considered, in view of these facts, that this CAR should be closed. Please call if further assistance is required.

Nonconformance Item

Checklist Number
BGA 8/15-05
Attachment A
Page 4 of 31

MC 26 1979

ATTACHMENT B
NONCONFORMANCE ITEM 2
CAR NO. 212

Bechtel Power Corporation

Interoffice Memorandum

To R. L. Scott

Subject Nuclear QA Is Applicable
Middle South Energy, Inc.
Bechtel Job No. 9645
File: 0294/0494
Response to CAR-212

Copies W. M. Turner, w/1
P. R. Britnell, w/1

Date March 22, 1979

From A. Zaccaria

Of Engineering

At Gaithersburg

The specific discrepancies listed in CAR 212 have been corrected and a review is in progress of all microfilm aperture cards and associated ADCR entries for similar discrepancies. At present, approximately 50% of the ADCR entries on Bechtel drawings and associated aperture cards have been reviewed and corrected as necessary.

To preclude the recurrence of discrepancies, the project administrator has conducted a training session concerning ADCR entries and micro-filming of drawings for document control personnel per IOM of March 21, 1979 (attached).

A. Zaccaria
A. Zaccaria
Project Engineer

AZ:ETE:sj

Enclosures: IOM, E. T. Elstner to A. Zaccaria, dated
March 21, 1979.



Checklist Number
BGA 8/15-05
Attachment A
Page 5 of 21

Bechtel Power Corporation

Interoffice Memorandum

To A. Zaccaria

Date March 21, 1979

Subject Nuclear QA Is Not Applicable
Middle South Energy, Inc.
Bechtel Job No. 9645
File: 0294/0765
Indoctrination and Training of
Document Control Personnel

From E. T. Elstner

Of Engineering

At Gaithersburg

Copies: W. M. Turner, w/att

This is to report that a training session concerning Automated Document Control Register (ADCR) entries and the microfilming of drawings/documents was conducted on March 16, 1979 by the Project Administrator, E. T. Elstner. The subject material is outlined on Attachment #1 and attendance is documented on Attachment #2.

This training session provided appropriate Document Control personnel with a review of procedural requirements to minimize errors in the ADCR and on microfilm aperture cards.

E. T. Elstner

E. T. Elstner
Project Administrator

ETE:sj

- Enclosures: 1. Outline of Instruction Presented
2. List of Personnel Attending

Checklist Number

BSA 8/115-05

Attachment A

Page 6 of 31

March 16, 1979

Project Document Control Training Session

ADCR System

1. Overview of ADCR Entries
2. Accuracy Verification of ADCR Entries
 - a) Bechtel Drawings, DCNs and Deviations
 - b) Vendor Documents
 - c) Specifications, Material Requisitions (when there is no specifications), Mechanical Standards
 - d) SDDRs, System Descriptions, FCR/FCN
 - e) Supplier Documents
3. Accuracy Verification of Microfilmed Aperture Cards
 - a) Bechtel Drawings
 - b) Supplier Drawings
 - c) Specifications and Mechanical Standards
 - d) DCNs and Deviations

Checklist Number

PGA 8/15-05

Attachment A

Page 7 of 31

INDOCTRINATION & TRAINING RECORD

SUBJECT(S) Verification of ADCR entries FILE NO. 0765
and accuracy of microfilm aperture DATE March 16, 79
 INSTRUCTOR(S) E. T. Elstner / N. Lee PROJECT/GROUP Admin.

ATTENDANCE			
NAME			
TYPE/PRINT	EMPLOYEE NO.	SIGNATURE	JOB TITLE
E. T. Elstner	571644	E. T. Elstner	Proj. Admin.
K. Heron	479386	K. M. Heron	Asst Proj Admin
N. A. Lee	803790	N. A. Lee	Doc Cont. Sup
Cathy Franklin	480146	Cathy Franklin	Vendor Exp. Clerk
Beth Smith	815489	Beth Smith	"
J. Brown	447052	Jane Brown	Specification Clerk
Rosalie Duvall	577618	Rosalie C. Duvall	Clerk
DAVIS	80		
P. Davis		Patty Davis	ADCR Clerk
Jay Brown	477417	Jay Brown	Clerk
B. T. DAVIS	480357	Brenda Davis	ADCR Clerk
Betty Blood	477571	Betty Blood	Clerk
Patty Howard	809145	Patty Howard	Clerk
Deborah Alexander	251337	Deborah Alexander	Clerk

Checklist Number
BGA 8/15-05
 Attachment A
 Page 8 of 31

BECHTEL POWER CORPORATION
GAITHERSBURG POWER DIVISION
BECHTEL JOB NO. 9645



NOV 30 1978

COPY TO: MP&L A. Ramey

GGNS PROJECT
M. P. & L. CO.

ATTN: W. Edge

TELEPHONE CALL

BY Phil Britnell OF Bechtel QA ROUTE R. L. Scott

TO Wenstrom Edge OF MP&L QA J. N. Ward

DATE November 28, 19 78 TIME 10:30 AM A. Zaccaria

SUBJECT CAR 212 Extension Request W. M. Turner

NUCLEAR QA (IS) ~~212122~~ APPLICABLE E. T. Elstner

ACTION REQUIRED

(ANS) (YES) BY 3/2/79
(DATE)

FILE NOS. 0750/0494 /

The specific discrepancies listed in CAR 212 have been corrected. Immediate steps are being taken to improve the accuracy of microfilm aperture cards provided to MP&L and their related entry into the ADCR System.

To determine the corrective action required to preclude the recurrence of discrepancies, a review of the ADCR System procedures is underway.

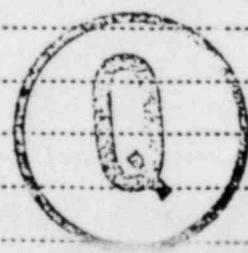
Accordingly, permission is requested to extend the corrective action response date to 3/2/79 to complete this review.

After corrective action has been accomplished, Project QA will perform a comprehensive audit of the ADCR System and its implementation to assure conformance with QA Program requirements. Similar audits will be scheduled annually thereafter.

This request for extension of response date was discussed with W. Edge who agreed to the extension. This request had also been discussed with A. Ramey and W. Edge on 11/27/78.

PRB

Checklist Number
86A 8/1/5-05
Attachment A
Page 9 of 31





MISSISSIPPI POWER & LIGHT COMPANY

Helping Build Mississippi

P. O. BOX 1640, JACKSON, MISSISSIPPI 39205

PRODUCTION DEPARTMENT

February 16, 1979

Mr. J. N. Ward, Project Manager
Bechtel Power Corporation
15740 Shady Grove Road
Gaithersburg, Maryland 20760

Dear Jerry:

SUBJECT: Grand Gulf Nuclear Station
Bechtel Job No. 9645
File 0272/0038/0490/15120
Approval of Recommendations Con-
cerning the Automated Document
Control Register *MPB79/20*
BMP-79/67

In regard to the recommended changes to the ADCR as outlined in the subject letter, we hereby approve Items 1, 2, 3 & 4.

However, we do not concur with the recommendation outlined in Item 5. The information coded on all aperture card headers is necessary for our retrieval of these records, especially the MPL number.

Yours truly,

L. F. Dale

for J. P. McGaughey, Jr.
Director of Power Production

LS/db

cc: Dr. D. C. Gibbs
Mr. Adrian Zaccaria
Mr. D. M. Lake
Mr. N. L. Stampley
Ms. Winnie Ray
Mr. L. F. Dale
Mr. W. L. Nail
Mr. C. K. McCoy
Mr. T. E. Reaves
Mr. G. E. Osborne
File

Film Access No.	_____
Record Type	1-4/1
Exposure Date	_____
Exposure Location	_____
Operator	_____

FILE COPY

Checklist Number
BGA 8/15-05
Attachment A
Page 10 of 31

INCLOSURE VII PAGE 38

MEMO TO: Mr. J. P. McGaughy, Jr.
FROM: C. K. McCoy
SUBJECT: MF3-79/0020, Recommendations Concerning Automated Document Control Register
FILE: 0230/0294/0038
PMI-79/162

It is agreed that the Automated Document Control Register (ADCR) contains valuable data and should not be discontinued at this time. It is felt that the procedural revisions implemented by the Bechtel Power Corporation will provide for more comprehensive quality checking.

The recommended changes shown in Item numbers 1, 2, 3, and 4 are acceptable. However, we do not concur with Item #5 which eliminates the MPL number from the aperture card headers of Bechtel Design drawings. Because of our filing method for Bechtel Design drawings, the MPL number is required for easy retrieval. Therefore, we request that the client document number, drawing number (including sheet number) and revision, and MPL number be included in the coding on microfilm aperture card headers of Bechtel Design drawings.

We feel that the procedural revisions and the recommended changes, with the exception noted, will improve the accuracy of the ADCR and related microfilm aperture cards. With continuing surveillance to ensure its accuracy, the ADCR can become a much more useable document.

C. K. M. G.
C. K. M.
2/16/79

JLM/CRH:pft

cc: L. F. Dale
W. L. Nail
File (Project)
File (Plant)

Film Access No.	
Record Type	
Suspension Date	
Resp. Period	
Indexer	

2/3/79
FILE COPY

Checklist Number
BGA 3/15-05
Attachment A
Page 11 of 31

1-19

Bechtel Power Corporation

Engineers—Constructors

15740 Shady Grove Road
Gaithersburg, Maryland 20760
301-948-2700



January 17, 1979

Mr. L. F. Dale
Assistant Project Manager
Mississippi Power & Light Company
P. O. Box 1640
Jackson, Mississippi 39205

Dear Mr. Dale:

Nuclear QA Is Not Applicable
Middle South Energy, Inc.
Grand Gulf Nuclear Station
Bechtel Job No. 9645
File: 0262/0038/0490
Automated Document Control
Register (ADCR), Supplier
Documents
MPB-79/0028

In connection with the on-going comprehensive review of supplier documents referred to in Bechtel letter MPB-79/0020 of January 10, 1979, we are finding that many additional equipment numbers applicable to a given document must be added to the ADCR for the following reasons:

1. Document received prior to establishment of the system for recording additional equipment numbers and backfit not accomplished.
2. Requirement for additional equipment numbers could not be readily determined upon initial receipt of the document and its entry into the ADCR. Current review of the purchase order as a whole, correlation with other documents, discussions with supplier, etc., are bringing out the requirement.

In the same review, we are finding that many document Unique Identification Numbers require change. As above, this is primarily due to the current review of the purchase order as a whole. Since one change can lead to several others, we are finding that the total number of Unique Identification Number changes is quite extensive.

The above additions and changes are necessary to meet MP&L's future operational goal, namely:

FILE COPY

Checklist Number
BGA 8/18-05
Attachment A
Page 12 of 31

Bechtel Power Corporation

Mr. L. F. Dale
Bechtel Job No. 9645

-2-

January 17, 1979
MPB-79/0028

"Should a question arise on one of the approximately 11,000 pieces of equipment, instruments, or valves in the plant, MP&L operators could quickly obtain a computer listing of all drawings and procedures that are applicable to that item."

As these additions and changes are brought to light, we will forward replacement copies of supplier documents to MP&L and to Bechtel Field Construction as determined from document distribution requirements. We will continue with this effort unless we hear from you to the contrary.

Very truly yours,

A. Zaccaria
A. Zaccaria
Project Engineer

AK/tsh

cc: V. P. McGaughey, Jr.
C. K. McCoy
W. L. Nail
T. E. Reeves
Dr. D. C. Gibbs
G. E. Osborne
J. N. Ward
D. M. Lake
R. A. O'Neil
H. H. Weber
R. J. Scott
Document Control Register

view of the purchase order as a whole. Only one change can be made.

Checklist Number

BGA 8/115-05

Attachment A

Page 13 of 31

*Recommended
approval
1/15/79*

RECEIVED

JAN 12 1979

GGNS PROJECT
M. P. & L. CO.

J. Sudbeck

Bechtel Power Corporation

Engineers — Constructors

15740 Shady Grove Road
Gaithersburg, Maryland 20760
301-948-2700



January 10, 1979

Mr. L. F. Dale
Assistant Project Manager
Mississippi Power & Light Company
P. O. Box 1640
Jackson, Mississippi 39205

Dear Mr. Dale:

Nuclear QA Is Not Applicable
Middle South Energy, Inc.
Grand Gulf Nuclear Station
Bechtel Job No. 9645
File: 0262/0038/0490
Re: BMP-78/516, dated 11/7/78
Automated Document Control
Register, Recommendations
Concerning
MPB-79/0020

As requested by Mississippi Power & Light Company letter BMP-78/516 of November 7, 1978, a review of the Automated Document Control Register System (ADCR) has been made by the Project Team and the Records Management Staff.

The ADCR was initially designed for the control of Bechtel design engineering documents and Supplier documents processed by design engineering. At MP&L's request, it was expanded to include all correspondence to and from other departments, and essentially everything in design engineering files, with the exception of interoffice memoranda and telecons. Entries were also required to identify the additional equipment numbers to which a Supplier document applies.

It is our opinion that the ADCR contains data valuable to both MP&L and to Bechtel and should be continued in effect subject to the following revisions and changes.

The following procedural revisions provide for more comprehensive quality checking:

1. All microfilm aperture cards on Bechtel design drawings are being reviewed for accuracy, film chip against header, along with their respective ADCR entry.

Checklist Number
BGA 8/1/75-05
Attachment A

Bechtel Power Corporation

Mr. L. F. Dale
Assistant Project Manager

-2-

January 10, 1979
MPB-79/0020

2. Each ADCR entry of Bechtel design documents and Supplier documents is being reviewed for accuracy, line by line.
3. Procedures for microfilming drawings and for entering data into the ADCR have been reviewed and are being revised as necessary with the objective of improving accuracy and efficiency.
4. Coordination has been made with our office services group, adding to the items to be detail checked on microfilm aperture cards by their quality control group.
5. Newly issued microfilm aperture cards are being checked against their respective ADCR entry after the ADCR masterfile is updated.
6. Discrepancies are resolved and corrections made as they appear.

The following changes are recommended:

1. Limit the ADCR entries to:
 - a. Bechtel design documents and other related items issued by Design Engineering, i.e., Drawings, Drawing Change Notices (DCN), Deviations, Systems Descriptions, Specifications and Field Change Requests.
 - b. Supplier documents processed by Design Engineering to include DCNs, Deviations, and Supplier Deviation Disposition Requests.
 - c. Additional equipment numbers to which these Supplier documents apply.

(Note that the ADCR is the only Drawing Control Log for Bechtel Hanger Details, HVAC Seismic Duct Supports, and Supplier Documents. It is necessary that we maintain Control Logs for these items).

2. Discontinue all other types of ADCR entries, i.e., All transmittal letters and other correspondence to and from Bechtel, all teletypes, telecons, telexes, Bid Requests,

Checklist Number
BGA 4/15-05
Attachment A
Page 15 of 31

Bechtel Power Corporation

Mr. L. F. Dale
Assistant Project Manager

-3-

January 10, 1979
MPB-79/0020

OK

Proposals, Purchase Orders, Nonconformance Reports and Quality Surveillance Reports. These entries are of questionable value. To date, Bechtel has not had a requirement to get a printout of this information from the ADCR except for the tracking of "Q" action correspondence. Moreover, the Procurement Department maintains records of the latest revision of Purchase Orders issued and also of the latest Quality Surveillance Reports issued. These records may be consolidated as necessary for Records Turnover.

Nonconformance Reports are initiated and controlled by Field Construction, only the small percentage forwarded to Design Engineering for resolution are entered in the ADCR.

If we discontinue entering these items in the ADCR, there is less chance of design documents being erroneously intermingled with them and vice versa, thus enhancing the accuracy of the control logs. (A separate tracking system will be instituted for control of "Q" action correspondence).

3. Transfer all entries in the current masterfile identified in item 1, above to a new masterfile and archive all other entries. The new masterfile will then become the working masterfile, which will be appreciably smaller, thus reducing the costs of its use.
4. Separate the new masterfile into 2 masterfiles; one for Bechtel Design Engineering documents and related items and one for Supplier documents, to include additional equipment numbers. This will enhance the accuracy of the system by reducing the erroneous intermingling of Design Engineering and Supplier documents.
5. Limit the coding on microfilm aperture card headers of Bechtel Design drawings to only that required for easy retrieval, i.e., client document number, job number, drawing number (to include sheet number) and revision. The ADCR will continue to include all other items as it now does, MPL number, date issued, etc. This will reduce the change of error on the aperture card header, while retaining the capability of getting sorts by MPL number from the computer.

Checklist Number
BGA 81/15-05
Attachment A

Bechtel Power Corporation

Mr. L. F. Dale
Assistant Project Manager

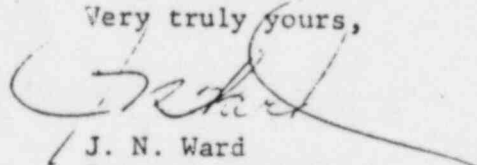
-4-

January 10, 1979
MPB-79/0020

The above procedural revisions and recommended changes will improve the accuracy of the ADCR and related microfilm aperture cards. Once the entire ADCR has been corrected and audited, continuing surveillance will be performed to ensure its accuracy.

Please advise us of your decision in this matter.

Very truly yours,



J. N. Ward
Project Manager

JNW:ETE:tjh

cc: J. P. McGaughy, Jr.
C. K. McCoy
W. L. Nail
T. E. Reaves
D. C. Gibbs
G. E. Osborne
A. Zaccaria
D. M. Lake
R. L. Scott
Document Control Register
L. Sudbeck

Checklist Number
BGA 81/15-05
Attachment A

Attn:

U. W. Starkman

Good L.H.

DRAFT

Bechtel Power Corporation

Interoffice Memorandum

To

R. L. Scott

For review & comment

Date

November 17, 1978

Subject

Nuclear QA Is Applicable

Middle South Energy, Inc.

Grand Gulf Nuclear Station

Bechtel Job No. 9645

File 0294/0490

MP&L Corrective Action Report (CAR) 212

J. N. Ward

P. R. Britnell

W. M. Turner

From

A. Zaccaria

Of

Engineering

At

Gaithersburg

RECEIVED

NOV 17 1978

BECHTEL JOB 9645
GRAND GULF NUCLEAR
STATION

The recommended response to CAR 212 is as follows:

The specific discrepancies listed in CAR 212 have been corrected.

The ADCR system is comprehensive and complex. It was originally designed for the entry of Bechtel design engineering documents and Vendor documents processed by design engineering. It was subsequently expanded to include the entry of essentially all correspondence to and from design engineering, plus correspondence and documents processed by other Bechtel departments. CAR 212 is primarily addressed to discrepancies found on microfilm aperture cards on Bechtel drawings and their applicable entry into the ADCR system. Immediate steps are being taken to improve the accuracy of both the microfilm aperture cards being provided to MP&L and their related entry into the ADCR system. Procedures are being reviewed and will be revised as appropriate. We are verifying the accuracy of microfilm aperture cards on previously issued Bechtel design drawings. The microfilm aperture card headers, the film clip and the ADCR entries are being checked and appropriate corrections made.

Implications from the CAR, discussions with MP&L and receipt of MP&L letter BMP-78/516, indicate that a complete review of the ADCR system should be made. This is being undertaken.

1 Page

Checklist Number

B6A 8/15-05

Attachment A

Page 18 of 21

PRODUCTION DEPARTMENT

POWER & LIGHT COMPANY
Helping Build Mississippi
P. O. BOX 1640, JACKSON, MISSISSIPPI 39205
November 7, 1978

Mr. J. N. Ward, Project Manager
Bechtel Power Corporation
15740 Shady Grove Road
Gaithersburg, Maryland 20760

Dear Jerry:

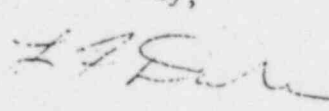
SUBJECT: Grand Gulf Nuclear Station
Bechtel Job No. 9645
File 0272/0490/0038/15420
MP&L QA Review of Bechtel
ADCR (PMI78/1095 & BCQM78/148)
BMP-78/516

As a result of an investigation by MP&L of the Bechtel Automated Document Control System, a 100% review of the entire ADCR system should be made by Bechtel. This review should include audits by Bechtel QA on all aspects of the system including microfilming, data input, etc.

At the present time, the ADCR is inadequate to be used for drawing control, records turnover, or any other functions under consideration. Should Bechtel find upgrading the ADCR is not cost effective, consideration should be given to scrapping the system and replacing it with a more adequate and effective system.

Please advise us of your decision concerning the Bechtel ADCR System.

Yours truly,


J. P. McGaughy, Jr.
Director of Power Production

LS:dp

cc: Dr. T. W. Schmatz THIS COPY FOR

Mr. Adrian Zaccaria
Mr. D. M. Lake
Mr. N. L. Stampley
Mr. W. L. Nail
Mr. L. F. Dale
Mr. T. E. Reaves

Mr. G. E. Osborne
Mr. R. A. Lang
Mr. R. L. Scott
Mr. R. L. Hickman
Mr. E. T. Elstner
File

Member Middle South Utilities System

Checklist Number
BGA 8/115-05
Attachment A
Page 19 of 31

CAR File



MISSISSIPPI POWER & LIGHT COMPANY

Helping Build Mississippi

P. O. BOX 1640, JACKSON, MISSISSIPPI 39205

PRODUCTION DEPARTMENT

October 24, 1978

Lou
CAR 212 (new)

Mr. R. L. Scott
Project Quality Assurance Manager
Bechtel Power Corporation
Post Office Box 41
Port Gibson, Mississippi 39150

Dear Bob:

SUBJECT: Grand Gulf Nuclear Station
Bechtel Job No. 9645
File 0272/0490/0038/15830
Issuance of CAR No. 212
ADCR Concerns
PMI 78/1095
BCQM-78/148

As a result of review of the Bechtel Automated Document Control Register System, Mississippi Power & Light is issuing Corrective Action Request (CAR) Number 212.

Please respond to this item by November 27, 1978.

Yours truly,

T. E. Reaves, Jr.
Manager of Quality Assurance

WEE;lb
Attachment

cc: Dr. T. W. Schnatz
Mr. J. N. Ward
Mr. A. Zaccaria
Mr. D. M. Lake
Mr. P. R. Britnell
Mr. N. L. Stampley
Mr. J. P. McGaughy, Jr.
Mr. C. K. McCoy
Mr. P. W. Sly
Mr. B. E. Ballard
CAR File
File

Checklist Number
BGA 8/115-05
Attachment A
Page 20 of 21

CORRECTIVE ACTION REQUEST
(CAR)

(1) Issued To Mr. R. L. Scott, PQAM
Audit/Insp.No. NA
Person Contacted Mr. R. L. Scott, PQAM



(2) Number 212
Date Due 11/27/78
Unit No. 1 & 2
PRD Form 16.20(A)
Initiated? Yes No X
PRD No. NA

NONCONFORMANCE: (3)

See Attachment A

W. E. Edge
Initiator

10/23/78
Date

K. Hewitt
Manager of Quality Assurance

10/24/78
Date

RECOMMENDED CORRECTIVE ACTION: (4a)

Bechtel to Determine

CORRECTIVE ACTION TAKEN: (4b)

Responsible Supervisor/Manager Date

(5) Corrective Action Verified By: _____

Quality Assurance

Date

NO. CONFORMANCE (3)

1. A. Commitment:

NQAM QADP 2.4 Rev. 1 Paragraph 2.0 states:

"Project Quality Assurance audits shall be scheduled to provide comprehensive audit coverage of project activities from commencement through completion to assure that the work is performed in conformance with the QA Program requirements."

B. Finding:

A review of the Project QA Master Audit Schedule Rev. 12 10/12/78, PQAE Audit Reports 42 through 60 and discussion with QA personnel indicates audits have not covered the ADCR System comprehensively enough to assure that the work is performed in conformance with the QA Program requirements. PQAE Reports 52 and 60 did address portions of the ADCR System but verification of ADCR entries, data input, aperture card entries, etc. was not included.

2. A. Commitment:

PEPM APPENDIX D, Rev. 2, states in part:

-Procedures for Making Entries into ADCR-

(1) Page D-3 "Objectives"

The objectives of the Automated Document Control Systems are to register the transmittal and receipt of project documents and to furnish records of these documents to project personnel for administrative control purposes."

(2) Page D-7 "Column 33 contains the Nuclear Safety Related Classification (S.R.C.L.), whether the item is Q or Non-Q. If S.R.C.L. has not been determined, enter 0 in column 33. If S.R.C.L. has been determined, enter Q or N in column 33."

(3) Page D-7 "Column 34 contains Station or Unit Indicator to be entered as follows:

Enter:	For:
1-	Unit 1
2-	Unit 2
S-	Shared"

Checklist Number
BGA 8/115-05
Attachment A
Page 22 of 31

- (4) Page D-7 "Columns 35 through 43 contain the Master Parts List (MPL) number from the Total Plant Numbering System (TOPLAN)."
- (5) Page D-9 "Columns 26 through 57 contain the Document Title. In the case of correspondence enter the subject of the correspondence. Abbreviate only when necessary."
- (6) Page D-10 "Drawings are entered into the Automated Document Control Register utilizing either the transmittal or the actual drawing. When drawings consist of more than one sheet, enter each sheet separately."
-EXPLANATION OF DOCUMENT CONTROL REGISTER PRINTOUT-
- (7) Page D-12 "The next eight spaces contain the Client sequential document number assigned by Document Control as each document is entered into the system."
- (8) Page D-14 "Q/N is the safety related classification. If SRCL has been determined, Q or N will be entered. If it has not been determined, 0 will be entered."
- (9) Page D-14 "UT (Col. 34) - indicates unit number as follows:
- 1- Unit 1
 - 2- Unit 2
 - S- Shared
 - D- Duplicate (Unit 1 and Unit 2)"
- (10) D-14 "The MPL Number is self-explanatory."
- (11) D-16 "Document Title is self-explanatory."
- (12) D-19 "Column 42-43 Revision"

2. B. Findings: Examples of typical Findings are listed below, but do not include all items identified. Numbering is the same as under item 2.A, above

- (1) See Attachment B which lists drawings received but not on current ADCR and other ADCR errors.

<u>Client Doc. No.</u>	<u>Dwg. No.</u>	<u>ADCR</u>	<u>Film</u>	<u>Aperture Card</u>
277964	E-1228-014 Rev. 3	0	N	N
142843	M0850 -007	Q	-	N
53227	M-850 -007	Q	-	Q
94070	M0850 -007	N	-	Q
120480	M0850 -007	Q	-	N

Checklist Number
BCA 3/15-05

Additional examples of items 2.B (2) and (3) are in Client Document Numbers 52463, 42259, 254812, 144809, 46201, 89152, 50938, 187931, 85305, 52464, 60933, 89170, and 65517.

(3)	<u>Client Doc.No.</u>	<u>Dwg.No.</u>	<u>ADCR</u>	<u>Film</u>	<u>Aperture Card</u>
	53227	M-0850			
		-007	-	1	S
	94070	M-0850	-	0	S
		-007			
	53221	M-0850	-	1	S
		-006			
	53220	M-0850	-	1	S
		-005			
	53219	M-0850	-	1	S
		-004			
	53218	M-0850	-	1	S
		-003			
	94069	M-0850	-	0	S
		-003			
	53217	M-0850	-	1	S
		-002			
	94067	M-0850	-	0	S
		-001			

(4)	<u>Client Doc.No.</u>	<u>Dwg.No.</u>	<u>ADCR</u>	<u>Film</u>	<u>Aperture Card</u>
	118901	SFD-0051A	U671025M	Y671025M	Y671025M
	99161	SFD-00518	U671025M	Y671025M	Y671025M
	268760	E-1774-001	C711055E	C711060	-
	(Doc. No. 266638 dwg. E-1817-001 MPL No. C711055E- This dwg. indicates E-1817-001 supercedes E-1774-001)				

(5)	231555	E-0725-005	DCN#1 to Rev. 4 of Rev. 4	Rev. 4 of Dwg.	
	238894	E-0725-005	DCN#1 to Rev. 5 of Rev. 5	Rev. 5 of Dwg.	
(6)	334763	-	Sheet 08		Sheet 07
	(Should be client document No. 334762)				

334762	Not Listed	Sheet 08
(Should be client document No. 334763)		

334762	E-1222	Sheet 07	Sheet 06	Checklist Number
(Sheet 6 not listed on ADCR)				<u>BGA 8/15-05</u>

2. B.(6)(Continued)

Attachment A to CAR 212
Page 4 of 5

	<u>Client Doc.No.</u>	<u>Dwg.No.</u>	<u>ADCR</u>	<u>Aperture Card</u>
(6)	156910	E-1264	27(Delete)	28
	316426	E-1271	28(Rev. 1) 28(Rev. 1)	28(Rev. 1.) 28(Rev. 2)
	307778	M-1358	Sheet G Rev. 9	M-3000- N2P43G004H291
(7)	75865		M300 NSP64G008H02 NSP64G008H23	
	75865		C1091 Q1M239035C C-1091B	

Same Client Doc. No. according to ADCR.

311042	Q1P444045H06 HL-1331F
311042	N171G013R 01 N1P716013 R082

Same Client Doc. No. according to ADCR.

- (8) Same as Item (2)
- (9) Same as Item (3)
- (10) Same as Item (4)
- (11) Same as Item (5)

(12)	<u>Client Doc. No.</u>	<u>Dwg.</u>	<u>Revision ADCR</u>	<u>Aperture Card</u>
	332351	E-1228-018 Rev. 3	Rev. 3 not on ADCR	Rev. 3
	117919	A-1110	Rev. 0	Rev. 1
	316332	E-1220 Sheet 2	Rev. 4	Rev. 5
	219146	M-3000	Rev. 2	Rev. 1

Checklist Number
BGA 8/115-05
Attachment

3. A. Commitment:

Bechtel letter MPB-78/0491 dated September 18, 1978, A. Zaccaria to L. Dale stated in part:

"This is to advise you that we are in the process of verifying the accuracy of information in the microfilm aperture card headers with the film chip and the associated ADCR entry on all Bechtel design drawings. As discrepancies are identified, corrections are made and corrected diazo duplicate aperture cards are forwarded to MP&L. This program will continue until all microfilm aperture cards for Bechtel design drawings have been reviewed and discrepancies corrected. Further, additional checks are being made on current issue of Bechtel drawings to improve the error rate."

B. Finding:

Five recent transmittals of corrected aperture cards were examined for errors as follows:

	<u>Transmittal</u>	<u>Date</u>	<u>Number of Cards</u>	<u>Errors</u>
a.	MPT-78/1811	9/29/78	78	11
b.	MPT-78/1809	9/28/78	94	3
c.	MPT-78/1559	8/21/78	139	3
d.	MPT-78/1880	10/6/78	136	1
e.	MPT-78/1876	10/5/78	51	11
		Total	<u>498</u>	<u>29</u>

Note this is a 7% error rate in corrected aperture cards with just a cursory review of about 353 of the cards. A more detailed review performed on transmittals MPT-78/1811 and MPT-78/1876 indicates some 22 errors in just 145 cards. This is a 15% error in corrected aperture cards.

Checklist Number
BGA 8/15-05
Attachment A
Page 5 of 5

2.B(1)

(a) ITEMS NOT LISTED ON ADCR BUT RECEIVED

E1220 - 136983, Sheet 7, Rev. 2
- 136984, Sheet 8, Rev. 2
- 136985, Sheet 9, Rev. 2
136986, Sheet 10, Rev. 1
137987, Sheet 11, Rev. 1

E1221-141174, Sheet 16
E1222-337594, Sheet 0
-337595, Sheet 7
-337596, Sheet 15
E1228-230535, Sheet 17
-94591, Sheet 13
E1234-72428 - 72442
E1232-343120-343123, Sheets 0-3, Rev. 1
E1240-229122-Sheet 5, Rev. 0
E1257-70304, Sheet 00, Rev. 0
305, Sheet 0A, Rev. 0
306, Sheet 0B, Rev. 0
307, Sheet 01, Rev. 0
308, Sheet 02, Rev. 0
309 - 70323
-137005-137006, Sheets 18-19
E1266-309740, Sheet 12, Rev. 3
E1267 200220-200227, Sheets 3-9 and 11
E1269 137724, Sheet 0, Rev. 2
E0728
E0701, Rev. 6 (Doc. No. 271520)
E-1011, Rev. 0
E-0712, Rev. 1
E-0725, Several sheets missing
E-2675, Rev. 0
E-0024, Sheet 2
E-0020, Rev. 3

(b) OTHER ADCR PROBLEMS

	<u>Drawing No.</u>	<u>Revision</u>	<u>Comment</u>
a.	E-0702	Rev. 6	Listed three times on ADCR
b.	E-2285-047	-	Should be E-1172-047
c.	E-2310G	-	Title and aperture card have E-2310G
d.	SFD-0036	Rev. 1	Listed as Client Doc. No. 28156, not received by MP&L.
e.	A-1107	Rev. 3	Client Doc.No. 325571 on ADCR but not received by MP&L.

MISSISSIPPI POWER & LIGHT COMPANY
INSTRUCTION TO RESPONSIBLE ORGANIZATION
FOR
COMPLETING CORRECTIVE ACTION REQUEST (CAR)

I. GENREAL

- A. All entries shall be typed or made in reproducible ink.
- B. Return the CAR original to MP&L Quality Assurance. Please keep neat.
- C. When there is insufficient space in Block (4) of the CAR to complete the information required, the additional information shall be placed on an attachment to the CAR. The attachment shall reference the CAR Number and the applicable block of the CAR. The attachment shall be numbered by the alphabet (i.e. Attachment A, B, etc.). The CAR shall reference the attachment letter in Block (4). Page numbering on the attachment should be in numerical sequence (i.e. Page 1 of 3, Page 2 of 3, etc.).
- D. Corrective Action Taken shall include: 1. action taken to correct the noted nonconformance and 2. action taken to prevent recurrence.
- E. In the event that corrective action cannot be completed prior to Date Due, submit an interim report by letter, memorandum or telecon indicating current status of the nonconformance(s), estimated date of completion and justification for requested extension.

F. Description of entries:

<u>BLOCK NO.</u>	<u>ENTRY</u>
4a	<ul style="list-style-type: none">. Enter a description of action to be taken.. Contact/Submit to MP&L QA for concurrence.
4b	<ul style="list-style-type: none">. Enter a concise description of action taken to correct the nonconformance and action taken to prevent recurrence.. Enter signature and date. This signature indicates that the action noted in Block (4) has been completed.. Return to MP&L QA for verification. Checklist Number

BGA 8/15-0.
Attachment A

Low
CAR 212 (new)

CAR File

MEMO TO: Mr. J. P. McGaughy, Jr., Director of Power Production

FROM: T. E. Reaves, Jr., Manager of Quality Assurance

SUBJECT: Investigation
Bechtel ADCR

File Numbers: 0290/049C/0038
PMI-78/1095

As requested by the Grand Gulf Plant Manager, Mr. C. K. McCoy, Quality Assurance has investigated the Bechtel ADCR System for resolution of Plant Staff concerns. This investigation was performed on October 9, 12 and 18, 1978. The findings and recommendations resulting from the investigation were discussed with your Mr. C. R. Hutchinson on October 18, 1978 and are attached for your evaluation.

Based on the sample taken, a significant problem does exist with the Bechtel ADCR System. The review process by Bechtel now in progress would appear to be inadequate to offer evidence that the ADCR is accurate enough to be used for records turnover, with LCTS, or other functions being considered.

A 100 percent review of the entire ADCR System should be made by Bechtel, complete with audits by Bechtel QA on all aspects including microfilming, data input, etc. Should Management feel that upgrading the ADCR System is not cost effective, Quality Assurance would recommend scrapping the system and replacing with a more adequate system.

Quality Assurance intends to issue CAR 212 as a result of this investigation. Resolution of the CAR will only address a small number of the problems that have been identified to date as many are not directly quality related. We recommend you issue an accompanying letter to Bechtel in order to expedite resolution.

Checklist Number
86A 8/1/5-05
Attachment
Page 29 of 31

Mr. J. P. McGaughy, Jr.

PMI-78/1095

Page 2

Quality Assurance will be glad to discuss the necessary course of action to resolve these concerns, findings and recommendations at your convenience.



T. E. R.

10/20/78

WEE:1b

Attachment

cc: Mr. N. L. Stampley
Mr. L. F. Dale
Mr. C. K. McCoy
Mr. C. R. Hutchinson
Mr. P. W. Sly
Mr. J. C. Fuller
Mr. W. E. Edge
CAR File
File
(All with attachment)

Checklist Number

BGA 8/1/5-05

Attachment A

Page 30 of 31

I. PLANT STAFF CONCERNS

- A. ADCR Errors
- B. Original Card Errors
- C. Corrected Card Errors
- D. Drawing Errors

II. PLANT STAFF USE OF ADCR

- A. Drawing Retrieval
- B. System Descriptions Retrieval
- C. Control Design Requirements Retrieval
- D. DCN Retrieval

III. PLANT STAFF USE OF DWGS., SYS. DESCR., CONTR. DESIGN REQ. AND DCNs.

- A. Training
- B. Preparing Operating Instructions (Safety-Related)
- C. Preparing Calibration Instructions (Safety-Related)*
- D. Review of System Descriptions, JDRs for Design Review (Post Freeze-MP&L Approval)

*Using Bechtel Site Drawing Control

IV. RECOMMENDATIONS

- A. Scrap ADCR or place better controls on system
- B. Plant Staff utilize other methods for drawings, system description, control design requirements and DCN retrieval.
- C. Management require Bechtel to place better controls on aperture card review now underway.
- D. Detailed review of Bechtel ADCR Systems, Microfilming, Key punch, etc. should be made by Bechtel. Bechtel A should begin audits of these functions.

Checklist Number
BGA 8/15-05
Attachment A
Page 31 of 31

AUDIT CHECKLIST

MAP REF.	COMMITMENT	METHOD OF VERIFICATION	FINDINGS/ COMMENTS	*CLASSIFICA TION CODE
	<p>PEPM Section 2.1.K, Rev. 3, dated 7/9/79. (Attachment A, p. 5 of 6).</p> <p>Note: Attachments A, B, C, and D for information.</p>	<p>Current PEPM Section 2.1.K restricts applicability to one FDI. Verify that this was the intention of Rev. 3 and question appropriate personnel for its applicability to the approval of other FDIs.</p> <p>REVIEW OF SECTION XI WORK IS NOW THE RESPONSIBILITY OF MP+L</p>	<p>PER W. TURNER, PROJECT QUALITY ENGR, IT WAS THE INTENTION THAT THE REQUIREMENT FOR APPROVAL BE LIMITED SOLELY TO FDI No. 44/42382 AS STATED IN SECTION 2.1.K.</p> <p>PER M. ARCHDEACON AND R. GIBSON, THIS WAS A UNIQUE CASE IN WHICH BECHTEL ACTED AS CONTRACT ADMINISTRATOR BETWEEN GE-NED AND GE I&SE. BECHTEL RESPONSIBILITY WAS TO VERIFY APPROVAL BY GE-NED OF GE I&SE QA PROGRAM FOR FDI.</p> <p>PER CONVERSATION WITH S. PRUITT, ISI COORDINATOR, MP+L PLANT STAFF,</p>	C

*Classification Code:

C=Conformance

N=Nonconformance

NC=Nonconformance Corrected during audit

ND=Nonconformance Documented by audited organization

A=Not Audited

V=Verified Corrective Actions

(More than one classification can be used)

PERSONS CONTACTED:

W. TURNER

M. ARCHDEACON

R. GIBSON, S. PRUITT

COMPLETED BY: E. Lemke

DATE: July 14, 1981

CHECKLIST NUMBER: BGA 81/15-06

(By Audit No.)

2. DESIGN EXECUTION

2.1 GENERAL PROCEDURES

This section establishes the procedures which are employed as a part of the overall project requirements during the design and construction work. These procedures are coordinated with other Bechtel Power Corporation standards and directives to control the project activities.

In order to ensure that the work performed on this project conforms to standards established by the corporation and Division Chiefs, each of the discipline group supervisors have been issued copies of Bechtel Corporation General Standards, Discipline Standards, Discipline Guides, Discipline Bulletins, the Project Engineering Procedures Manual and the Project Design Criteria Manual. It is directed that all work performed on this project be done in conformance with the above documents. If it becomes necessary and/or desirable to deviate, approval of the deviation shall be obtained from the discipline chief engineer. Because these documents represent current thinking and reflect continuing advances in design and operational practices, they are expected to be updated frequently. Therefore, distribution is generally limited to each of the Group Supervisors. Each Group Supervisor is charged with the responsibility of assuring that the information contained in these documents, as well as any changes that will be made, is brought to the attention of each of his personnel whether on the project or reporting to the project. The Group Supervisor is specifically directed to keep his library of standards, and other related documents, in a conspicuous place for use by project personnel and to specifically instruct each of his personnel in the use of these documents as they apply to specific assignments. The Project Engineer shall resolve any conflicts that exist between any of these documents and the Project Engineering Procedures Manual.

Checklist Number BGA 8/15-06

444

Except as otherwise noted, references to position/functions, such as Project Engineer, Project Quality Engineer, Project Engineering Resident Engineer, Group Supervisor, Project Administrator, Project Field Engineer and Project Field Quality Control Engineer are intended to include their assistants or designees acting in their behalf. Dates of effectivity of changes to the Project Engineering Procedures Manual shall be the date of the change as appearing at the bottom of the page. Retrofit shall not be required unless otherwise stated.

RESPONSIBILITIES AND INTERFACE OF RESIDENT ENGINEER

In order to augment liaison between engineering and field construction on the Grand Gulf Project, a Resident Engineer has been assigned to the jobsite.

Description of his functional responsibilities and organizational interfaces are given in EDPI-2.14-00 Rev. 0.

The Project Engineer has delegated authority to the Resident Engineer to act as his representative at the jobsite for technical interface activities where the approval of the Project Engineer is required; In exercising this authority he will be guided by the following:


- A. He may disposition and approve all Field Change Requests (FCR), Field Change Notices (FCN) and Nonconformance Reports (NCR), without concurrence of the cognizant Group Supervisor.
- B. Design changes requiring calculations to be checked must be referred to the cognizant Group Supervisor for disposition and approval.
- C. A record copy of each approved design change must be forwarded to project engineering for incorporation into the appropriate design drawing and for distribution and filing.
- D. Deleted

E. He will prepare reports to the Project Engineer for significant incidents as required only to the extent that the subject matter is not covered elsewhere.

F. The resident Engineer (R.E.) has the authority to approve Field Design Changes (FDC) prepared by field engineering in accordance with the "Field Design Change (Redline) Procedure For Pipe Hangers, Supports, Guides and Anchors". The R.E.'s approval shall be documented by his signing and dating the marked-up* design document. This approval is contingent upon submission of a Field Change Request (FCR) to Project Engineering for approval.

* REF. Construction Work Plan Procedures WP/P-P-100

G. A Resident Engineering Light Structures Group (RELSG) has been assigned to the jobsite to provide direct engineering support for the installation of pipe anchors and safety related supports for HVAC ducts, cable trays, conduit, instruments and instrument tubing. This group is authorized to perform calculations, revise existing drawings, initiate and issue new drawings and to issue drawings as applicable to these installations only. The performance of these functions shall be in compliance with applicable project engineering design criteria and procedures. The Resident Engineering Light Structures Group Supervisor is authorized to sign drawings as Group Supervisor. The Lead Resident Engineer, so designated in writing by the Project Engineer, is authorized to sign/approve drawings (applicable to the function described above) for the Project Engineer. Further clarification of RELSG activities are delineated in Section 4.2.19 of the PEPM.

 H. A Resident Power Generation Control Complex (PGCC) Engineer(s) has been assigned to the General Electric Nuclear Energy Systems Division at San Jose, California, to provide engineering interface between Project Engineering and

Checklist Number **BGA 8/15-06**

Att. **A**

Page **3** of **6**

2.1-3
Rev. 4
9-8-80

General Electric Engineering for the fabrication of the PGCC.

The Resident Engineer(s), designated in writing by the Project Engineer, is authorized to issue and approve Drawing Change Notices (DCN's) (Figure 4-3b), on behalf of the Project Engineer, after consultation and verbal approval by the responsible Project Engineering Group Supervisor or his designee. Verbal concurrence must also be obtained from MP&L on all PGCC documents (panel layouts, etc.) originally reviewed and approved by them. These verbal consultations shall be documented in a Telephone Memorandum by the Resident Engineer (Figure 4-2t).

After the DCN has been signed and approved by the Resident PGCC Engineer, he may issue a copy directly to GE, and forward the original to Project Engineering for processing and distribution in accordance with paragraph 4.3.1.6.1 of the Project Engineering Procedures Manual.

The Resident Engineer will receive functional direction and technical guidance from, and will report to, the Project Engineer or, in his absence, to either of the Assistant Project Engineers. The Resident Engineer shall comply with the requirements of the Project Engineering Procedures Manual as applicable.

- CN 136**
- I. A Resident Engineer (PGCC) has been assigned to the jobsite, on a scheduled basis, to augment liaison between Project Engineering, Field Construction and the Checkout and Turnover Organization (CTO) in the fabrication and installation of the Power Generation Control Complex. PGCC problems identified by Project Engineering shall be coordinated through the PGCC engineer and documented in accordance with CTO procedures. The Project Engineer has delegated authority to the PGCC Resident Engineer as defined in preceding Sections 2.1(A) through 2.1(F) of the procedures.
- J. To expedite the processing of deviation requests received from Subcontractors, and Suppliers for Field Procurement, the Lead Resident Engineer has been authorized by the Project Engineer to disposition and approve "accept as is"

Checklist Number BGA 8/15-06

Att. A

Page 4 of 6

and "repair" action SDDR's. The Lead Resident Engineer shall coordinate with the cognizant Group Supervisor and the Project Quality Engineer or his designee for concurrence of disposition/rationale, and document all communication with a telecon memo with the exception of disposition/rationale provided by the Resident Light Structures Group for HVAC subcontract (Figure 4-2 t). He shall acquire an SDDR control number from the Project Quality Engineer and record the number on the original SDDR.

The Lead Resident Engineer shall complete the SDDR form as required by Procedure 4.2.17 and sign and date for the Project Engineer in block 20 of the SDDR.

The SDDR original and a copy of the telecon memo shall be transmitted to Project Engineering for further processing in accordance with Procedure 4.2.17.4 of the PEPM. A copy of the approved SDDR shall be submitted to Field Subcontracts to extend authorization to the Subcontractor or the Project Field Engineer to extend authorization to the Supplier.

K. The Lead Resident Engineer shall approve the QA Program submitted by GE I&SE for work performed under GG-NED FDI No. 44/42382. This approval is limited to the verification that the subject QA Program has been approved by GE-NED.

DESIGN ACTIVITIES BY FIELD ENGINEERING

Design activities to be performed by Field Engineering are designated in the division of responsibilities section of the Project Procedures Manual. The requirements for review and approval by Project Engineering are delineated in various documents such as Mechanical Standards, Performance Specifications, etc., as appropriate.

VENDOR PROPRIETARY INFORMATION

There are occasions when certain vendors will provide Bechtel with Proprietary information. Bechtel must comply with the vendor's stipulations concerning the handling of such proprietary information. Distribution of such information will be made on a need to know basis and generally will be limited to the NRC

Checklist Number BGA 8/15-06

Att. A

Page 5 of 6

2.1-4a
Rev. 0
7-9-79

INCLOSURE VII PAGE 65

35

(when required) and to the client. No other distribution will be made without prior explicit authorization by the Project Engineering Manager. When it is necessary that Vendor proprietary information be included in a Bechtel prepared drawing or document, an appropriate Proprietary Information Notice must be conspicuously affixed to the drawing or document. The following notice will be placed on such material when it includes GE proprietary information. A rubber stamp shall be used to apply the notice to paper documents. A stick-on label will be used only on material such as mylar, where a rubber stamp will not suffice. Similar notices for proprietary information provided by other vendors will be prepared as the situation arises.

THE INFORMATION CONTAINED ON
THIS DRAWING HAS BEEN
REPRODUCED FROM A G.E.
PROPRIETARY DOCUMENT. THE
FOLLOWING NOTICE APPLIES:

PROPRIETARY INFORMATION NOTICE

"FURNISHING THIS DOCUMENT DOES NOT CONVEY ANY LICENSE, EXPRESS OR IMPLIED, TO USE ANY PATENTED INVENTION OR OTHER PROPRIETARY INFORMATION OF GENERAL ELECTRIC CONTAINED HEREIN, OR ANY RIGHT TO PUBLISH OR MAKE COPIES OF THE DOCUMENT WITHOUT PRIOR WRITTEN APPROVAL OF GENERAL ELECTRIC, AND THE DOCUMENT AND ALL COPIES OF THE DOCUMENT OR ANY PART THEREOF SHALL BE RETURNED UPON WRITTEN REQUEST OF GENERAL ELECTRIC. HOWEVER THIS DOES NOT ALTER IN ANY WAY THE RIGHTS AND OBLIGATIONS DEFINED BY THE APPLICABLE CONTRACTS."

Checklist Number BSA 8/15-06

Att. A

Page 6 of 6

2.1-5
Rev. 2
4-17-78

GENERAL INFORMATION		DATE OF ISSUE APR 06 1979
FIELD DISPOSITION INSTRUCTION		ORIGINAL COPY WHEN THIS IMPRINT IN RED. #7
PROJECT	Grand Gulf	UNIT 1
EQUIPMENT	RPV Recirc. Nozzle Modifications	
MPL NO.	B13-D003	
FDI ORIGINATOR PRINT SIGN	G. Singleton <i>Singleton</i>	DATE 4-5-79
FDI DIRECTED TO GE FIELD REPRESENTATIVE		W. A. Shanks, Site Manager
FDI NO.		44/42382
REVISION		1
SHEET		1 OF 1

DESCRIPTION OF TASK

1. PURPOSE

1.1 The purpose for this revision is to update one of the required documents. All other parts of Revision 0 remain in effect.

2. REQUIRED DOCUMENTS

2.1 (Change to) Reactor Vessel Modification Drawing 112D2514, Rev. 1

GRAND GULF NO. 1 PROJECT
MISSISSIPPI POWER & LIGHT
BECHTEL JDD NO. 9645
GE I&SE NO. 360N1001

RPV RECIRC NOZZLE MOD

DOCUMENT NO: 44/42382 Rev. 1
RELEASE FOR CONSTRUCTION
D.O. for W.R. Winters 5/4/79
QUALITY ASSURANCE DATE

Checklist Number BGA 8/15-06

Att. B

Page 1 of 10

APPROVALS	DATE	AFFECTS SAFETY RELATED FUNCTION <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO	
D. R. Heising <i>DR Heising</i>	4/6/79	DISTRIBUTION CODE	
RESPONSIBLE ENGINEER		690E INTERNAL	EXTERNAL
R. E. Williams <i>RLC</i>	4/6/79		
RESPONSIBLE ENGRG MANAGER			
N/A			
MATERIALS APPL ENGINEER			
W. N. Lorentz <i>C.E. Morris for Lorentz</i>	4/6/79		
PROJECT MANAGER		DATE FDI TASK COMPLETED	



GRAND GULF NUCLEAR STATION

FDI/FDDR

BECHTEL RELATED WORK



Bechtel related work 21/137
to General Electric

FDI/FDDR No. 44/42382

ISSUE DATE 3-02-79

A. Resident Engineer Disposition

(Check one)

- ☒ 1. No Bechtel Engineering Documents/Drawings Affected.
Route to Field Construction.
- ☐ 2. Bechtel Engineering Documents/Drawings Affected.
Route to Project Engineering for Disposition.

B. Project Engineering Disposition

(List Documents/Drawings Affected by Change)

N/A

C. Approvals

1. M. L. Rayfield 3/16/79
Resident Engineer / Date
2. N/A
Project Engineer / Date

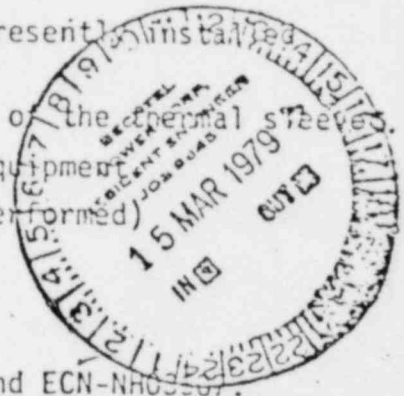
Checklist Number BGA 8/15-06

FIELD DISPOSITION INSTRUCTION		MAR 15 1979	
PROJECT	GRAND GULF	MISSISSIPPI SOUTH JOB #9645	FDI NO. 44/42382
EQUIPMENT	RPV RECIRC NOZZLE MODIFICATIONS		REVISION 0
SPL NO.	B13-D003		SHEET 1 OF 8

FDI ORIGINATOR PRINT G. Singleton SIGN <i>G. Singleton</i>	DATE 2-21-79	FDI DIRECTED TO GE FIELD REPRESENTATIVE W.A. Shanks, Site Mgr.
--	-----------------	--

DESCRIPTION OF TASK	DOCUMENT NO: 44/42382 Rev. 0 RELEASE FOR CONSTRUCTION <i>OK for W.R. Winter</i> 5/4/79 QUALITY ASSURANCE DATE
---------------------	--

1. PURPOSE ORIGINAL COPY WHEN THIS IMPRINT IN RED. #7
- 1.1 This FDI describes the technical requirements for accomplishing the modification of the reactor recirculation inlet nozzles and thermal sleeves.
- 1.2 The engineering requirements are specified in the documents called for in paragraph 2.
- 1.3 The NEBG Installation Engineering representative will interface with the installer and assist in clarifying any of the technical or engineering requirements.
- 1.4 The Tasks required to perform the modification include:
- a. Detension and remove the jet pump mixers. (Optional task. See Para. 4.9)
 - b. Blocking the recirculation jet pump risers at the present locations. (See Para. 4.9.1 and 4.9.2)
 - c. Cut and remove the existing safe ends and a portion of the thermal sleeves
 - d. Install new safe ends using automatic GTA welding equipment
 - e. Replace the jet pump mixers. (Only if Task (a) is performed)
2. REQUIRED DOCUMENTS
- 2.1 Reactor vessel modification drawing 112D2514, Rev. 0, and ECN-NH03685-112D2587.
- 2.2 Safe end and extension drawing ~~112D2514~~, Rev. 0 and ECN-NH03685-112D2587.
- 2.3 Welding requirements for field modifications of vessel components, 21A2042, Rev. 3.*



APPROVALS		DATE	AFFECTS SAFETY RELATED FUNCTION	
D.R. Heising	<i>D.R. Heising</i>	2/27/79	GRAND GULF No. 1 PROJECT	
RESPONSIBLE ENGINEER	R.E. Williams	2/24/79	MISSISSIPPI POWER & LIGHT	
RESPONSIBLE ENGR. MANAGER	<i>D.W. Sanders</i>	2/23/79	BECHTEL JOB NO. 9645	
MATERIALS APPL. ENGINEER	W.N. Lorentz	2/21/79	GE 185E NO. 360N1001	
PROJECT MANAGER	L.E. Suggs	2/21/79	DISTRIBUTION CODE	
OTHER			INTERNAL	
			EXTERNAL	
			690E	
			743G Checklist Number BGA 8/1/79	
			Att. B	
			DATE FDI COMPLETED	
			Page 3 of 10	
			CONFIRMED BY FIELD MANAGER	

NEBG 603 (6/78)

CONTINUATION SHEET

FIELD DISPOSITION INSTRUCTION

GENERAL  ELECTRIC

NUCLEAR ENERGY DIVISION

FDI NO. 44/42382

SHEET 2 OF 8

- 2.4 Cleaning and cleanliness control for modification of vessel components, 21A2040, Rev. 0
- 2.5 Vessel & Components Specification 21A3513, Rev. 9.*
- 2.6 Jet pump installation kit drawing 767E421, P001, Rev. 3.*
- 2.7 ☒ Hydraulic Fluid drawing 213A5692, Rev. 2.-
- 2.8 UT of Full Penetration Dissimilar metal welds, 21A3863, Rev. 1*
- 2.9 Installation Instructions for Reactor Assembly, 22A4304AA, Rev. 0.*
- 2.10 ☒ Weld Metal Interfaces, 21A2039, Rev. 1.
- 2.11 Repair of Arc Strikes for the Reactor assy, 21A2041, Rev. 0. —

* At Site

3. MATERIALS AND TOOLS

- 3.1 GE will provide the replacement safe ends. *MR-AL-873*
- 3.2 The installer shall furnish all other materials, equipment, tools, and fixtures required to complete the work called for by this FDI.
- 3.3 If the Installer requires a hydraulic power supply, it shall be provided by the Installer. The use of any hydraulic fluid which may come in contact with the safe end or nozzle must meet the requirements of reference 2.7. The commercial fluid "Houghto-safe 620" is approved for use.

3.4 Machining Coolants

- 3.4.1 Demineralized water which meets the requirements of the document listed in Paragraph 2.4 is acceptable. The commercial coolant "Cindipol 150" is approved for use.

3.5 Machining Lubricants

- 3.5.1 Lubricants applied to the machining surface must be GE-NEBG approved and must be completely removed after machining. Two machining lubricants which have been approved in the past are known as LT-404 and LM-413, available from:

Andre W. Reichel, Inc.
 Industrial and Custom Chemicals
 17095 Westport Drive
 Huntington Beach, Ca. 92649
 Phone (714) 549-2834

Checklist Number *BGA 8/15-06*
 Att. *B*
 Page *4* of *10*

FIELD DISPOSITION INSTRUCTION

GENERAL ELECTRIC

NUCLEAR ENERGY DIVISION

FDI NO. 44/42382

SHEET 3 OF 8

A mixture of graphite and isopropyl alcohol or castor oil may be used as a cutting fluid.

3.5.2 Gear lubricants and similar applications shall use any commercially available lubricant except those containing sulphides or lead as an added constituent. Leakage on feed screws, etc. is acceptable, provided that the excess is wiped clean periodically.

4. REQUIREMENTS

4.1 The removal and replacement of primary pressure boundary components and their attachment welds shall be governed by the applicable rules in the codes referenced in items a, b, c, and d of Paragraph 4.2. These components are designated as the replacement safe ends. The welds are designated as the safe end to nozzle welds.

4.2 Applicable Codes

- a. ASME Section III, Nuclear Power Plant Components, 1974 Edition with Addenda to and including the Summer 1976 Addenda.
- b. ASME Section IX Welding and Brazing Qualification, 1974 Edition with Addenda to and including the Summer 1976 Addenda.
- c. ASME Section V, Non-destructive examination, 1974 Edition with Addenda to and including Summer 1976 Addenda.
- d. ASME Section XI, Rules for Inservice Inspection of Nuclear Power Plant Components, 1974 Edition with Addenda to and including the Summer 1975 Addenda.

4.3 The removal, modification, or replacement of all other components shall be done in accordance with the requirements in the documents referenced in Paragraph 2, and this FDI.

4.4 All residual coolant and lubricant material must be completely removed before any components are fitted up for welding.

4.5 The Quality Control Requirements of the documents referenced in Paragraphs 2 and 4.1 shall apply.

4.6 Welding Qualifications

4.6.1 All welders and welding operators shall be qualified to the requirements specified in the document called for in Paragraph 2.3.

4.7 Mockup Requirements - The mockup requirements detailed in Paragraphs 4.7.1 and 4.7.2 are intended to provide the Installer with the proven methods, equipment and data that will be needed to perform the operations called for in Paragraph 2.3. If applicable methods, equipment and data are available from previous mockups or field work, any or all of the required mockup work may be omitted. The Installer

Number 86A 8/11/8-06
t. B

must request in writing, by FDDR, any deviation from the mockup requirements of this FDI. The FDDR must include the source and description of all methods, equipment and data that will be used in lieu of actual mockups.

4.7.1 Welding and NDE mockup. The welding and NDE mockup shall be fabricated to duplicate the actual size, location, and configuration of the following components, and shall include as a minimum:

INSIDE OF RPV

- *a. Shroud support
- *b. Shroud
- *c. Vessel wall
- d. Two diffusers with instrument lines and brackets.
- e. Jet pump riser with elbow, thermal sleeve, simulated restrainer bracket, and lower end of inlet mixer, if applicable. (See Para. 4.9)

*These components must be of sufficient size to accommodate items d and e.

OUTSIDE OF RPV

- a. Work platform
- b. Shield wall with locally interferring components
- c. Vessel wall with insulation (if installed)
- d. Nozzle configuration (I.D. and O.D.)
- e. Safe end

4.7.1.1 The nozzle portion for the nozzle to safe end weld may be made of steel pipe or tube, and must be at least equal to the full thickness of the weld joint for a minimum of 12 inches toward the vessel. This will provide an adequate heat sink, rather than using an actual nozzle forging.

4.7.1.2 All parts to be used for making the mockup welds should be removable to facilitate making additional welds.

4.7.1.3 Full size safe end and thermal sleeve parts of the same material as actual hardware shall be used. Alternate materials are allowed except for a distance of two inches on each side from the center of all welds, or provided they are weld overlaid per 21A2042, Paragraph 3.6.

4.7.1.4 The root side of the welds shall not be visible during the final mockup welding unless they will be visible during production welding. It may be useful in preliminary mockups to observe the root during fusion.

Checklist Number *BGA 8/15-a*

Att. *B*

Page *4* of *10*

FIELD DISPOSITION INSTRUCTION

GENERAL  ELECTRIC

NUCLEAR ENERGY DIVISION

FDI NO. 44/42382

SHEET 5 OF 8

4.7.1.5 Gas Purge - The method for gas purging the root side (backside) of the weldment which will be used in production shall also be used in the mockup. The purge gas shall be supplied from individual cylinders, not from the plant manifold system. The oxygen content at the purge discharge point prior to welding shall be 1% or less. A higher than normal gas flow rate is recommended when welding inconel. Because of the high flow rate, extra venting precautions must be taken to prevent the gas pressure from building up in the purged area.

4.7.1.6 Joint Details - The welding procedure and the welding operator(s) shall be qualified using the actual joint prep geometry and insert configuration that will be used on the production joints.

4.7.1.7 Data - Welding of the mockup shall be monitored by the Installer's designated welding Supervisor. All adjustable parameters shall be recorded for each weld. Adequate measurements shall be taken before and after welding to determine the extent of axial and radial shrinkage. This data shall be used in the calculation to determine the thermal sleeve extension trim length.

4.7.1.8 Examination - The examination requirements and acceptance criteria are defined in reference 2.3, 21A2042, Paragraph 3.6.

4.7.2 Machining Mockups - Any machining equipment to be used on the thermal sleeve or the nozzle shall be demonstrated and qualified on a mockup before being used for production.

4.7.2.1 Materials - Machining shall be performed on a mockup made of the same materials in the areas or zones of actual metal removal that will be machined in production. Commercially available materials are permissible providing dimensions are duplicated on diameters within $\pm 1/16$. The annulus between diameters shall be held to drawing requirements. Hardness of the 300 series Stn. Stl. should not exceed RB 95, (Brinell 210), to duplicate as-built material conditions.

4.7.2.2 Configuration of Mockup - The mockup structure shall duplicate the identical full size, shape, dimensions, configuration, rigidity, and adjacent work access restrictions as will be present on the production components where the machining equipment will mount and cut.

4.7.2.3 Capability - The qualification and approval for use of the machining equipment shall be based on a demonstration witnessed by the designated NEBG Installation Engineering representative. The following items will be the minimum criteria for acceptance:

- a. Assembly of components
- b. Set up and alignment
- c. Verification of alignment
- d. Operation of all component parts and adjustments
- e. Removal and replacement of cutting tools
- f. Control of drive mechanism

Checklist Number B6A 8/15-06

Att. B

Page 7 of 10

NED-8888 115-701

FIELD DISPOSITION INSTRUCTION

GENERAL ELECTRIC

NUCLEAR ENERGY DIVISION

FDI NO. 44/42382

SHEET 6 OF 8

- g. Ability to meet required drawing dimensions and tolerances
- h. Ability to meet surface finish requirements
- i. In-process dimensional inspection if required
- j. Removal of equipment without damage to finished machined surfaces
- k. Any unique handling or rigging requirements
- l. Method for preventing cutting fluids from entering the vessel
- m. Removal of all fluids, chips, and debris from nozzle area, and method for cleaning all required surfaces
- n. Recommended on-site spare parts to prevent delays from excessive down time
- o. A detailed written procedure describing each operational step and the sequence required to complete the machining

4.7.2.4 The installers machining supervisor shall be responsible for any special training required. Machining technicians used to operate any special machining equipment in production shall have adequate training using such equipment on the mockup.

4.8 Hydrostatic Test. After all welding and NDE are complete, all pressure retaining welds shall be hydrostatically tested and must satisfy the requirements of the document referenced in paragraph 4.2.d.

4.9 Jet Pump Mixer Assemblies. The jet pump mixer assemblies may be removed to provide better access for blocking, and monitoring the movement of the jet pump risers during the safe end/thermal sleeve removal and replacement, if necessary.

4.9.1 Before making any cuts on the safe ends or thermal sleeves, a method must be devised for anchoring the jet pump risers to prevent them from moving during machining. The vessel wall, diffusers, and shroud may be used as anchor points. Any devices used must be mechanical, no tack welding to the vessel or internal components is allowed. The risers should be anchored as close to the elbow as practical to restrict horizontal movement, and may be anchored from the top to restrict vertical movement.

4.9.2 The modification procedures shall include data sheets to record the following information:

- a. Installed location of each riser, vertically and horizontally, before any clamps, wedges, or blocking devices are installed.
- b. Location and description of all blocking devices used.
- c. Location and type of reference marks used, punch marks, scribe line, etc.
- d. Type of measuring device used: scale, dial indicator, micrometer, etc.; and its expected accuracy. Tolerances must be reduced by expected accuracies.

Number 264 of 10
 check list
 age 8
 att.

FIELD DISPOSITION INSTRUCTION

GENERAL  ELECTRIC

NUCLEAR ENERGY DIVISION

FDI NO 44/42382

SHEET 7 OF 8

- e. Location of each riser after all welding and NDE are complete.
- f. Location of each riser after all blocking restraints are removed.

4.9.3 Horizontal location measurements shall be taken at the restrainer bracket elevation or lower. Vertical measurements may be taken from any fixed reference point(s). The welding sequence shall determine when the riser restraints must be released during the installation of the safe end.

4.9.4 The jet pump mixers, if removed, (see Para. 4.9) must be re-installed after all welding and NDE is completed. The mixers must meet the fit up requirements called out in reference 2.6. The instructions in reference 2.9 and the following information should be used;

- a. The restrainer bracket adjusting screws may have to be replaced if they have already been tack welded.
- b. Target the center of the diffuser with a plumb bob and transfer the plumb line to a target in the restrainer bracket.
- c. Adjust the restrainer bracket screws to the target and install the mixers per the above referenced fit up requirements.

4.9.5 All required as-built data must be taken and recorded as was done for the original jet pump installation.

5. MODIFICATION SEQUENCE

5.1 The machining, welding, and NDE for each nozzle/thermal sleeve/safe end shall be performed in accordance with approved procedures written to satisfy the requirements of the documents referenced in paragraph 2, and the following paragraphs.

5.1.1 De-tension the jet pump hold down beams and remove the inlet mixer assemblies. The mixers must be stored and protected from damage in an area or location to be determined and controlled by the installer. (Optional task. See Para. 4.9)

5.1.2 Establish and document all required measurement datum marks and measurements called for in Paragraph 4.9 with special attention to data required by Paragraph 4.9.2.a, e, and f.

5.1.3 Install all required blocking devices called for in Paragraph 4.9.

5.1.4 Layout and cut-off the safe end and thermal sleeve.

5.1.5 Machine the weld preps on the nozzle and thermal sleeve.

5.1.6 Install the replacement safe end and perform the required welding and NDE.

5.1.7 Measure and record the data required in Paragraph 4.9.2.e.

5.1.8 Remove all blocking and restraint devices called for in Paragraph 4.9.

check list Number BGA 8/1/8-06
 att. 3
 age 9 of 10

FIELD DISPOSITION INSTRUCTION

GENERAL  ELECTRIC

NUCLEAR ENERGY DIVISION

FDI NO. 44/42382

SHEET 8 OF 8

5.1.9 Measure and record the data required in Paragraph 4.9.2.f.

5.1.10 Install the jet pump mixer assemblies (if removed) and complete all work required by Paragraph 4.9.4.

5.1.11 Place a substantial cover over the open end of the safe end to prevent foreign material from entering the nozzle, and to protect the weld preps. This should be done at the completion of the work in Paragraph 5.1.6.

6. SUBMITTALS

6.1 The installer shall prepare an overall work sequence plan, and schedule, and submit it to the GE Project office in San Jose for approval. This may be a general plan document, referencing detailed procedures where the specific sequence steps are defined. This document(s) must identify all procedures, data sheets, etc., that will be used for the entire scope of this modification.

6.2 All procedures required by the documents referenced in Paragraph 2 and those called for in Paragraphs 4 and 5, shall be submitted to the GE project office in San Jose for review and approval. None of the work defined in Paragraphs 5.1.2 through 5.1.11 shall be allowed to start until written approval has been received at the job site.

Checklist Number BGA 8/15-06

Att. B

Page 10 of 10

RED-4440 111-701

GENERAL INFORMATION

FIELD DEVIATION
DISPOSITION REQUEST *PS*

- ☒ NONCONFORMANCE
DISPOSITION REQUEST
- ☐ DESIGN CHANGE
REQUEST

DATE OF ISSUE

MAY 02 1979

PROJECT Grand Gulf

UNIT 1

EQUIPMENT (IMPL OR DESCRIPTION OR BOTH) B13-D003

Reactor Pressure Vessel Modification

FDDR NO. JB1-135

SHEET 1 OF 1

DATE ORIGINATED 4/12/79

DOCUMENT NO. FDI 44/42382 SH NO. 5 REV 0 TITLE

RPV Recirc Nozzle Modifications

DEVIATION DESCRIPTION

FDDR ORIGINATOR

PRINT G.E. Smith

SIGN *G.E. Smith*

APPROVED BY *W. Winters*

DATE 4/14

APPROVALS

DATE

RESPONSIBLE ENGR *W. Winters*

DATE 4/26/79

ENGRG MANAGER *W. Winters*

DATE 4/27/79

LEAD SYSTEM ENGR *W. Winters*

DATE 4/27/79

MATV APPL ENGR *W. Winters*

DATE 4-27-79

INSTALLATION ENGR *W. Winters*

DATE 4-27-79

PROJECT MANAGER *C. G. Morris*

DATE 4/20/79

FIELD MANAGER

EXPEDITED APPROVAL

DATE

BY

DISAPPROVED

DATE

OTHER PLANTS

SUPPLIER ACTION

AFFECTED

REQUIRED

☐ YES ☒ NO

☐ YES ☒ NO

SUPPLEMENTAL INST REQD PER

FDI NO. N/A

DESIGN CHANGE PROCESSING

FOR FOLLOW-UP ACTION N/A

TYPE

☐ MANDATORY ☐ PROD ☐ RECOM

☐ IMPR ☐ MENDE

CATEGORY

☐ I ☐ II

PRIORITY

☐ EMERGENCY ☐ URGENT ☐ ROUTINE

CCB CHAIRMAN

ECA/ECN

DISTRIBUTION CODE

INTERNAL

EXTERNAL

FIELD WORK ORDER NO.

Paragraph 4.7.1.5 of the above FDI requires that the argon gas purge be supplied by individual cylinders of gas, not from a plant manifold system.

DOCUMENT NO: JB1-135

RELEASE FOR CONSTRUCTION

W.R. Winters

6-18-79

QUALITY ASSURANCE

DATE

ORIGINAL COPY WHEN
THIS IMPRINT IN RED.

#1

SUGGESTED DISPOSITION

Allow use of the plant bulk system for this gas. This system is well maintained at this site and is proving to be satisfactory by continuing use.

Due to the difficulty of transporting and storing bottle gas in the containment area, it is more practical to use the plant system.

A commercial gas dryer is to be used in the welding and purge lines.

GRAND GULF NO. 1 PROJECT
MISSISSIPPI POWER & LIGHT
BECHTEL JOB NO. 9645
GE I&SE NO. 360N1001

RPV RECIRC NOZZLE MOD

FINAL DISPOSITION

Same as suggested disposition.

RECEIVED

MAY 9 1979

SUB CONTRACTS

Verification in DRF-B13-D003

STATEMENT (SAFETY, RELIABILITY, AND DESIGN VERIFICATION)

These deviations will have no effect on safety or reliability.

Checklist Number BGA 8/115-06

Att. C

☒ NONCONFORMANCE
DISPOSITION REQUEST

☐ DESIGN CHANGE
REQUEST

MAY 02 1979

FIELD DEVIATION
DISPOSITION REQUEST

PROJECT Grand Gulf UNIT 1
EQUIPMENT (IMPL OR DESCRIPTION OR BOTH) B13-D003
RPV Modification

FDOR NO. JB1-134
SHEET 1 OF 2
DATE ORIGINATED 4/12/79

DOCUMENT NO. FDI 44/42382 SH NO. 4 REV 0 TITLE RPV Recirc Nozzle Modifications

DEVIATION DESCRIPTION
Paragraph 4.7 of the above FDI lists the mockup requirements for the Recirculation Nozzle Safe-End modification work. Omission of any of these requirements is permissible provided sufficient data is available from previous mockups or field work.

FDOR ORIGINATOR Smith
PRINT SIGN Smith
APPROVALS BY W. Winters DATE 4/12/79

DOCUMENT NO: JB1-134
RELEASE FOR CONSTRUCTION
W.R. Winters @ 6-18-79 #1
QUALITY ASSURANCE DATE

APPROVALS
RESPONSIBLE ENGR RLC DATE 4/27/79
ENGRG MANAGER N/A
LEAD SYSTEM ENGR DW Sandusky DATE 4/27/79
MAINT APPL ENGR W. Winters DATE 4-23-79
INSTALLATION ENGR

SUGGESTED DISPOSITION
The mockup requirements covers three areas; welding, machining and fixturing. These three requirements will be satisfied as follows:
The welding will be done by Dimetrics Company, L.A., California. The welding equipment is on site and it has been verified that it will operate within the restricted clearances that are unique to the Grand Gulf site.
Welding procedure and operator qualification tests will be performed on mockups at the site.
The machining operation will be done by Power Cutting Company, Wheeling, Illinois.
This company has extensive experience in RPV Nozzle Safe-End removal and machining at many sites. They have machined mockups in their Illinois plant to simulate Grand Gulf vessel configurations.
(CONTINUED ON SHEET 2)

C.E. Morris 4/20/79
PROJECT MANAGER
FIELD MANAGER

EXPEDITED APPROVAL DATE
BY
DISAPPROVED DATE

OTHER PLANTS AFFECTED
☐ YES ☒ NO
SUPPLIER ACTION REQUIRED
☐ YES ☒ NO
SUPPLEMENTAL INST REQD PER
FDI NO. N/A

FINAL DISPOSITION
Same as suggested **RECEIVED** tion

DESIGN CHANGE PROCESSING FOR FOLLOW-UP ACTION N/A
TYPE ☐ MANDATORY ☐ PROD IMPR ☐ RECOM-MENDED
CATEGORY ☐ 1

GRAND GULF NO. 1 PROJECT
MISSISSIPPI POWER & LIGHT
BECHTEL JOB NO. 9645
GE I&SE NO. 360N1001

SUB CONTRACTS
MIDDLE SOUTH JOB #9645

PRIORITY
☐ EMERGENCY ☐ URGENT ☐ ROUTINE

CCB CHAIRMAN
ECA/ECN N/A

STATEMENT (SAFETY, RELIABILITY, AND DESIGN VERIFICATION)
These deviations will have no effect on safety or reliability.

DISTRIBUTION CODE
INTERNAL
FIELD WORK ORDER NO.
DISPOSITION COMPLETE
checklist Nutcher 8/15/80 2 of 3
tt. 2 2 2

RPV RECIRC NOZZLE MOD



MISSISSIPPI POWER & LIGHT COMPANY

Helping Build Mississippi

P. O. BOX 1640, JACKSON, MISSISSIPPI 39205

PRODUCTION DEPARTMENT

August 27, 1979

Mr. R. L. Scott
Project Quality Assurance Manager
Bechtel Power Corporation
Post Office Box 41
Port Gibson, Mississippi 39150

Dear Bob:

SUBJECT: Grand Gulf Nuclear Station
Bechtel Job No. 9645
File 0272/0168/15830/15850
Verification of D&CR #92
MQBC -79/83
BCQM-79/70

Mississippi Power & Light Company has verified the corrective action taken for Discrepancy & Correction Report (D&CR) Number 92. Attached is a copy of the verified and closed D&CR.

Thank you for your assistance.

Yours truly,

for W.E. Edze

T. E. Reaves, Jr.
Manager of Quality Assurance

ATR:lb
Attachment

cc: Dr. D. C. Gibbs w/o
Mr. J. N. Ward w/o
Mr. A. Zaccaria w/o
~~Mr. D. M. Lake w/o~~
~~Mr. P. R. Britnell w/o~~
Mr. N. L. Stampley w/o
Mr. J. P. McGaughy, Jr. w/o
Mr. L. F. Dale w/o
Mr. C. K. McCoy w/o
Mr. J. C. Fuller w/a
File w/a
D&CR File w/a

Checklist Number BGA 8/15-
Att. D

Page 1 of 1

DISCREPANCY AND CORRECTION REPORT
(D&CR)

ed To R. L. Scott, Bechtel PQAM
Insp. No. BGA-7
on Contacted R. L. Scott,
Zaccaria



(?) Number 92
Date Due 8/15/79
Unit No. 1 & 2

REFERENCE: (3)

No evidence of Lead Resident Engineer approval of the GE I&SE QA Program for GE-NED
DI No. 44/42382.

(See Attachment A for details)

T. E. Reaves, Jr. 7-12-79 for W. E. Edge 7/12/79
Initiator Date Manager of QA/QAFS Date

ENDED DISPOSITION: (4)

Bechtel to determine and coordinate with MP&L QA
See Block (5) Below.

RR Bitell for R.L. Scott 8/14/79 Quality Assurance (MP&L) Date
Performing Organization(or QA) Date

IVE ACTION TAKEN: (5)

See Attachment B

RR Bitell for R.L. Scott 8/14/79 J. E. Reaves 8/24/79
Performing Organization(or QA) Date Quality Assurance (MP&L) Date

CEPTANCE:

NONCONFORMANCE: (3)

Commitment:

PEPM Section 2.1 (K); Change Request Number 91 dated 4/27/79 states:

"The Lead Resident Engineer shall approve the QA Program submitted by GE I&SE for work performed under GE-NED FDI No. 44/42382. This approval is limited to the verification that the subject QA Program has been approved by GE-NED."

Finding:

Objective evidence was not available to demonstrate that the Lead Resident Engineer has approved the GE I&SE QA Program for GE-NED FDE No. 44/42382.

ATTACHMENT B

to

D&CR 92

Corrective Action Taken: (5)

Objective evidence to verify approval of the GE - I&SE QA Manual by the Lead Resident Engineer, Mr. M. L. Rayfield, has been obtained. See letter of approval dated June 22, 1979.

Checklist Number *BSA 8/1/5-1*

Bechtel Power Corporation

Interoffice Memorandum

To E. F. Lewis

File No. M-001.0/0306

Subject Nuclear QA Is Applicable
Middle South Energy, Inc.
Grand Gulf Nuclear Station
Bechtel Job No. 9645
GE-I & SE QA. Manual

Date June 22, 1979

From M. L. Rayfield


Of Project Engineering

Copies to A. Zaccaria
D. Lake
W. Turner
R. Scott

At Port Gibson, MS Ext 356

RE: FDI-44/42382

In accordance with section 2.1(k) of the Project Engineering Procedures Manual (Change Notice #91, dated 4/27/79) I have verified that the GE-I & SE Quality Assurance Manual, Revision 2, including Addenda 5 of the table of contents has been reviewed and approved by GE-NEGB. Refer to GE letter No. BGE-79/56, W. N. Lorentz to D. M. Lake dated May 11, 1979.


M. L. Rayfield
Lead Resident Engineer

MLR/aj

Enclosure: GE letter No. BGE-79/56, dated May 11, 1979



Checklist Number BGA B/15-1

GENERAL ELECTRIC

tl

D&CR 92

NUCLEAR ENERGY
PROJECTS DIVISION

GENERAL ELECTRIC COMPANY, 175 CURTNER AVE., SAN JOSE, CALIFORNIA 95125
MC 392, (408) 925-3704

May 11, 1979

Mr. D. M. Lake
Field Construction Manager
Bechtel Corporation
P. O. Box 41
Port Gibson, MS 39150

Attention: T. Gritzer

Gentlemen:

Middle South Energy, Inc.
Grand Gulf Nuclear Station
Bechtel Job No. 9645
File No. 0275/M-001.0
RPV NOZZLE AND RECIRC PIPE MODIFICATIONS
BGE-79/56

The following concerns the quality assurance manual and installation procedures for field modification of the Grand Gulf 1 recirc nozzle safe end and recirculation pipe per FDI-44/42382 and FDDR JB1-130.

Recirc Header Sweepolet Cladding, RR-4-380, Rev. 0

GE-NEGB has reviewed this GE-I&SE procedure and has the following comments:

Paragraph 1.2 - The description of the two zones differs from that given in P50YP175 Paragraph 3.5. Revise to provide the correct description. CRC is not limited to pipe only. In this case it is being applied to a fitting.

Paragraph 1.3.4 - Submit document WPS RR-4-380.

Paragraph 5.1 - Define the extent and scope of welder qualification.

Paragraph 5.2 - Delete SFA-5.4.

Paragraph 6.2.2 - Revise to read: "...using a straight edge and level to transfer nozzle elevation...."

Data Sheet No. 1 - Show a level on top of the straight edge.

Checklist Number BGA 61115-

GENERAL ELECTRIC

Mr. D. M. Lake

Page 2

May 11, 1979

ATTACHMENT B Page 4 of 4

to D&CR 92

Nuclear Quality Assurance Manual

GE-NEGB has reviewed and approved Revision 2, including Addenda 5 of table of contents for this and other applications by GE-I&SE at Grand Gulf. This ASME Section 3 manual is also applicable to ASME Section 11 work.

Very truly yours,

W. N. Lorentz
W. N. Lorentz, Manager
Grand Gulf Project

WNL:daj/614-615

cc: L. F. Dale
J. S. Gills
O. M. Jones, Jr.
C. K. McCoy
J. P. McGaughy
V. L. Nail
T. E. Reaves
T. W. Schnatz
W. A. Shanks
J. H. Ward
W. Winters
R. R. Zrubek
File: 15.12

Checklist Number BGA 1115-

CAR/D&CR NUMBER:

92

Verification Method:

1. Examined Bechtel Interoffice Memo dated 6/22/79 (Attachment B, Page 2 of 4 to D&CR 92)
2. Examined G.E. letter No. BGE-79/56 dated 5/11/79 (Attachment B, Page 3 of 4 to D&CR 92)

All corrective action taken on the above ~~CAR/D&CR~~ has been accomplished satisfactorily.

J. E. Reaven

8/24/79

Checklist Number

Quality Assurance Representative Date

Bechtel Power Corporation

Engineers — Constructors

Post Office Box 607
15740 Shady Grove Road
Gaithersburg, Maryland 20760
301-948-2700



August 15, 1979

RECEIVED

AUG 20 1979

GGNS PROJECT
M. P. & L. CO.

Mr. T. E. Reaves, Jr.
Manager of Quality Assurance
Mississippi Power & Light Company
P. O. Box 1640
Jackson, Mississippi 39205

Dear Mr. Reaves:

Nuclear QA Is Applicable
Middle South Energy, Inc.
Grand Gulf Nuclear Station
Bechtel Job No. 9645
File 0262/0494
Completed Corrective Action
for D&CRs No. 92, 93 and 94
MQBC-79/83

Ref: BCQM-79/56

Attached for verification of completed corrective action are
D&CRs No. 92, 93, and 94.

Bechtel Project Quality Assurance has evaluated and verified that
the corrective actions respond to the concerns raised in the subject
D&CRs.

Please let us know of your verification of completed corrective action
for these nonconformances.

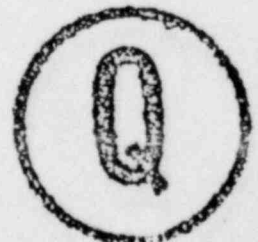
Very truly yours,

R. L. Scott
for R. L. Scott
Project QA Manager

RLS:PRB:saj

Attachments

cc:	D. C. Gibbs, w/l	A. Zaccaria, w/l
	J. P. McGaughy, Jr., w/l	D. M. Lake, w/o
	L. F. Dale, w/l	J. M. Amaral, w/o
	C. K. McCoy, w/l	P. R. Britnell, w/l
	J. N. Ward, w/o	W. M. Turner, w/o



Checklist Number BGA 8/15-07



BECHTEL POWER CORPORATION
GAITHERSBURG POWER DIVISION
BECHTEL JOB NO. 9645



TCI 79/423

COPY TO: MP&L T. E. Reaves
ATTN:

TELEPHONE CALL

BY Phil Britnell OF Bechtel GPD QA ROUTE R. L. Scott
TO Art Ramey OF MP&L QA J. W. Yelverton
DATE August 16, 1979 TIME 10:40 AM
SUBJECT D&CR and CAR Status

NUCLEAR QA (IS) ~~NOT~~ APPLICABLE

ACTION REQUIRED

~~YES~~ (YES) BY Bechtel QA
~~NO~~

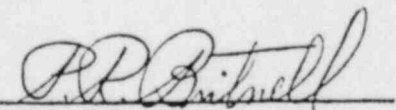
FILE NOS. 07500494 /

Reviewed status of CARs and D&CRs resulting from MP&L's Audit #7 of GPD performed on 6/19-22/79. Informed Art that CAR 223 and D&CRs 92, 93 and 94 were enroute to MP&L for verification and close-out.

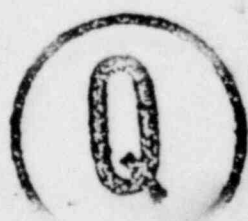
Requested extensions to corrective action response dates for the remaining CARs and D&CRs as follows:

<u>CAR/D&CR</u>	<u>Reason for Extension</u>	<u>Extended Response Date</u>
CAR 225	Incomplete remedial action.	9/28/79
CAR 226	QA verification of corrective action.	9/15/79
CAR 227	Incomplete corrective action.	9/28/79
CAR 228	Requires approved PPFM, Rev. 1.	10/26/79
CAR 230	Requires GPD NQAM revision.	9/28/79
D&CR 90	Incomplete remedial action.	9/7/79
D&CR 91	Dependent upon PPM revision.	9/28/79
D&CR 95	Incomplete corrective action.	9/24/79
D&CR 96	Requires PPFM Section 6.8 revision.	9/28/79
D&CR 97	Incomplete corrective action.	10/19/79

Art agreed to these extensions in response dates.


P. R. Britnell

Checklist Number BGA 8/15-06





MISSISSIPPI POWER & LIGHT COMPANY

Helping Build Mississippi

P. O. BOX 1640, JACKSON, MISSISSIPPI 39205

PRODUCTION DEPARTMENT

July 12, 1979

D&CR 92

Mr. R. L. Scott
Project Quality Assurance Manager
Bechtel Power Corporation
Post Office Box 41
Port Gibson, Mississippi 39150

Dear Bob:

SUBJECT: Grand Gulf Nuclear Station
Bechtel Job No. 9645
File 0272/0490/15800/15810/15850
BGA-7 Audit Report
6/19-22/79
BCQM-79/56

Mississippi Power & Light conducted a Limited Scope Audit of the Bechtel QA Program on June 19-22, 1979. The audit scope and summary of findings is outlined in Attachment "A".

Fourteen nonconformances were identified and discussed with you during the audit and at the post-audit meeting on June 22, 1979. These nonconformances are documented on six Corrective Action Request (CARs) and eight Discrepancy and Correction Reports (D&CRs), attached.

Ten additional nonconformances were identified and corrected during the audit. These items are considered minor or singular in nature and require no further action. These items are summarized in Attachment "A".

Please complete the CAR and D&CR forms in accordance with the attached instructions and return to this office by August 15, 1979. If corrective action cannot be completed by this date, we request that you submit an interim report indicating the current status of the nonconformance and an estimated date for completion of the corrective action.

Please extend our appreciation to all concerned for the courtesies and cooperation shown our auditors.

Yours truly,

for W. E. Edge

T. E. Reaves, Jr.
Manager of Quality Assurance

JER:lb

Attachments: (A) Audit Scope & Summary
(B) CARs 223, 225, 226, 227, 228 & 230
(C) D&CRs 90 through 97
(D) Audit Participants

cc: Continued on following page

Checklist Number BGA 81/15.
Att. D

Page 11 of 11

Mr. R. L. Scott

BCQM-79/56

Page 2

cc: Dr. D. C. Gibbs (A,B,C,D)
Mr. J. P. McGaughy, Jr. (A,B,C,D)
Mr. L. F. Dale (A,B,C,D)
Mr. C. K. McCoy (A,B,C,D)
Mr. J. N. Ward (A,D)
Mr. A. Zaccaria (A,D)
Mr. D. M. Lake (A,D)
Mr. R. A. O'Neil (A,D)
Mr. D. E. Trapold (A,D)
Mr. J. M. Amaral (A,D)
Mr. P. R. Britnell (A,D)
Mr. W. M. Turner (A,D)
CAR File (A,B,C,D) & LHC FORM 100
D&CR File (A,B,C,D)
File (A,B,C,D)

Checklist Number 100

DISCREPANCY AND CORRECTION REPORT
(D&CR)

Issued To R. L. Scott, Bechtel PQAM
Audit Insp. No. GA-7
Person Contacted R. L. Scott,
A. Zaccaria



(2) Number 92
Date Due 8/15/79
Unit No. 1 & 2

NONCONFORMANCE: (3)

No evidence of Lead Resident Engineer approval of the GE I&SE QA Program for GE-NED
FDI No. 44/42382.

(See Attachment A for details)

T. E. Reaves, Jr.
Initiator

7-12-79
Date

T. E. Reaves, Jr.
Manager of QA/QAFS

7/12/79
Date

RECOMMENDED DISPOSITION: (4)

Bechtel to determine and coordinate with MP&L QA

<u>Performing Organization(or QA)</u>	<u>Date</u>	<u>Quality Assurance (MP&L)</u>	<u>Date</u>
---------------------------------------	-------------	-------------------------------------	-------------

CORRECTIVE ACTION TAKEN: (5)

FINAL ACCEPTANCE:

<u>Performing Organization(or QA)</u>	<u>Date</u>	<u>Quality Assurance (MP&L)</u>	<u>Date</u>
---------------------------------------	-------------	-------------------------------------	-------------

Checklist Number BGA 8115-
Att. D

NONCONFORMANCE: (3)

Commitment:

PEPM Section 2.1 (K); Change Request Number 91 dated 4/27/79 states:

"The Lead Resident Engineer shall approve the QA Program submitted by GE I&SE for work performed under GE-NED FDI No. 44/42382. This approval is limited to the verification that the subject QA Program has been approved by GE-NED."

Finding:

Objective evidence was not available to demonstrate that the Lead Resident Engineer has approved the GE I&SE QA Program for GE-NED FDI No. 44/42382.

Checklist Number *BGA 81/15-6*

Att. *0*

MAP REF.	COMMITMENT	METHOD OF VERIFICATION	FINDINGS/ COMMENTS	*CLASSIFI TION CODE
C03.50	PROJECT ENGINEERING PROCEDURE MANUAL SECTION 4.7 DESIGN FREEZE OF SYSTEMS (See Attached) 4.7.A.3	1. Review results of design freeze meeting for resolution of outstanding items on each system or the establishment of an agreed upon procedure and schedule for resolution of the items. 2. Verify that Bechtel has, as a result of the design freeze meeting, forwarded to MP&L an updated copy of all materials transmitted prior to the meeting plus an updated FSAR write up for the system, approximately three weeks after the meeting.	SEE ATTACHMENT	C
	4.7.B	Review Design Change Notices issued against a Piping & Instrumentation Drawing or a Systems Flow Diagram to verify that it has been sent to MP&L for approval. Verify that a telephone call is placed to MP&L and recorded on a telephone call memo to verify approval when no comments are received from MP&L.		NA A

*Classification Code:

C=Conformance

N=Nonconformance

NC=Nonconformance Corrected during audit

ND=Nonconformance Documented by audited organization

A=Not Audited

V=Verified Corrective Actions

(More than one classification can be used)

PERSONS CONTACTED:

E.T. ELSTNER

W. TURNER

R. MCCORMICK

COMPLETED BY:

J. BOWMAN

DATE: 7-15-81

CHECKLIST NUMBER:

BGA-81/15-07

(By Audit No.)

4.7 DESIGN FREEZE OF SYSTEMS

A. PROCEDURES TO AFFECT DESIGN FREEZE

The following procedures will be followed in order to affect the design freeze of all systems.

1. Approximately twenty working days prior to a meeting at which systems will be frozen, Bechtel will forward the following to MP&L for each system.
 - a. System Description
 - b. Piping and Instrumentation Diagram
 - c. System Flow Diagram
 - d. Control Logic Diagram
 - e. Equipment Location Drawing(s) for the equipment included in the system
 - f. Piping Composite Drawing(s) for the system
 - g. Electrical One Line Diagram for the system equipment
2. MP&L will review the material and provide Bechtel with a list of questions and comments regarding the systems prior to the meeting.
3. At the design freeze meeting, Bechtel and MP&L will resolve all outstanding items on each system or establish an agreed upon procedure and schedule for resolution of the items.
4. Approximately three weeks after the design freeze meeting, Bechtel will forward to MP&L an updated copy of all of the material transmitted prior to the meeting, plus an updated FSAR writeup for the system.
5. When MP&L is satisfied that all concerns have been resolved, MP&L will inform Bechtel that the system is officially considered to be frozen.

B. CHANGES TO SYSTEMS FOLLOWING DESIGN FREEZE

After a system has been frozen, it may be necessary to make changes to the system.

Nonconformance (3) JB 7.15.81

A. COMMITMENT:
(Reference)

PEPM 4.7 A. 4

Approximately three weeks after the Design freeze meeting, Bechtel will forward to MPEL an updated copy of all the material transmitted prior to the meeting, plus an updated FSAR writeup for the system.

B. FINDINGS;

Meeting 36: An updated FSAR write-up could not be located.

* Meeting 40: Could not locate post design freeze meeting transmitted or updated FSAR write-up. JB 7.15.81

- Note:
- 1- All design freeze document transmittals are not identified with the design freeze meeting number and are filed separately from the meeting minutes. This causes great difficulty in retrieving documents.
 - 2- Reviewed Change Notices to ascertain that requirement was in effect at the time of referenced meetings.
- * Meeting 40 was held to resolve punch list items from previous meetings. No new systems discussed or added on. See memo BNP-76/442 attached.



MISSISSIPPI POWER & LIGHT COMPANY

Helping Build Mississippi

P. O. BOX 1640, JACKSON, MISSISSIPPI 39205

PRODUCTION DEPARTMENT

November 10, 1976

RECEIVED

NOV 17 1976

Mr. T. W. Habermas, Project Engineer
Bechtel Power Corporation
Post Office Box 607
Gaithersburg, Maryland 20760

JOB NO 9645

Dear Tom:

SUBJECT: Grand Gulf Nuclear Station
Bechtel Job No. 9645
File 0272/1002
Design Freeze/Design Review Meetings
(MPB-76/424)
BMP-76/442

As stated in MPB-76/424, May 24, 1975, Design Review Meeting No. 39 was cancelled since no systems were available for design freeze. It was anticipated that regularly scheduled design review meetings would resume in September, 1976, so that we could complete our design freeze effort by the end of 1976.

We request that you provide us with a design freeze schedule for the remaining GGNS systems as soon as possible in order to complete the design freeze effort in a timely manner.

We also have open items remaining from Design Review Meeting No. 38 held in May. Please advise us of the status of these items.

Yours truly,

J. P. McGaughey, Jr.
Project Manager

NC JPM/de

cc: Dr. C. G. Chezem
Mr. C. W. Sandford
Mr. H. D. Bruner
Mr. N. L. Stampley
Mr. W. L. Nail
Mr. T. E. Reaves
Mr. J. E. Wimberley
File /

00197711

1 - REVIEWED DESIGN REVIEW MEETING MINUTES FOR MEETINGS 36 & 40. THESE MINUTES INDICATE RESOLUTION OF OUTSTANDING ITEMS, RESPONSIBILITY ASSIGNMENTS & ACTION DUE DATES.

2 - A UPDATED COPY OF ALL MATERIALS TRANSMITTED TO MP&C PRIOR TO THE MEETING WERE FORWARDED TO MP&C. AFTER THE MEETING - NO FSAR FOR WRITE-UP LOCATED. (MEETING 36)

PRE DESIGN FREEZE PACKAGE TRANSMITTALS:

MP&C- 76/0450	3.4.76
MP&C- 76/0454	3.10.76
MP&C- 76/0529	3.11.76

POST DESIGN FREEZE PACKAGE TRANSMITTAL: MP&C-76/0487 5.24.76

2 - B * ~~COULD NOT LOCATE PRE OR POST DESIGN FREEZE PACKAGE TRANSMITTALS OR UPDATED FSAR WRITE-UP (MEETING 40)~~ JB 1.15.81

NOTE: SOME DESIGN FREEZE TRANSMITTALS ARE IDENTIFIED TO DESIGN REVIEW MEETING NUMBER, OTHERS ARE NOT. THIS CAUSES DIFFICULTY IN RETRIEVING DOCUMENTS.

* SEE ATTACHMENT 'A' TO BGA-81/15-07

J. BOWMAN
7.13.81

- 81/15-07

5 A RESULT OF AUDIT TEAM MEETING 7.15.81, THIS
ITEM WAS DISCUSSED AND DECIDED TO BE DESIGNATED
"NOT AUDITED".

DESIGN FREEZE RECORDS ARE OF NO QA VALUE. RECORDS
ARE NOT TRACEABLE TO MEETING RECORD MINUTES WITHOUT
EXTENSIVE STUDY.

MEMO T. REAVES TO MC GAUGHY WILL BE DRAFTED TO
EXPLAIN WHAT WAS FOUND. (CANNOT PROVIDE
INFO. FOR ACCURACY OF COMMITMENT)

4.7 DESIGN FREEZE OF SYSTEMS

A. PROCEDURES TO AFFECT DESIGN FREEZE

The following procedures will be followed in order to affect the design freeze of all systems.

1. Approximately twenty working days prior to a meeting at which systems will be frozen, Bechtel will forward the following to MP&L for each system.
 - a. System Description
 - b. Piping and Instrumentation Diagram
 - c. System Flow Diagram
 - d. Control Logic Diagram
 - e. Equipment Location Drawing(s) for the equipment included in the system
 - f. Piping Composite Drawing(s) for the system
 - g. Electrical One Line Diagram for the system equipment
2. MP&L will review the material and provide Bechtel with a list of questions and comments regarding the systems prior to the meeting.
3. At the design freeze meeting, Bechtel and MP&L will resolve all outstanding items on each system or establish an agreed upon procedure and schedule for resolution of the items.
4. Approximately three weeks after the design freeze meeting, Bechtel will forward to MP&L an updated copy of all of the material transmitted prior to the meeting, plus an updated FSAR writeup for the system.
5. When MP&L is satisfied that all concerns have been resolved, MP&L will inform Bechtel that the system is officially considered to be frozen.

B. CHANGES TO SYSTEMS FOLLOWING DESIGN FREEZE

After a system has been frozen, it may be necessary to make changes to the system.

4.7-1
Rev. 2
3-14-79



PEPM CHANGE NOTICE

PROJECT NO. 9645

1. PAGE 1 OF 1

2. CHANGE NOTICE NO. 98

ATTACHMENT:

YES ☐ NO ☐

3. DATE MO DAY YR
6 6 79

4. PROCEDURE NO.

4.7

5. TITLE

DESIGN FREEZE OF SYSTEMS

6. EXISTING CONDITION:

B. CHANGES TO SYSTEMS FOLLOWING DESIGN FREEZE

After a... the system. When such... be followed.

1. Revision notices... stamped "Post Design Freeze"
(Action No. 6...

NOTE: This PCN supersedes PCN No. 81.
Please remove PCN No. 81 from the PEP.

7. CHANGE TO READ

B. CHANGES TO SYSTEMS FOLLOWING DESIGN FREEZE

After... the system. Minor changes that reflect as-built conditions, vendor physicalization etc. will not require MP&L approval of P&ID or SFD Revision Notices or DCNs. However, for significant changes that may affect design concept or operating philosophy, approval by MP&L is required and shall be obtained by the following procedure:

1. A copy of the drawing and associated Revision Notice will be sent to MP&L for approval, stamped "Preliminary" and "Post Design Freeze" (Action No. 6...

8.

Bruce C. Stanchfield 6/5/79
PREPARED BY DATE

for R. Scott 6/6/79
FOR CONCURRING

William E. L... 6/5/79
FOR CONCURRENCE DATE

6/6/79
FOR APPROVAL

MAP REF.	COMMITMENT	METHOD OF VERIFICATION	FINDINGS/ COMMENTS	*CLASSIFICATION CODE
C06.10 C06.20 C06.30	<p>PEPM Section 4.2.20, C/N 124, 5/21/80.</p> <p><u>4.2.20.2 PROCEDURE</u></p> <p>B. PROJECT ADMINISTRATION</p> <ol style="list-style-type: none"> 1. Receive drawing(s), verify contents. 2. Date stamp transmittal letter. 3. Log drawing(s) into the Automated Document Control Register (ADCR). 4. Prepare coding sheet, have drawing microfilmed and order the necessary copies. 5. File copies of the transmittal letter in each file number assigned and also in the REDT sequential file. (Notify the Resident Engineer of any missing serial numbers.) 6. Prepare a transmittal letter to Field Construction with distribution as indicated on Figure 4-2a. This transmittal letter shall include the following note: "This drawing(s) was previously transmitted to Field Construction by RMT (year/number)." 7. Assemble the package and make distribution. <p>C. PROJECT ENGINEERING-MANAGER GROUP</p> <ol style="list-style-type: none"> 1. Receive drawing and calculation package. Verify contents. 2. Approve calculations, and process in accordance with section 4.4.6 and 4.4.7 of the PEPH. 3. Submit a legible copy(s) of the calculations to Project Administration for microfilming. 4. File calculations in accordance to section 4.4.8 of the PEPH. 5. Establish a drawing print file for revision control. 6. Revisions to the support drawing and calculations, if necessary, submitted by the Resident Engineer shall be processed in the same manner described above. 7. Receive original drawing showing actual configuration (as-built condition) of pipe supports. 8. Prepare a new drawing duplicating the design detail as shown on the original (latest revision) drawing. 9. Apply Registered Professional Engineer stamp to the drawing. Complete review and approval process in accordance with section 4.3.1.1 of the PEPH. 10. Issue the drawing to Field Construction. <p>Note: The revision history of the field prepared drawing shall be replicated on the new drawing. The next sequential revision number shall be used, and the revision block read as follows: "Redrawn, issued for Construction and Certification." All sign-off blocks shall be complete.</p>	<p>Examine documentation for compliance to paragraphs 4.2.20.2 B & C (Attachment A, pp. 3-4 of 4).</p> <p>Reviewed the following drawing and calculation packages</p> <p>(1) FSK-H-1077A-025C Q1B2IG155 R01 REDT 80/0227</p> <p>(2) FSK-H-1077A-022C (REDT 80/0237) Q1B2IG152 R01 Q1B2IG152 C01 Q1B2IG152 R02 Q1B2IG152 H01 Q1B2IG152 R03</p> <p>(3) FSK-H-1082-024C (REDT 81/0018) Q1C4IG124 R01 Q1C4IG124 R03 Q1C4IG124 R02 Q1C4IG124 R04</p> <p>(4) FSK-H-1082-018C (REDT 80/0210) Q1C4IG118 C01 Q1C4IG118 R01 Q1C4IG118 C02 Q1C4IG118 R02</p> <p>(5) FSK-H-1082-017C (REDT 81/0018) Q1C4IG117 H01 Q1C4IG117 R03 Q1C4IG117 R01 Q1C4IG117 C02 Q1C4IG117 R02 Q1C4IG117 C02</p> <p>(6) FSK-H-1077B-034C Q1B2IG164 C01 Q1B2IG164 R01 Q1B2IG164 C02 Q1B2IG164 R02</p> <p>(7) FSK-H-1082-020C Q1C4IG120 C01 Q1C4IG120 C04 Q1C4IG120 C02 Q1C4IG120 C05 Q1C4IG120 C03 Q1C4IG120 R01</p>	<p>All packages reviewed were in compliance with procedural requirements - no noncompliances were noted</p>	C

*Classification Code:

C=Conformance

N=Nonconformance

NC=Nonconformance Corrected during audit

ND=Nonconformance Documented by audited organization

A=Not Audited

V=Verified Corrective Actions

(More than one classification can be used)

PERSONS CONTACTED:

KANTI J. PATEL

Larry Jha

COMPLETED BY:

W.C. E.H.

DATE:

7/13/81

CHECKLIST NUMBER:

BGA 81/15-09

(By Audit No. 5)



PEPM CHANGE NOTICE

PROJECT NO. 9645

1. PAGE 1 OF 4

2. CHANGE NOTICE
NO 124

ATTACHMENT
YES ☐ NO ☒

3. DATE MO DAY YR
5 21 80

4. PROCEDURE NO.

4.2.20

5. TITLE

Pipe Support Design by the Resident
Engineer-Hanger Group

6. EXISTING CONDITION -

None

7. CHANGE TO READ

Add Procedure 4.2.20 (delineated on pages 2, 3 and 4) immediately following
Procedure 4.2.19 (Page 4.2-63 of the PEPM).

Checklist Number BGA 8/1/5.
Att. A

Page 1 of 4

8.

PREPARED BY Pence C. Stanchfield DATE 5/21/80
R.L. Scott

William M. [Signature] DATE 5/21/80
FOR CONCURRENCE



PEPM CHANGE NOTICE SUPPLEMENTAL SHEET

PROJECT NO. 9645

CHANGE NOTICE
NO 124

PAGE 2

4.2.20 PIPE SUPPORT DESIGN BY THE RESIDENT ENGINEER-HANGER GROUP

4.2.20.1 PURPOSE

To facilitate construction, pipe supports for 1 1/2" and 2" ASME, Section III, Class 1 piping shall be designed and drafted by the Resident Engineer-Hanger Group. The design drawing shall be issued to Field Construction for fabrication and installation prior to certification. A note conspicuously placed on each drawing shall specify that this drawing does not permit final acceptance of installation. Final acceptance shall be contingent upon receipt by Field Engineering of a Registered Professional Engineer stamped copy of the support drawing signifying approval and certification from Project Engineering.

4.2.20.2 PROCEDURE

A. RESIDENT ENGINEER

1. Perform calculations in accordance with section 4.4 of the PEPM.
2. Prepare a design drawing in accordance with section 4.3 of the PEPM. The drawing will be signed (initialed) by the designer (By), checker (CHK), Resident-hanger group leader (Design Supvr.) and the Lead Resident Engineer (Proj. Engr.). (Engr.) and (APPR) blocks will be marked N/R until issued by Project Engineering for construction and certification.
3. Place a note on the drawing to read as follows:
-- "This drawing shall not be used for final acceptance of installation. Final acceptance shall be based upon certified issue from Project Engineering at Gaithersburg."
4. Issue the drawing (Rev. 0-Issued for fabrication and Installation) to Field Construction and include the support location (FSK-H) drawing furnished by Field Engineering.
5. Establish a log to document and control the issue of drawings and calculations.
6. Transmit (REDT Resident Engineer Drawing Transmittal) a copy of the drawing to the Project Engineer for microfilming and subsequent processing.
7. Under separate transmittal, send a copy (original after final installation) of the drawing and calculations to the Group Supervisor. Include a copy of the FSK-H.

Checklist Number BGA 8/1/15-09 75



PEPM CHANGE NOTICE SUPPLEMENTAL SHEET

PROJECT NO. 9645

CHANGE NOTICE
NO 124

PAGE 3

8. Modifications to the support requiring a revision to the drawing and/or calculations shall be processed as in item 6 and 7 above.
9. After installation, transmit the original dwg. (showing as-built condition) and original calcs. as per item 6 and 7 above.

B. PROJECT ADMINISTRATION

1. Receive drawing(s), verify contents.
2. Date stamp transmittal letter.
3. Log drawing(s) into the Automated Document Control Register (ADCR).
4. Prepare coding sheet, have drawing microfilmed and order the necessary copies.
5. File copies of the transmittal letter in each file number assigned and also in the REDT sequential file. (Notify the Resident Engineer of any missing serial numbers.)
6. Prepare a transmittal letter to Field Construction with distribution as indicated on Figure 4-2ai. This transmittal letter shall include the following note: "This drawing(s) was previously transmitted to Field Construction by REDT (year/number)."
7. Assemble the package and make distribution.

C. PROJECT ENGINEERING-HANGER GROUP

1. Receive drawing and calculation package. Verify contents.
2. Approve calculations, and process in accordance with section 4.4.6 and 4.4.7 of the PEPM.
3. Submit a legible copy(s) of the calculations to Project Administration for microfilming.
4. File calculations in accordance to section 4.4.8 of the PEPM.
5. Establish a drawing print file for revision control.

Checklist Number BGA 8/15-09
Att. A

Page 3 of 4



PEPM CHANGE NOTICE SUPPLEMENTAL SHEET

PROJECT NO. 9645

CHANGE NOTICE
NO 124

PAGE 4

6. Revisions to the support drawing and calculations, if necessary, submitted by the Resident Engineer shall be processed in the same manner described above.
7. Receive original drawing showing actual configuration (as-built condition) of pipe support.
8. Prepare a new drawing duplicating the design detail as shown on the original (latest revision) drawing.
9. Apply Registered Professional Engineer stamp to the drawing. Complete review and approval process in accordance with section 4.3.1.2 of the PEPM.
10. Issue the drawing to Field Construction.

Note: The revision history of the field prepared drawing shall be replicated on the new drawing. The next sequential revision number shall be used, and the revision block read as follows: "Redrawn, Issued for Construction and Certification." All sign-off blocks shall be complete.

Checklist Number *BGA 8/15-09*

Att. *A*

Page *11* of *11*

MAP REF.	COMMITMENT	METHOD OF VERIFICATION	FINDINGS/ COMMENTS	*CLASS TIC
C9159	<p>GRAND GULF NUCLEAR STATION NUCLEAR QUALITY ASSURANCE MANUAL</p> <p>POLICY NO. <u>QQA-4.1</u> REV. <u>2</u> DATE <u>May 1979</u></p> <p>3.0 <u>POLICY</u></p> <p>3.1 Procurement documents shall require suppliers or subcontractors to provide a quality assurance program commensurate with the complexity of the activities that they perform.</p> <p>3.2 Suppliers of off-the-shelf items do not need a formal quality assurance program unless required by the applicable code. However, there must be evidence of a history of satisfactory performance of the item or allied product of the selected supplier.</p> <p>3.3 The following sequence of steps shall be followed in the preparation of procurement documents:</p> <p>3.3.1 The quality and technical portions of procurement documents shall be originated by engineering.</p> <p>3.3.2 Quality requirements shall be reviewed by the appropriate quality organization prior to issuance.</p> <p>3.3.3 Engineering shall forward the quality and technical requirements to Procurement.</p> <p>3.3.4 Procurement shall prepare the appropriate purchase order documents prior to issue to suppliers/subcontractors.</p> <p>4.0 <u>REFERRALS</u></p> <p>4.1 The design documents used in procurement shall be generated in accordance with the design control requirements of Policy QQA-3.1. Evaluation and selection of suppliers and subcontractors is in accordance with Policy QQA-7.1.</p> <p>5.0 <u>PROCEDURAL REQUIREMENTS</u></p> <p>5.1 Project Engineering procedures shall provide for the following:</p> <p>5.1.1 Preparation, review, and approval of technical and quality requirements of procurement documents, including the revision status of drawings, specifications, codes and industrial standards. This includes a review to assure that the procurement documents are prepared in accordance with applicable procedure requirements.</p> <p>5.1.2 Inclusion or reference of applicable regulatory requirements, design bases, and quality requirements in the technical and quality portions of the procurement documents.</p>	<p>Reference Paragraph 3.3</p> <p>Reference Paragraph 5.1</p> <p>Verify that documents, specifications, calculations and other design documents are prepared and revised by including identification and coordination provisions for interface requirements.</p> <p>To include WE #381</p> <p>Reviewed the following sections of the PEPM for inclusion and adequacy of address of design interface requirements: 3.2, 4.1, 4.2, 4.3, 4.4, 4.5, 4.7, 4.8, 4.9 & 4.10</p> <p>Specific details of implementation are given in checklists 7, 17, 18, 20, 21, 27 & 38</p>	<p>Satisfactory - no adverse conditions noted.</p>	C

*Classification Code:

C=Conformance

N=Nonconformance

NC=Nonconformance Corrected during audit

ND=Nonconformance Documented by audited organization

A=Not Audited

V=Verified Corrective Actions

(More than one classification can be used)

PERSONS CONTACTED:

COMPLETED BY:

William C. Ely

DATE: 7/13/81

CHECKLIST NUMBER:

BGA-81/15-12 (1 of 4)

(By Audit No.)

MAP REF.	COMMITMENT	METHOD OF VERIFICATION	FINDINGS/ COMMENTS	*CLASSI- FICATION CODE
C9358	<p>GRAND GULF NUCLEAR STATION NUCLEAR QUALITY ASSURANCE MANUAL</p> <p>POLICY NO. <u>QAG-4.1 REV. 2</u> DATE <u>May 1979</u></p> <p>5.1.3 Control of purchase memorandums and material requisitions.</p> <p>5.1.4 The specification, review, and approval of requirements for supplier or subcontractor quality assurance programs.</p> <p>5.1.5 Identification of procured items and services that require procurement supplier quality surveillance or audit and identification of requirements for surveillance inspection, including special inspection requirements.</p> <p>5.1.6 Documentation to show evidence of review (including Project Quality Engineering review of quality program requirements) and approval of purchase memorandums and material requisitions prior to issuance.</p> <p>5.1.7 Measures to ensure that procurement documents include the specific requirements delineated in the policies of this manual, in addition to the following general requirements, as appropriate to the material, equipment, or service provided:</p> <p>5.1.7.1. Identification of documents required for engineering review and/or quality verification, including appropriate requirements regarding special process work conducted by suppliers or subcontractors and special handling, storage, and shipping requirements.</p> <p>5.1.7.2. Provisions for directing the supplier to provide access by Bechtel and Client personnel to conduct inspections and audits.</p> <p>5.1.7.3. Identification of witness and hold points required by Project engineering, if any.</p> <p>5.1.7.4. Provisions for the suppliers or subcontractors to formally certify to the correctness and completeness of their work.</p> <p>5.1.7.5. Provisions for supplier or subcontractor submittal of his quality assurance program, including changes, for review and approval prior to implementation of activities.</p>	<p>Reference Paragraph 5.1</p> <p>Verify that documents, specifications, calculations and other design documents are prepared and revised by including identification and coordination provisions for interface requirements. (To include W2 7/13/81)</p> <p>Reviewed the following sections of the PEPM for inclusion of and adequacy of address of design interface requirements; 3.2, 4.1, 4.2, 4.3, 4.4, 4.5, 4.8, 4.7, 4.9 & 4.10</p> <p>Specific details of implementation are covered by checklist #s 7, 17, 18, 20, 21, 27, & 38</p>	<p>Satisfactory - no adverse conditions noted</p>	C

*Classification Code:

C=Conformance

N=Nonconformance

NC=Nonconformance Corrected during audit

ND=Nonconformance Documented by audited organization

A=Not Audited

V=Verified Corrective Actions

(More than one classification can be used)

PERSONS CONTACTED:

COMPLETED BY: William C. Ehl

DATE: 7/13/81

CHECKLIST NUMBER: BGA-81/15-12 (2 of 4)

(By Audit No.)

MAP REF.	COMMITMENT	METHOD OF VERIFICATION	FINDINGS/ COMMENTS	*CLASSIFICATION CODE
C839	<p>GRAND GULF NUCLEAR STATION NUCLEAR QUALITY ASSURANCE MANUAL</p> <p>POLICY NO. <u>QQA-4.1 REV. 2</u> DATE <u>May 1979</u></p> <p>5.1.7.6. Provisions to allow Bechtel to require revisions to Bechtel approved supplier or subcontractor quality assurance programs at any time over the life of the contract.</p> <p>5.1.7.7. Provisions for the supplier or subcontractor to establish and maintain records, including personnel qualification records, not required to be submitted to Bechtel pending final disposition of such records by Bechtel.</p> <p>5.1.7.8. Provisions for the supplier or subcontractor to comply with the personnel qualification requirements of the procurement documents, including applicable Code and Standard requirements for special process work.</p> <p>5.1.7.9. Provisions for the supplier or subcontractor to obtain project engineering approval of "repair" and "use as is" nonconformances and deviations to procurement document requirements and include these in the documentation package.</p> <p>5.1.7.10. Provisions for the supplier or subcontractor to formally notify engineering and procurement that items previously received and accepted by Bechtel require supplier initiated modification and/or rework to improve or correct the integrity, functions, etc., of the item.</p> <p>5.1.7.11. Provisions for complete turnover of required supplier or subcontractor records to Bechtel prior to closeout of the contract.</p> <p>5.2 Procurement procedures shall provide for the following:</p> <p>5.2.1 Preparation, review, and control of purchase orders and subcontracts.</p> <p>5.2.2 Documentation to show the originator's review and approval of Procure" at initiated departures from or" nator's specified requirements.</p> <p>5.2.3 Control of procurement documents and changes to assure the use of current documents.</p>	<p>Reference Paragraph 5.1</p> <p>Reference Paragraph 5.2</p> <p>Verify that documents, specifications, calculations and other design documents are prepared and revised by including identification and coordination provisions for interface requirements.</p> <p><i>to include WE 7/13/81</i></p> <p><i>Reviewed the following sections of the PEPM for inclusion and adequacy of address of design interface requirements; 3.2, 4.1, 4.2, 4.3, 4.4, 4.5, 4.7, 4.8, 4.9 & 4.10</i></p> <p><i>Specific details of implementation are given in checklists 7, 17, 18, 20, 21, 27 & 38</i></p>	<p><i>C - No adverse WE 7/13 conditions noted - Satisfactory</i></p>	C

*Classification Code:

C=Conformance

N=Nonconformance

NC=Nonconformance Corrected during audit

ND=Nonconformance Documented by audited organization

A=Not Audited

V=Verified Corrective Actions

(More than one classification can be used)

PERSONS CONTACTED:

COMPLETED BY: W.C. E

DATE: 7/13/81

CHECKLIST NUMBER:

BGA-81/15-12 (3 of 4)

(By Audit No.)

MAP REF.	COMMITMENT	METHOD OF VERIFICATION	FINDINGS/ COMMENTS	*CLASSIFICATION CODE
C9359	<p>GRAND GULF NUCLEAR STATION NUCLEAR QUALITY ASSURANCE MANUAL</p> <p>POLICY NO. <u>GGG-4.1</u> REV. <u>2</u> DATE <u>May 1979</u></p> <p>5.2.4 Control of procurement document processing, including documentary evidence of review and approval.</p>	<p>Verify that documents, specifications, calculations and other design documents are prepared and revised by inclusion identification and coordination provisions for interface requirements.</p> <p>To include WE 7/13/81</p> <p>Reviewed the following sections of the PEPM for inclusion and adequacy to address design interface requirements: 3.2, 4.1, 4.2, 4.3, 4.4, 4.5, 4.7, 4.8, 4.9 & 4.10</p> <p>Specific details of implementation are covered by checklists 7, 17, 18, 20, 21, 27 & 38</p>	<p>Satisfactory. No adverse conditions noted</p>	c

*Classification Code:

C=Conformance

N=Nonconformance

NC=Nonconformance Corrected during audit

ND=Nonconformance Documented by audited organization

A=Not Audited

V=Verified Corrective Actions

(More than one classification can be used)

PERSONS CONTACTED:

COMPLETED BY: W.C. Eff

DATE: 7/13/81

CHECKLIST NUMBER: BGA-B1/15-12 (4 of 4)

(By Audit No.)

AUDIT CHECKLIST

MAP REF.	COMMITMENT	METHOD OF VERIFICATION	FINDINGS/ COMMENTS	*CLASSIFICATION CODE
09359	<p>GRAND GULF NUCLEAR STATION NUCLEAR QUALITY ASSURANCE MANUAL</p> <p>POLICY NO QGG-3.2 REV. 2 DATE MAY 1979 PAGE 1 OF 2</p> <p>3.0 POLICY</p> <p>3.1 Internal design interfaces involve discipline groups on the project and specialist groups off the project. External design interfaces involve the Client, NSSS Supplier and other suppliers, and subcontractors.</p> <p>4.0 REFERRALS</p> <p>4.1 Supplier/subcontractor design interface document submittal requirements are specified in the procurement documents in accordance with Policy QGG-4.1.</p> <p>5.0 PROCEDURAL REQUIREMENTS</p> <p>5.1 Project Engineering procedures shall provide for the following:</p> <p>5.1.1 Identification of the requirements and responsibilities of the various design groups associated with the preparation, review, approval, control, and distribution of design documents to interfacing design organizations.</p> <p>5.1.2 Coordination of internal and external design groups which provide design criteria, designs, or technical input to the project.</p> <p>5.1.3 A description of the division of responsibilities and interfaces between Bechtel, Client, NSSS Supplier and other suppliers and subcontractors providing design criteria and performing design work.</p> <p>5.1.4 Incorporation, as appropriate, of design information transmitted between interfacing organizations in design documents.</p> <p>5.1.5 Identification to Field Engineering those documents requiring Project Engineering review and/or approval.</p>	<p>4.0 Requirements of Policy QGG-4.1 are contained at Checklist No. <u>BGA-81/15-12</u></p> <p>Reference Paragraph 5.1</p> <p>Verify that documents, specifications, calculations and other design documents are prepared and revised by included identification and coordination provisions for interface requirements. to include we 7/13/81</p> <p>Reviewed the following sections of the PERM for inclusion and adequacy of address of design interface requirements:</p> <p>3.2, 4.1, 4.2, 4.3, 4.4, 4.5, 4.7, 4.8, 4.9, 4.10</p> <p>specific details & implementation are included in checklists 7, 17, 18, 20, 21, 27 & 38</p>	<p>Satisfactory - no adverse or nonconforming conditions were noted</p>	C

*Classification Code:

C=Conformance
N=Nonconformance

NC=Nonconformance Corrected during audit

ND=Nonconformance Documented by audited organization

A=Not Audited

V=Verified Corrective Actions

(More than one classification can be used)

PERSONS CONTACTED:

E. Fritz

COMPLETED BY:

William C. Ciff

DATE: 7/14/81

CHECKLIST NUMBER:

BGA-81/15-14
(By Audit No.)

MAP REF.	COMMITMENT	METHOD OF VERIFICATION	FINDINGS/ COMMENT	*CLASSIFICATION																		
C0350	<p>PROJECT ENGINEERING PROCEDURES MANUAL</p> <p>SECTION 2.0, Page 2.1-2, Rev 7, 9-8-80</p> <p>Para 2.1 States in part,</p> <p>"RESPONSIBILITIES AND INTERFACE OF RESIDENT ENGINEER</p> <p>The Project Engineer has delegated authority to the Resident Engineer to act as his representative at the jobsite for technical interface activities where approval of the Project Engineer is required. In exercising this authority he will be guided by the following:</p> <p>"B. Design changes requiring calculations to be checked must be referred to the cognizant Group Supervisor for disposition and approval.</p> <p>"C. A record copy of each approved design change must be forwarded to project engineering for incorporation into the appropriate design drawing and for distribution and filing."</p> <p>"F. The resident Engineer(R.E.) has the authority to approve Field Design Changes(FDC) prepared by field engineering in accordance with the "Field Design Change (Redline) Procedure for Pipe Hangers, Supports, Guides and Anchors". The R.E.'s approval shall be documented by his signing and dating the marked-up* design document. This approval is contingent upon submission of a Field Change Request(FCR) to Project Engineering for approval."</p> <p>"G. A Resident Engineering Light Structures Group (RELSC) has been assigned to the jobsite to provide direct engineering support for the installation of pipe anchors and safety related supports for HVAC ducts, cable trays, conduit, instruments and instrument tubing. This group is authorized to perform calculations, revise existing drawings, initiate and issue drawings as applicable to these installations only. The performance of these functions shall be in compliance with applicable project engineering design criteria and procedures."</p> <p><i>Item H was deleted by CN 136 dtd 9/17/80 w/E 7/13/81</i></p>	<p>Reference B. Verify that design changes requiring calculations to be checked are referred to the cognizant Group Supervisor for disposition and approval.</p> <p>Reference C. Verify that a record copy of each approved design change is forwarded to project engineering for incorporation into the appropriate design drawing and for distribution and filing.</p> <p>Verify that procedures exist for accomplishment of C above. Verify the method for documenting the incorporation of the design change into the "appropriate design drawing".</p> <p>Reference F. Verify that the Resident Engineer(R.E.) has approved Field Design Changes and documented approvals by signing and dating the marked-up design document.</p> <p>Verify that a Field Change Request(FCR) has been submitted to Project Engineering accompanying Field Design Changes.</p> <p><i>PEPM 4.2.14 Change Request/notice</i></p> <p><i>Reviewed the following documents involving interface with RE</i></p> <table border="0"> <tr> <td>FCR/FCN</td> <td>DCN's</td> </tr> <tr> <td>E1543</td> <td>J0136V DCN#1</td> </tr> <tr> <td>E1540</td> <td>DCN#2</td> </tr> <tr> <td>E1538</td> <td>DCN#3</td> </tr> <tr> <td>E1537</td> <td>E1130 DCN#1</td> </tr> <tr> <td>J482</td> <td></td> </tr> <tr> <td>J473</td> <td></td> </tr> <tr> <td>J454</td> <td></td> </tr> <tr> <td>J437</td> <td></td> </tr> </table>	FCR/FCN	DCN's	E1543	J0136V DCN#1	E1540	DCN#2	E1538	DCN#3	E1537	E1130 DCN#1	J482		J473		J454		J437		<p><i>For design changes involving design calculations, calcs are normally performed & checked by GPD.</i></p> <p><i>all documents reviewed were in conformance</i></p> <p><i>satisfactory - procedure adequately addresses incorporation of field design changes</i></p> <p><i>Activities located at EGNS site</i></p> <p><i>N/A - requirement deleted by CN #136 dtd 9/17/80</i></p> <p><i>Piping & hanger design interface covered on checklist BGA-81/15-09</i></p>	<p>C</p> <p>C</p> <p>C</p> <p>C</p> <p>A</p> <p>N/A</p>
FCR/FCN	DCN's																					
E1543	J0136V DCN#1																					
E1540	DCN#2																					
E1538	DCN#3																					
E1537	E1130 DCN#1																					
J482																						
J473																						
J454																						
J437																						

*Classification Code:

C=Conformance

N=Nonconformance

NC=Nonconformance Corrected during audit

ND=Nonconformance Documented by audited organization

A=Not Audited

V=Verified Corrective Actions

(More than one classification can be used)

PERSONS CONTACTED:

W.M. (Bill) Turner

G.E. Van Fossen

J. Arbizu

C. Wierke, I.M. Poss

COMPLETED BY:

William C. Eiffl

DATE: 7/15/81

CHECKLIST NUMBER:

BGA-81/15-15 (1 of 2)
(By Audit No.)

MAP REF.	COMMITMENT	METHOD OF VERIFICATION	FINDINGS/ COMMENTS	*CLASSIFICATION CODE
C0350	<p>PROJECT ENGINEERING PROCEDURES MANUAL</p> <p>SECTION 2.0, Page 2.1-2, Rev 7, 9-8-80</p> <p>Para 2.1 States in part,</p> <p>"RESPONSIBILITIES AND INTERFACE OF RESIDENT ENGINEER</p> <p>H</p> <p>on behalf of the Project Engineer, after consultation and verbal approval by the responsible Project Engineering Group Supervisor or his designee. Verbal concurrence must also be obtained from NPOT on all POGG documents (panel layouts, etc.) and finally reviewed and approved by them. These verbal consultations shall be documented in a Telephone Memorandum by the Resident Engineer (Figure 4-2E)."</p> <p>Add AI state RPOCE is assigned to jobsite WE 7/13/81</p> <p>Subparagraph 4.2.19.3 PROCEDURE PAGE 4.2-59, Project Engineering Procedures Manual states in part:</p> <p>"The Project Engineering Procedures modifications for the RELSG are as follows: A. Change Request/Notice (CR/N) 1. Change Request/Notice (Field Change Requests for Field Change Notices) submitted to the RELSG Supervisor by Field Engineering will be processed in accordance with 4.2.14.4, sections B, C, and D.1. All CR/Ns shall subsequently be presented to the Lead Resident Engineer for final project engineering approval."</p> <p>Subparagraph 4.2.19.3 B.1. states in part: "The RELSG supervisor will submit all NCRs dispositioned by him to the Lead Resident Engineer for final project engineering approval."</p> <p>Resident Engineering Light Structures Group (RELSG)</p>	<p>Verify that verbal consultations with NPOT concerning POGG documents are documented in a Telephone Memorandum by the Resident Engineer.</p> <p>requirement deleted by CN 136 dtd 9/17/80 WE 7/13/81</p>	<p>Requirement deleted by CN 136 dtd 9/17/80</p> <p>Activities located at GGNS site</p> <p>Activities located at GGNS site</p>	<p>N/A</p> <p>A</p> <p>A</p>

*Classification Code:

C=Conformance
 N=Nonconformance
 NC=Nonconformance Corrected during audit
 ND=Nonconformance Documented by audited organization
 A=Not Audited
 V=Verified Corrective Actions
 (More than one classification can be used)

PERSONS CONTACTED:

W.M. Turner I.M. Poss
 J. Arbaiza
 C. Wienke
 G.E. Van Fossen

COMPLETED BY:

William C. Eiji

DATE: 7/15/81

CHECKLIST NUMBER:

BGA-81/15-15 (2 of 2)
 (By Audit No.)

MAP REF.	COMMITMENT	METHOD OF VERIFICATION	FINDINGS/ COMMENTS	*CLASSIFICATION
C03.50	PROJECT ENGINEERING PROCEDURES MANUAL (PEPM) SECTION 3.2 Pages 3.2-1 through 3.2-4 (SEE ATTACHMENTS A and B to THIS CHECKLIST) 3.2.4.1.C. DESIGN RESPONSIBILITIES 3.2.4.4 SIGNATURE VERIFICATION AND TRACEABILITY	Verify that interface responsibilities are well understood through existing organizational agreements and established practice by examination of such "existing agreements" and by discussions with personnel. 1. Verify that design verification is documented by signature/ initials of the reviewer on the respective design document. 2. Verify that the Supervisor of Engineering Administration and Operations maintains signature and initial specimens of Engineering Department personnel IAW Engineering Department Procedure 7.5.	VERIFIED BY DISCUSSION OF INTER DISCIPLINE DRAWING COORDINATION (PEPM 4.3) DISCUSSED WITH FOLLOWING PERSONNEL: F HUNT J SOUDER C1234E REV 1 C1234F REV 0 M1002 REV 12 M1013 REV 13 M2012 REV 15 VIEWED MICROFILMED SIGNATURE & INITIAL CARDS FOR FOLLOWING PERSONNEL: E SHEROW C SHAFFER F LOLLI G HILLER J VOGEL F HUNT	C C C

*Classification Code:

C=Conformance
N=Nonconformance
NC=Nonconformance Corrected during audit
ND=Nonconformance Documented by audited organization
A=Not Audited
V=Verified Corrective Actions
(More than one classification can be used)

PERSONS CONTACTED:

ET ELSTNER

E SCHWEITZER

J SOUDER

F HUNT

COMPLETED BY:

J. Dorman

DATE: 7.10.81

CHECKLIST NUMBER:

BGA-81/15-18

(By Audit No.)

3.2 DESIGN INTERFACE CONTROL

3.2.1 PURPOSE

The purpose of this procedure is to define methods for identifying, controlling, and coordinating the responsibilities and functions related to Bechtel design interfaces.

3.2.2 SCOPE

This procedure applies to the external interfaces between the Project Engineering Team and non-Bechtel organizations, such as MP&L, T/G Manufacturer, NSSS supplier, Consultants, etc. Also, it applies to internal interfaces between the Project Engineering Team and other Bechtel entities, such as Service Groups, Construction, and other Divisions. In addition, it applies to the identification of the flow of information between disciplines and personnel within Project Engineering.

The nature of the interfaces within the scope of this procedure include design responsibilities, information flow, and appropriate documentation.

CN
164

3.2.3 EXTERNAL INTERFACES

3.2.3.1 IDENTIFICATION

The external interfaces between the Project Engineering Team and non-Bechtel Entities are identified and set forth in the Project Procedures Manual, Section 1.0, and the Project Engineering Procedures Manual, Sections 2 and 4. The Project Engineering Team typically interfaces with the following non-Bechtel entities:

MP&L

NSSS supplier

Consultants

Turbine Generator Supplier

Other suppliers, including all subcontractors

3.2.3.2 RESPONSIBILITIES

A. The Project Manager, assisted by the Project Engineer, assures that the design responsibilities of the non-Bechtel entities are identified in the Project Procedures Manual, Section 1.0.

B. The design responsibilities include the following:

Identification of Criteria

Input or support

Detail design or other input

Review or comment

Approval or acceptance

Technical direction

C. The definition of responsibilities of the organizational entities of the Bechtel Project Team are contained in the Project Procedures Manual, Section 2.0, Project Functions; and, the responsible organization manuals applicable to the project.

D. Essentials of the definition of responsibility related to suppliers/sub-contractors and consultants are incorporated in specifications or other contractual documents. Sufficient distribution, of these documents, PEPM Section 4.2, is to be made to permit mutual understanding and acceptance of necessary responsibilities.

3.2.3.3 AUTHORIZATIONS

Personnel authorized to act on behalf of their organizations are identified in the various project procedure manuals, contract documents, by letter, or by other appropriate documents. These authorizations cover the key functions of providing approvals, transmittal of design information (e.g., criteria, drawings, and specifications), design comments and technical direction.

3.2.3.4 COMMUNICATIONS, DOCUMENTATION, AND CHANGE CONTROL

Control of the flow of information and direction across the external inter-

faces shall be in accordance with the appropriate Project Engineering Pro-

3.2-2
Rev. 0

cedures applicable to the specific means of communication employed (i.e., correspondence, drawings, or specifications). These procedures contain provisions with regard to communications, documentation and change control. Where additional requirements are appropriate, these shall be added to current project procedures.

CN
164

3.2.3.5 DIVISION OF RESPONSIBILITIES

Figure 3-2d provides a listing of referral documents that define the areas of responsibility of design between Bechtel, Contractors (GE, Allis-Chalmers, etc.) and other vendors/subcontractors.

3.2.4 INTERNAL INTERFACES

3.2.4.1. DESIGN RESPONSIBILITIES

- A. The internal interfaces between the Project Engineering Team and other Bechtel entities are identified and set forth in other procedures in this manual.
- B. The Project Engineering Team interfaces with the following Bechtel entities:
 - Home Office Construction Department - in an advisory capacity to assist Engineering in construction matters.
 - Specialist Groups - e.g., the Chief Engineers and their staffs.
 - Other Divisions and Bechtel Companies - e.g., Geo-Tech, and Materials and Quality Services (M&QS).
- C. The interface responsibilities are well understood through existing organizational agreements and established practice. Project Engineering Procedures shall apply to on-project, and off-project work. Where they do not apply, substitute procedures shall be subject to the approval of the Project Manager.

3.2.4.2 PROCUREMENT RESPONSIBILITIES

Procurement functions for the project and the responsibility for the execu-

tion of each of the procurement functions are delineated in the PPM, Section 2.2

GPD Procurement Manual and the Procurement Inspection Department Manual.

The project engineering responsibilities related to procurement and procurement inspection activities are delineated in the Project Engineering Procedures Manual relating to specific design documents and activities.

3.2.4.3 COMMUNICATIONS, DOCUMENTATION, AND CHANGE CONTROL

Control of project engineering information and direction across the internal project interfaces shall be in accordance with the appropriate Project Engineering Procedure, Section 4.2, applicable to the specific means of communication employed (i.e., correspondence, drawings, or specifications). Each of these procedures contains provisions with regard to communications, documentation and change control.

3.2.4.4 SIGNATURE VERIFICATION AND TRACEABILITY

Design verification shall be clearly traceable to the reviewer. Evidence of required Bechtel review and approval shall be documented by signature/initials on the respective design document. The Supervisor of Engineering Administration and Operations maintains signature and initial specimens of Engineering Department personnel in accordance with Engineering Department Procedure 7.5.

3.2.5 INTRA-PROJECT FUNCTIONS

Assignment of responsibilities to technical disciplines and personnel within the Project Engineering Team, and for control of the flow of information between them, shall be in accordance with the procedures in this manual related to specific documents or other means of communication.

MAP REF.	COMMITMENT	METHOD OF VERIFICATION	FINDINGS/ COMMENTS	*CLASSIFICATION
C03.50	PROJECT ENGINEERING PROCEDURES MANUAL (PEPM) SECTION 3.4 <u>PROJECT DESIGN CRITERIA MANUAL</u> Paragraph 3.4.1 PREPARATION	1. Verify that the Design Criteria Manual identifies and lists, by applicable dates, revision and/or addenda, the codes, Standards, Regulations and other information to be used to establish design bases. 2. Verify that exceptions to any requirement are also identified and listed.	REVIEWED PDCM REV 11 TO VERIFY CONFORMANCE TO THESE REQUIREMENTS.	C
	Subparagraph 3.4.2.1.d	Verify that all documents referenced or noted as being part of the design criteria, are readily available to the users.	SELECTED FOLLOWING DOCUMENTS SOUTHERN STANDARD RUMBLING CODE TEHA C - 6TH EDITION 1978 ANSI B31.1, 73 WINTER 76 IEEE STD 387	C
	Subparagraph 3.4.2.3e	Verify that the Project Administrator has initiated action to obtain signed receipts for each issue of the Design Criteria Manual.	EXAMINED FILE OF ISSUE RECEIPTS FOR PDCM REV 11. ACTION INCLUDES SECOND REQUEST APX 30 DAYS AFTER ISSUE.	C

*Classification Code:

C=Conformance

N=Nonconformance

NC=Nonconformance Corrected during audit

ND=Nonconformance Documented by audited organization

A=Not Audited

V=Verified corrective Actions

(More than one classification can be used)

PERSONS CONTACTED:

T. ELSTNER

E. SCHWEITZER

COMPLETED BY:

J. R. RUMMAN

DATE: 7.15.81

CHECKLIST NUMBER:

BGA-81/15-19

(By Audit No.)

3.4 PROJECT DESIGN CRITERIA MANUAL

The Grand Gulf Nuclear Station (GGNS) Design Criteria Manual provides Project Engineering the design bases for the Grand Gulf Nuclear Station. This procedure defines the requirements for the preparation, review, approval, processing and control of the manual.

3.4.1. Preparation

The Design Criteria Manual shall be prepared, issued and controlled by the Project Engineer. The manual shall identify and list, by applicable dates, revision and/or addenda, the Codes, Standards, Regulations and other information to be used to establish the design bases. Exceptions to any requirement also shall be identified and listed.

3.4.2 Review and Approval

The Design Criteria Manual shall be reviewed and approved by the cognizant discipline chief engineer and the chief nuclear engineer (as required by the Design Control Check List) and the Project Engineer.

3.4.2.1 The Group Supervisor Shall Be Responsible For:

- a. Coordinating the design criteria prepared by his discipline with other disciplines for compatibility with their established criteria. (Process per PEPM paragraph 4.3.1.2.2)
- b. Ensuring and documenting by the DRN process (PEPM para. 6.3) that the design criteria prepared by his discipline are consistent with the Safety Analysis Report commitments and applicable codes, standards, regulations, etc.
- c. Periodically reviewing, once annually as a minimum, his discipline's portion of the manual for configuration status. Evidence of this review shall be documented by issuance of a manual revision, as necessary, or by memorandum to file (0462) stating that his discipline's portion remains current and requires no revision.

NOTE: The extent of revision shall be identified by a vertical line and revision number in the right margin. All previous revision indicators shall be retained.

- d. Ensuring that all documents referenced or noted as being part of the design criteria, are readily available to the users.
- e. Obtaining approval signatures of:
 1. The Chief Engineer(s) for those documents listed on the Design Control Check List (Use DRNs - PEPM section 6.3),
 2. The Project Engineer.

- f. Reconciling all comments received during the review and approval process.
- g. Subjecting all revisions of the manual to the same review and approval process as the original (Ref. PEPM paragraph 3.4.2).
- h. Maintaining the manual assigned to him or his respective group in a current status.

3.4.2.2 The Cognizant Assistant Project Engineer Shall be Responsible for:

- a. Ensuring that the manual is reviewed in accordance with PEPM paragraph 3.4.2.1c.

3.4.2.3 The Project Administrator shall be Responsible for:

- a. Maintaining a current distribution list to include appropriate control numbers for the Design Criteria manual.
- b. Distribution of the Manual and subsequent changes in accordance with the current distribution list.
- c. Initiating cover letters for the Project Engineer's signature, noting the purpose and effectivity of each issue and instructions for insertion into the manual.

NOTE: The cover/transmittal letter of the latest revision/change shall be retained in the manual.

- d. Maintaining two (2) record copies of each issue - to be retained in separate buildings (Ref. PEPM section 6.14).
- e. Initiating necessary action to obtain signed receipts for each issue.
- f. Maintaining records showing acknowledgement of receipt of each issue of the manual. Signed and returned receipts (Figure 3.4a) shall be retained until a signed receipt of a subsequent issue has been returned and appropriately filed.
- g. Conducting an annual configuration survey, utilizing the table of contents and issued by transmittal sheet to each holder of the manual. Manual holders shall survey the contents of the manual against this configuration and return the results to the Project Administrator. The results shall be retained until a subsequent survey.

If the manual is found to be out of configuration, the manual holder shall secure current material and replace the out-of-date material.

MAP REF.	COMMITMENT	METHOD OF VERIFICATION	FINDINGS/ COMMENTS	*CLASS TION
C03.50	<p>PROJECT ENGINEERING PROCEDURES MANUAL SECTION 4.3</p> <p>Subparagraph 4.3.1.2.2 PROCEDURES FOR COORDINATION OF DRAW- INGS/DOCUMENTS AMONG DISCIPLINES</p> <p>SEE ATTACHED PAGES 4.3-6, 4.3-7</p> <p>Subparagraph 4.3.1.2.3i BECHTEL REVIEW AND APPROVAL SEE ATTACHED PAGE 4.3-8</p>	<p>Verify that coordination of draw- ings/documents among disciplines is in compliance with procedures set forth in subparagraph 4.3.1.2.2.</p> <p>Verify the existence of objective evidence to show incorporation of changes, as applicable, in appro- priate documents (NQAM 5.1.3)</p> <p>Verify that safety-related drawings (Q) are submitted to the cognizant discipline and Nuclear Chief Engineer for review and approval as required by DCCL (Design Control Check List) prior to issuing drawings for construction.</p> <p>Verify existence of objective evidence to document accomplish- ment of the review and approval.</p>	<p>SEE ATTACHED SHEET</p>	<p>N</p> <p>C</p> <p>C</p>

*Classification Code:

C=Conformance

N=Nonconformance

NC=Nonconformance Corrected during audit

ND=Nonconformance Documented by audited organization

A=Not Audited

V=Verified Corrective Actions

(More than one classification can be used)

PERSONS CONTACTED:

R. W. HUNT

J. D. SOLDER

F. J. LOLL

R. C. GIBSON

COMPLETED BY:

J. BOWMAN

DATE: 7-13-81

CHECKLIST NUMBER:

BGA-81/15-20

(By Audit No.)

Drawing checkers shall avoid changing arrangements, methods of presentation, and details unless they conflict with drafting standards or design criteria. The checker shall indicate all corrections clearly and in sufficient detail for the draftsman to completely understand them. If the corrections or changes required are not apparent, the draftsman shall consult with the responsible checker. When interference exists, the checker shall notify the Discipline Group Supervisor or the Drafting Supervisor to coordinate with the other design groups to resolve the problem.

An appropriate check list, available in the design Guides or Standard Manuals for each discipline, may be used as a guide in the review process to facilitate a thorough and systematic check of the drawings. The checker shall make certain that all changes have been incorporated on the drawings before initialing.

The following procedures shall be followed by drawing checkers:

- a. The checker shall have access to all related calculations or other sources of information for verification of the adequacy and accuracy of the drawing.
- b. The drawing number shall be checked for precise conformance to the established project drawing number format, i.e., ensure that dashes are used where required and not spaces, etc.
- c. Correct work shall be yellowed out on the check print to verify that all items have been checked.

Changes and additions on the check print shall be clearly indicated on the check print by red pencil markings.

- d. Deletions shall be indicated on the check print by light green pencil markings.
- e. As the corrections are made on the original drawing, a blue check mark (✓) shall be placed alongside the red or green marking.

- f. Check prints and corrected drawings shall be given to the checker to determine that corrections have been properly made. Back-checker shall circle check mark ☒ if correction is properly made.

When details of a pending change have not been finalized, but the drawing is required for other reasons, a "HOLD" shall be placed on the portion of the drawing which is subject to change. Upon completion of the check, the checker should be satisfied that the quality of the drawing is consistent with the Bechtel design philosophy and drafting standards.

The checker, when satisfied that the drawings are correct, shall initial in the appropriate title block location. The original drawings are then to be given to the checker's immediate supervisor. After the drawings have been signed and released by the Project Engineer/Assistant Project Engineer, the check prints may then be destroyed.

~~4.3.1.2.2~~ PROCEDURES FOR COORDINATION OF DRAWINGS/DOCUMENTS AMONG DISCIPLINES

After sign-off by the checker, the discipline Group Supervisor routes coordination prints of the drawings, stamped with the coordinating print stamp (4.2.12.e or f) to other interfacing project disciplines for information and comment. The Responsible Engineer or Designer shall log in discipline Coordinating Record Log which will contain as a minimum: Document Number, description, routing (disciplines), date out and date in.

The Discipline Group Supervisor receiving the print for coordination, is responsible for evaluation and review of matters pertinent to the reviewing group's area of responsibility and will take the necessary action to revise his discipline drawings, if required. He will date and initial the coordinating stamp and return the coordinating prints to the originating Group Supervisor with detailed comments. The originating discipline Responsible Engineer coordinates the comments and has them incorporated on the drawing.

4.3-6
Rev. 7
7-9-79

2-17 -

Matters which cannot be agreed upon by the various project disciplines, will be resolved by the Project Engineer/Assistant Project Engineer and/or the discipline Chief Engineers.

After the drawings have been signed and released by the Project Engineer/Assistant Project Engineer, the coordinating prints may be destroyed.

4.3.1.2.3 BECHTEL REVIEW AND APPROVAL

Standard Bechtel practices provide for several levels of review and approval of design work. These include: (a) Checking and sign-off within the discipline design group by qualified personnel; (b) review and approval by the responsible Group Supervisor; and (c) review and approval by the Project Engineer/Assistant Project Engineer. The Project Engineer is responsible, but may delegate authority to a representative, (Asst. Project Engineer) for accomplishing:

- a. Assuring complete sign-offs.
- b. General quality of drawings.
- c. Compliance with contract requirements.
- d. Release of drawings.

The Discipline Group Supervisor is responsible, but may delegate authority to the Group Leader, for:

- a. Completion of design work on drawings.
- b. Engineering check for conformance of drawings to design calculations.
- c. Technical adequacy and feasibility of design, including access for inspection and maintenance.
- d. Conformance to project design criteria, including codes, standards, and SAR commitments.
- e. Coordination with other disciplines and departments, including their design interfaces.

- f. Conformance to technical standards and engineering design principles, including suitability of materials.
- g. Completion of review requirements.
- h. Conformance to Engineering Registration Laws.
- i. Obtaining Chief Engineer's approval when applicable.

Safety Related Drawings (Q) will be submitted to the cognizant Discipline and Nuclear Chief Engineer for review and approval as required by the Design Control Check Lists (DCCL), prior to issuing drawings for construction. (Final review in accordance with use/definition noted on DCCL.)

This review process is initiated by the preparation and submission of a "Design Review Notice." (See Section 6, Engineering Quality Control, for instructions.)

Drawings not requiring the Chief Engineer's approval shall have N/R entered in the applicable signature block(s) for initial issue and all subsequent revisions, effective 7/1/75, - retrofit not required - (NOTE: Block on extreme right for Chief Engineer's initials.)

Final review by the Chief Engineers includes evaluation of evidence of correct approach and method, general professional quality, completeness of work and required reviews, and incorporation of appropriate QA/QC requirements. However, the scope and depth of review is left to the discretion of the Chief Engineer(s) based upon their knowledge of the design criteria and approach, previous experience with the selected approach, extent and completeness of the design analysis and checks.

The Quality Assurance documentation of the review and approval of Safety Related Drawings commences with "Issue for Construction" and applies to all subsequent revisions affecting Design Criteria, SAR, or Codes & Standards.

GRAND GULF NUCLEAR STATION
NUCLEAR QUALITY ASSURANCE MANUAL



GAITHERSBURG
POWER DIVISION

CONTROL OF DESIGN CHANGES

POLICY

NO. QGG-3.5 REV. 4

DATE May 1979

PAGE 1 OF 3

TOTAL REVISION

1.0 PURPOSE

To identify the requirements and responsibilities associated with the control of design changes.

2.0 APPLICABILITY

This policy applies to the Bechtel activities associated with the control of design changes to Q-list items after the initial design has been released.

3.0 POLICY

3.1 Design changes, including field and supplier/subcontractor changes, shall be subject to design review and control measures which are commensurate with those applied to the original design. When possible, the review will be performed by the group that performed the design. Proposed changes may be implemented prior to Project Engineering approval, provided controls are established.

3.2 Changes are accomplished by revising the document or by formal, controlled change notices or approved change requests.

4.0 REFERRALS

4.1 Changes shall be issued in accordance with the distribution requirements in Policy QGG-6.2.

4.2 Design review and control measures in Policy QGG-3.1 shall apply to design changes.

5.0 PROCEDURAL REQUIREMENTS

5.1 Project Engineering procedures shall provide for the following:

5.1.1 Identification of documents utilized to process changes to design documents.

5.1.2 Time limitations within which changes must be dispositioned and/or incorporated in affected documents.

GRAND GULF NUCLEAR STATION
NUCLEAR QUALITY ASSURANCE MANUAL



GAITHERSBURG
POWER DIVISION

CONTROL OF DESIGN CHANGES

POLICY

NO. QGG-3.5 REV. 4

DATE May 1979

PAGE 2 OF 3

TOTAL REVISION

- 5.1.3 Documentation showing that changes have been reviewed and approved by cognizant personnel prior to issuance and objective evidence to show incorporation of changes, as applicable, in appropriate documents.
- 5.1.4 Identifying the date or applicability of changes which apply to work already performed, including disposition of items manufactured or installed prior to the changes.
- 5.1.5 Controlling processing of changes which affect SAR or design criteria, including objective evidence in the form of self-closing forms or logs to show incorporation of the changes in the SAR or design criteria and to show when the change was incorporated.
- 5.1.6 Documentation showing delegation of review and approval authority when not performed by the original person or organization.
- 5.1.7 Reviewing design changes to identify any design errors or deficiencies which may require corrective action (reference Policy QGG-16.1).
- 5.2 Field Engineering procedures shall provide for the following:
 - 5.2.1 Documentation showing changes have been reviewed for their effect on completed work. This documentation shall include evidence, as required, of incorporation in affected documents originated by Field Engineering.
 - 5.2.2 Preparation, review, and approval, of field proposed design changes implemented prior to Project Engineering approval. Time limitations regarding Field Engineering approval of the proposed change shall be included in the governing change procedure.

REVIEW OF FOLLOWING DISCIPLINE COORDINATING PRINT RECORD.

CIVIL
PLANT DESIGN & LAYOUT
ARCH
ELEC.

NOTE: PLANT DESIGN COORDINATING PRINT RECORD HAD SOME ENTRIES WHICH DID NOT INDICATE DATE IN, HOWEVER THESE WERE SEVERAL YEARS OLD. RECENT ENTRIES ARE MAINTAINED IN ACCORDANCE WITH PROCEDURE. REASONABLE EXPLANATIONS AND LOGIC WAS OBTAINED BY FURTHER INVESTIGATION FOR THE QUESTIONABLE P.D. RECORD ENTRIES.

NC

4.3.1.2.3.i

FOLLOWING DRAWING DRN'S WERE SELECTED FOR VERIFICATION OF REQUIREMENT.

DCN B M-1077 REV 13

PEID M-0037 REV A

SFD M-0037.

SD 1085A REV 15-16

M 10834 REV 11-12

MAP REF.	COMMITMENT	METHOD OF VERIFICATION	FINDINGS/ COMMENTS	*CLASSIFI- TION CODE
C03.50	<p>PROJECT ENGINEERING PROCEDURES MANUAL SECTION 4.5</p> <p>Subparagraph 4.5.1.2. <u>COORDINATION, REVIEW AND APPROVAL OF DESIGN SPECIFICATIONS</u></p> <p>4.5.1.2.2</p> <p>(SEE ATTACHED PAGES 4.5-1 through 4.5-6)</p>	<p>Verify that Safety-Related Specifi- cations are reviewed by appropriate reviewers.</p> <p>Verify that Safety-Related Specifi- cations that have been approved by the PQE bear his initials on the "PQE" Stamp.</p>	<p>See Attached Matrix</p>	C

*Classification Code:

C=Conformance

N=Nonconformance

NC=Nonconformance Corrected during audit

ND=Nonconformance Documented by audited organization

A=Not Audited

V=Verified Corrective Actions

(More than one classification can be used)

PERSONS CONTACTED:

PAT Lescalette

Tom Elstner

COMPLETED BY:

CW Neam

DATE: 7/16/81

CHECKLIST NUMBER:

BGA-81/15-21

(By Audit No.)



MIDDLE SOUTH SERVICES, INC.
GRAND GULF NUCLEAR STATION
BECHTEL JOB 9645



SPECIFICATION REVIEW

TITLE _____ SPEC. NO. _____ REV. _____
ORIGINATOR _____ DATE _____

<u>ROUTING</u>	<u>DIST.</u>	<u>INITIAL</u>	<u>DUE DATE</u> (As determined by the Responsible Engineer.)
(share one copy) { Civil	_____	_____	_____
Architectural	_____	_____	_____
Control Systems	_____	_____	_____
Electrical	_____	_____	_____
Mechanical	_____	_____	_____
PD&P Layout	_____	_____	_____
Nuclear	_____	_____	_____
Project Quality Engineer	_____	_____	_____
Division Services	_____	_____	_____
Asst. Project Engineer (1)	_____	_____	_____
M. Regner, Construction Staff (1)	_____	_____	_____
Procurement (1)	_____	_____	_____
Chief Engineer (1)	_____	_____	_____
Others: _____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

INSTRUCTIONS

The distribution of specifications for review, other than distribution to the disciplines, is as indicated. Enter a check mark in the distribution column opposite the disciplines that are to review the specification, and the date that comments are due. Note that if certain disciplines are to review the specification, one copy will be routed for them to share in their review.

The person responsible to review the specification will initial in the column opposite his discipline and return directly to the originator with his comments no later than the due date indicated.

Figure 4-5a
Rev. 3
7-8-77

4.5 SPECIFICATIONS

This procedure defines the requirements for the preparation, review, approval, and control of specifications prepared by Engineering.

4.5.1 GENERAL

Specifications shall be prepared in accordance with the Bechtel Power Corporation Standards, the Standard Specifications as related to each discipline and specific project requirements, including requirements shown in System Descriptions. Bechtel Specifications for the Grand Gulf Project are divided into three categories defined as follows:

SUBCONTRACT SPECIFICATION

The Subcontract Type Specification shall be used when erection or other services are to be performed by other than Bechtel personnel at the job site. The format and content shall be defined in Appendix E, "Instructions and Sample Forms for Preparation of Subcontract Specifications."

PURCHASE ORDER SPECIFICATION

The Purchase Order Type Specification is required when equipment or material is being furnished. The format and contents shall be as defined in Appendix F "Instructions and Forms for preparation of Purchase Order Specifications."

FIELD PERFORMANCE SPECIFICATION

The Field Performance Specification is required to provide instructions to the field such as concrete placement, piping erection, cleanliness, and special handling for major or special items; e.g., Reactor Pressure Vessel. As quality control is dependent on these performance requirements, these specifications will be scheduled and controlled in the same manner as the subcontract and purchase order type specifications.

4.5.1.1 SPECIFICATION IDENTIFICATION

Specifications shall be identified by the JOB Number, followed by the number listed in the Specification Subject File Section 4.1.6.

4.5-1
Rev. 4
9-8-80

4.5.1.2 COORDINATION, REVIEW AND APPROVAL OF DESIGN SPECIFICATIONS

4.5.1.2.1 COORDINATION OF SPECIFICATIONS

Coordination of specifications shall be accomplished (as necessary) using specification review form (Figure 4-5a).

4.5.1.2.2 BECHTEL REVIEW AND APPROVAL

Several levels of review and approval of specifications are required for Grand Gulf Project Specifications. These include:

Responsible Engineer

Responsible Engineer preparing specifications shall consider the need for requirements relating to the following:

- a. Project design criteria and system or structure functional requirements;
- b. Applicable codes, standards, regulatory requirements and SAR commitments;
- c. Appropriate quality standards and acceptance criteria;
- d. The need for design analyses such as physics, stress, materials, thermal, hydraulic, radiation or accident as a basis for the specification requirements;
- e. Design or operational test requirements necessary to assure that the item will perform satisfactorily in service;
- f. Requirements for packaging, handling, shipping and storage.
- g. For processing see paragraph 4.5.2.

The Responsible Engineer, after ensuring that his specification meets project technical and design requirements, shall complete and sign the Specification check List (Figure 4-5g). The purpose of this list is to assure that all appropriate licensing commitments have been factored into the specification. If it is not possible or practical to incorporate a particular licensing commitment into the specification, the Responsible Engineer will advise the LCTS Coordinator and initiate a SAR/ER Change Notice through the Licensing Engineer per Section 6.8 of the PEPM.

4.5-2
Rev. 4
9-8-80

To properly complete the Specification Check List, the Responsible Engineer will examine the Licensing Commitment Tracking System (LCTS) Index and/or Action sheets for those commitments that relate to his specification. He will then enter the commitment reference and the LCTS locator in columns 1 and 2, respectively, on the Specification Check List. In column 3 the Responsible Engineer will indicate the particular paragraph of the specification in which the commitment and any changes thereto have been incorporated. In column 4 he will enter the SAR/ER Change Notice number (s) assigned by the Licensing Engineer as applicable. In completing the Specification Check List the Responsible Engineer should pay particular attention to the following:

1. He may not restrict his search to the LCTS action items originally assigned to his discipline; commitments originally made by other disciplines may affect his specification (it is suggested that each discipline scan the LCTS index for all commitments affecting its effort).
2. He must recognize the "chain effect" possible by committing to a code, standard, or Regulatory Guide; where codes, standards, etc. reference other codes or standards, the effect of these other documents must be evaluated before the Specification Check List can be signed off as completed.

After completion of the Specification Check List, it shall be made a part of the specification by assigning an appropriate Roman numeral page designation and including it in the individual page revision index sheet. For items which are being purchased with only a Material Requisition, the Specification Check List shall be incorporated as an Appendix to the Material Requisition. It shall be included in the List of Appendices by Title and Revision Number. Moreover, the responsible engineer is responsible for the accuracy of the Specification. Toward this end, he shall verify that each page of the specification, each appendix and each page of the appendices are identified with

the correct revisions as listed on the individual page revision index sheets and tables of contents.

Checker

All engineering specifications shall be checked by an engineer who has a level of design qualifications at least sufficient to originate the specification.

The checker shall not be the originator of the specification. Checking may be performed by the originator's supervisor if the supervisor is the only individual on the project team or specialty group team competent to perform the checking.

If the originator's supervisor is the checker the next level of supervision shall also initial in the "checked" box to attest that the supervisor is the only individual on the project or in the specialty group competent to perform the check.

(No requirement exists for the next level supervisors initials if Project specifications are included in the Off-Project Design Review).

The checker shall be responsible for:

- a. Checking specifications, attachments, and appendices against requirements listed under Responsible Engineer.
- b. Sign-off on cover sheet by initialing.

Group Supervisor

The cognizant Group Supervisor shall review all design specifications and appendices prepared by his group for technical adequacy and conformance with design requirements. In addition, the Group Supervisor will be responsible for assuring that all specifications prepared within his discipline fulfill the licensing commitments made in the SAR, ER, and other licensing documents. This process will include, but not be limited to, the approval and signing of the Specification Check List. Specifications written by staff personnel, specialist groups, and service agencies shall be reviewed and approved by the

4.5-4
Rev. 5
9-8-80

cognizant project Group Supervisor.

After review and approval, the Group Supervisor shall initial or sign the cover sheet. The Group Supervisor shall provide for a registered Professional Engineer seal on all applicable specifications.

Chief Engineer

The Chief Engineer or his delegated staff personnel shall review and approve safety related specifications in accordance with the Design Control Check List (DCCL), or as requested by the project, or when the Chief Engineer elects to review specific specifications.

Specifications not requiring the Chief Engineer's approval shall have N/R entered in the applicable signature block(s) for initial issue and all subsequent revisions. (Effective with issue 5-1-75, retrofit not required). Review by the Chief Engineers includes evaluation of evidence of correct approach and method, general professional quality, completeness of work and required reviews. However, the scope and depth of review is left to the discretion of the Chief Engineer based upon his knowledge of the design criteria and approach, previous experience with the selected approach, extent and completeness of the design analysis and checks.

The Chief Engineer's review and approval of (Q) specifications listed on the DCCL shall be accomplished prior to issuing specifications for MP&L's review and approval. (Final review in accordance with use/definition noted on the DCCL). This review process is initiated by the preparation and submission of a "Design Review Notice" per Section 6.3 of PEPM.

Project Quality Engineer (PQE)

The PQE, or his designee, shall review and approve all "Q"-safety-related specifications, material requisitions, including their changes, and purchase memorandums to determine compliance with quality and engineering requirements. The PQE

4.5-5
Rev. 6
9-8-80

shall designate his review and approval by his initials on the "PQE" stamp, applied on each document, i.e., purchase memorandum, material requisition, specification.

Non-Q specifications and associated procurement documents or revisions shall be reviewed and approved in the same manner as "Q"-safety-related documents. However, an exception to the PQE's review and approval of non-Q documents shall be when purchase memorandums or material requisitions are issued for non-technical reasons they shall not require a PQE approval. Non-technical issues as defined herein shall be issues such as request for quotes, change of delivery dates, change of quantities, change of price, etc.

Project Engineer

The Project Engineer approves all specifications, including the revisions and associated procurement documents, i.e., purchase memorandums and material requisitions. Documents approved by the Project Engineer, evidenced by his initials or signature and date, shall be authority for issuance of the document

4.5.1.2.3 MP&L REVIEW AND APPROVAL

All specifications shall be submitted to MP&L for review and approval at Revision 0. Approval or comments should be received within 10 working days from the date of transmittal. Comments, transmitted by meetings, telecons, TWX's (i.e., conveyance other than by letter) shall be confirmed in writing by Bechtel. After 10 working days, if approval has not been received from MP&L it will be assumed

that the specification is approved and Bechtel will expeditiously advise MP&L that the procurement process for issuing the specification for bids is being initiated.

Information concerning processing of Specifications after comments/ approval have been received from MP&L is contained in paragraph 2.1.4.1, Preparation of Bid Package.

4.5.1.3 ISSUING OF SPECIFICATIONS

Each Group Supervisor shall control and maintain a record of all Bechtel specifications issued by his discipline. When issued for any purpose (other than in-house review), the status of the specification shall be recorded in the revision block, e.g., "Issued for _____" and identified by revision letter or number, as applicable.

If copies of Bechtel specifications are issued for reference purposes to any external agency, client, vendor, or interested party other than the project for which they were intended, they shall be stamped or be preprinted to indicate the user's responsibility. In addition, personnel issuing specifications or data for non-project use, shall secure permission of the Project Engineering Manager or Manager of Engineering to verify MP&L's requirements or restrictions on release of such information.

All Project specifications issued by a numerical revision and subsequently superseded by a "Material Requisition" must be reissued to assure specification control. It will be necessary to reissue the specification cover sheet with the statement "Voided by MR REV. ____" entered in the revision description block and the cover stamped "VOID". This reissue will require only the cover sheet to be revised and distributed to all the original recipients of the specification.

All specification revisions shall be effective upon approval. The official action date will be defined below:

A. Upon signing the specifications by the Project Engineering Manager, it will be forwarded to Purchasing for formal issuance to MP&L, Vendors, Bechtel Field,

4.5-6
Rev. 6
9-8-80

C.W. Heard 7/16/81
Auditor Date

PARAGRAPH NO. AUDITED

PROCEDURE NO. PEPM Section 4.5

ITEM	4.5.1.2.2 Responsible Engineer	4.5.1.2.2 Checker	4.5.1.2.2 Group Supervisor	4.5.1.2.2 Chief Engineer	4.5.1.2.2 PQE	4.5.1.2.2 P.E.	COMPLIANCE YES/NO/NA
1. Spec 9645-M-207.0 Rev 16 Dtd 7/10/81	Yes	Yes	Yes	Yes (N/R)	Yes	Yes	Yes
2. Spec 9645-M-067.0 Rev 14 Dtd 6/26/81	Yes	Yes	Yes	Yes (N/R)	Yes	Yes	Yes
3. Spec 9645-M-102.0 Rev 28 Dtd 6/15/81	Yes	Yes	Yes	Yes (N/R)	Yes	Yes	Yes
4. Spec 9645-M-258.0 Rev 19 Dtd 7/1/81	Yes	Yes	Yes	Yes (N/R)	Yes	Yes	Yes
5. Spec 9645-J-318.0 Rev 1 Dtd 6/24/81	Yes	Yes	Yes	Yes (N/R)	Yes	Yes	Yes
6. Spec 9645-M-300.6 Rev 24 Dtd 6/18/81	Yes	Yes	Yes	Yes (N/R)	Yes	Yes	Yes
7. Spec 9645-M-617.1 Rev 4 Dtd 6/26/81	Yes	Yes	Yes	Yes (N/R)	Yes	Yes	Yes
8. Spec 9645-M-181.0 Rev 7 Dtd 2/2/81	Yes	Yes	Yes	Yes (N/R)	Yes	Yes	Yes
9. Spec 9645-J-301.2 Rev 5 Dtd 6/4/81	Yes	Yes	Yes	Yes (N/R)	Yes	Yes	Yes
10. Spec 9645-M-257.0 Rev 14 Dtd 7/1/81	Yes	Yes	Yes	Yes (N/R)	Yes	Yes	Yes

NOTES:

ENCLOSURE VII PAGE 139

QUALITY ASSURANCE FORM 18.10(D), Rev. 5, 6/22/81

6.2 DESIGN CONTROL CHECK LIST (DCCL)

6.2.1 GENERAL

- A. This procedure describes the method for controlling, identifying and documenting the off-project design review of selected Q and non-Q design documents. This effort is accomplished by the Design Control Check List (DCCL) and the Design Review Notice (DRN). The DRN procedure is defined in Section 6.3 of the PEPM.
- B. The DCCL, Figures 6-2a and 6-2b, identifies those documents developed by each discipline which are selected by the cognizant discipline Chief Engineer for review and approval. Consideration for inclusion on the list shall be given, but not limited to, the following items.
 - (a) Design Criteria Manual ;
 - (b) Systems descriptions, flow diagrams and piping and instrumentation drawings.
 - (c) Major drawings (equip. location drawings, arrangements, single lines etc...)
 - (d) Specifications

6.2.2 PROCEDURE

- A. The discipline Group Supervisor or his designee, shall prepare and submit the DCCL to the Project Engineer/Asst. Project Engineer for review and approval. When the Project Engineer/Asst. Project Engineer approves, the discipline Group Supervisor shall transmit the DCCL (by DRN) to the discipline Chief Engineer and Chief Nuclear Engineer for review and approval.
- B. Type and definition of review categories (P-Preliminary, I-Interim and F-Final) shall be determined and performed by the discipline Chief Engineer and/or Chief Nuclear Engineer and properly defined in the appropriate block of the DCCL. (Figure 6-2a)
- C. All revisions shall follow the original approval requirements. A DRN (Figure 6-3a), specifically describing the reason for the change(s) shall be used for each submittal of the DCCL. The DCCL may be revised at any time. However, the DCCL shall be revised when revisions to the Project Q-List require additions or deletion of documents listed on the DCCL. The DCCL revisions shall be issued from 30 to 60 days after the revision date of the Project Q-List.

- D. When adding items to the DCCL, the document number (drawing, specification, etc.) shall be entered in the "identity number" column and the document title entered in the "item/description" column. A delta symbol identifying the revision number, shall be placed in the extreme right portion of the Review Category column beside the added item.
- E. When deleting items from the DCCL, the document title entry shall be erased and substituted with the word "deleted". The document number shall not be erased and a delta symbol, identifying the revision number, shall be placed in the extreme right portion of the Review Category column beside the deleted item and remain throughout subsequent revisions.
- F. Each page of the DCCL shall have entered, in the space provided, the DCCL revision number at which the most recent revision to that page was made.
- G. Each discipline group shall maintain a "working copy" of the DCCL in an updated and current status identifying added or deleted items and when required, the Group Supervisor shall issue the revised DCCL for review and approval.
- H. The Project Quality Engineer shall monitor the processing of the discipline DCCL.
- I. The Group Supervisor shall provide copies of revisions of the DCCL and supporting documentation to Project Administration to be filed in General Subject File No. 0161. (by discipline).

36

Acc. Room

WCC

Bechtel Power Corporation

Interoffice Memorandum

POA-81/065

Date June 17, 1981

From W. A. Braun

Of Quality Assurance

At Port Gibson, MS

RECEIVED

JUN 30 1981

*COND PROJECT
M. P. & L. CO.*

To R. S. Trickovic

Subject Nuclear QA Is Applicable
Middle South Energy, Inc.
Grand Gulf Nuclear Station
Bechtel Job No. 9645
Project QA Audit Report PE-08-02,
Copies QAFs #1, #2, and #3

File: 0494-3

J. N. Ward	C. D. Wood
D. M. Doyle	R. A. Wheeler
W. M. Turner	J. K. Conway
D. C. Kansal	L. E. Ruhland
E. C. Fratz	

The attached Project Quality Assurance Audit Report "Processing of Design Control Check List (DCCL) and Design Review Notice (DRN)" is forwarded for your action.

The Audit Report contains three (3) Quality Assurance Findings. The audit findings and recommended corrective actions were discussed with the Project Quality Engineer upon completion of the audit.

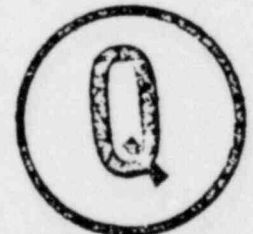
Please provide this office with your responses on or before the scheduled completion dates listed on QAFs #1, #2, and #3.

If assistance with the attached QAFs are required, please contact L. D. Vaughan, Quality Assurance Engineer, at extension 4487.

W. A. Braun
W. A. Braun
Project QA Manager

WAB
WAB:RHM:art

Attachments





GRAND GULF NUCLEAR STATION
QUALITY ASSURANCE PROGRAM
PROJECT AUDIT REPORT

JOB NO. 9645

AUDIT NO. PE-08-02 AUDIT DATE 5/18-6/5/81

TYPE OF AUDIT

ELEMENT AUDIT NO. PE-08

☒ ENGINEERING ☐ CONSTRUCTION ☐ OTHER

AUDITOR L. D. Vaughan

INDIVIDUALS CONTACTED (NAME & TITLE)

T. E. Elstner - Project Administrator
W. M. Turner - Project Quality Engineer
F. Lolli - Plant Design Discipline Supervisor (Layout)
L. Jha - Plant Design Discipline Supervisor (Stress)
J. Vogel - Civil Discipline Supervisor
J. Catlin - Control System Discipline Deputy Supervisor
D. Denison - Mechanical Discipline Supervisor
P. Kochis - Mechanical Discipline Deputy Supervisor
G. Singh - Architectural Discipline Supervisor
S. Wimmer - Records Microfilming Group Leader
L. Sprouffer - Electrical Discipline Supervisor

DESCRIPTION & SCOPE OF AUDIT

Reviewed the method of controlling, identifying and documenting the off-project design review of selected Q and non-Q design documents, by use of the Design Control Check List and the Design Review Notices. Examined each discipline's (A, C, J, E, M, and PD) DCCLs, Project Engineering's file copy of each discipline's DCCL, 24 DRNs and its related listed design documents.

(see attachments A, B, C, and D for objective evidence examined.)

SUMMARY OF FINDINGS


QAF #1 - DRNs submitted for use with change (s) to the discipline's DCCL did not maintain a specific description of the reason for the change.


QAF #2 - DCCL page revision numbers were omitted from the discipline's current DCCL.


QAF #3 - Discipline's working copy of the DCCL (Rev. No. and Date) is not maintained and/or identified to the current DCCL as maintained in Project Engineering's DCCL file #0161.

DISTRIBUTION	INFO	ACTION	ATTACHED QAF NOS.
R. S. Trickovic		x	QAFs 1, 2, and 3
J. N. Ward	x		
C. D. Wood	x		
W. M. Turner	x		
D. C. Kansal	x		
J. K. Conway	x		
E. C. Fratz	x		
D. M. Doyle	x		
R. A. Wheeler L. E. Ruhland	x		
AUDITOR	DATE	POAM	DATE
Larry D. Vaughan	6/12/81	J/N H Brown	6/17/81

6/15/81 8/74

DATE 5/18-6/5/81		GRAND GULF NUCLEAR STATION QUALITY ASSURANCE FINDING	QAF NO. 1 PAGE 1 OF 1																				
JOB NO. 0645																							
DESCRIPTION OF AUDIT Project engineering's method for controlling, identifying and documenting the off-project design review of selected Q and non-Q design documents by use of DCCL and DRNs.		AUDITOR L. D. Vaughan																					
WHERE FOUND Plant Design Mech., Elec. and Control Systems		DISCUSSED WITH W. Turner, E. Lollis, L. Jha, G. Van Fossen, J. Catlin, D. Demison, L. Stouffer																					
REFERENCE DOCUMENT PEPM Change #38, Sect. 6.2, Para. 6.2.2.C		AUDIT NO. PE-08-02																					
		TYPE OF AUDIT FIELD <input checked="" type="checkbox"/> OFFICE <input type="checkbox"/>																					
REQUIREMENT PEPM Change #38, Sect. 6.2, Para. 6.2.2.C states "...A DRN specifically describing the reason for the change(s) shall be used for each submittal of the DCCL."																							
FINDING Four (4) (listed below) out of six (6) DRNs submitted for use with change(s) to the discipline's DCCL noted that no reason specifically describing the change were identified on the DRN.																							
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;">DISCIPLINE</th> <th style="text-align: left;">ITEM</th> <th style="text-align: left;">REV.</th> <th style="text-align: left;">PE APPROVAL DATE</th> </tr> </thead> <tbody> <tr> <td>Plant Design</td> <td>DCCL</td> <td>10</td> <td>3/10/80</td> </tr> <tr> <td>Electrical</td> <td>DCCL</td> <td>9</td> <td>6/15/79</td> </tr> <tr> <td>Control System</td> <td>DCCL</td> <td>10</td> <td>6/22/79</td> </tr> <tr> <td>Mechanical</td> <td>DCCL</td> <td>13</td> <td>4/14/81</td> </tr> </tbody> </table>				DISCIPLINE	ITEM	REV.	PE APPROVAL DATE	Plant Design	DCCL	10	3/10/80	Electrical	DCCL	9	6/15/79	Control System	DCCL	10	6/22/79	Mechanical	DCCL	13	4/14/81
DISCIPLINE	ITEM	REV.	PE APPROVAL DATE																				
Plant Design	DCCL	10	3/10/80																				
Electrical	DCCL	9	6/15/79																				
Control System	DCCL	10	6/22/79																				
Mechanical	DCCL	13	4/14/81																				
RECOMMENDED CORRECTIVE ACTION 1. Take corrective action to correct the above noted deficiency. 2. Take action to preclude recurrence. 3. Report all actions taken to PQA.																							
RESPONSIBILITY FOR CORRECTIVE ACTION R. S. Trickovic, Project Engineer		SCHEDULED COMPLETION DATE July 31, 1981																					
CORRECTIVE ACTION TAKEN																							
RESPONSE SUBMITTED BY (NAME & TITLE)		DATE																					
QA VERIFICATION BY		DATE																					

DATE 5/18-6/5/81		GRAND GULF NUCLEAR STATION QUALITY ASSURANCE FINDING	CAT NO. 2 PAGE 1 OF 1												
DESCRIPTION OF AUDIT Project Engineering's method for controlling identifying and documenting the off-project design review of selected Q and non-Q design documents by use of the DCCL and DRNs.		AUDITOR L. D. Vaughan													
WHERE FOUND Civil, Electrical, Plant Design (Layout) and Control Systems		DISCUSSED WITH W. Turner, F. Loll, J. Stouffer, L. Jia, J. Catlin, and J. Vogel													
REFERENCE DOCUMENT PEPM Change #38, Sect. 6.2 Para. 6.2.2.F		AUDIT NO. PE-08-02													
REQUIREMENT PEPM Change Notice #38, Sect. 6.2, Para. 6.2.2.F states "Each page of the DCCL shall have entered in the space provided, the DCCL revision number at which the most recent revision to that page was made."		TYPE OF AUDIT FIELD OFFICE X													
FINDING Four (4) (listed below) out of six (6) DCCLs reviewed noted that the DCCLs pages did not maintain the DCCL page revision number at which the most recent revision to that page was made.															
<table style="width: 100%; border: none;"> <thead> <tr> <th style="text-align: left; width: 60%;"><u>DISCIPLINE</u></th> <th style="text-align: left; width: 40%;"><u>REV.</u></th> </tr> </thead> <tbody> <tr> <td>** Civil</td> <td>7</td> </tr> <tr> <td>** Electrical</td> <td>9</td> </tr> <tr> <td>Plant Design</td> <td></td> </tr> <tr> <td>Control Systems</td> <td>10</td> </tr> <tr> <td colspan="2">** DCCLs in - process of being up - dated.</td> </tr> </tbody> </table>				<u>DISCIPLINE</u>	<u>REV.</u>	** Civil	7	** Electrical	9	Plant Design		Control Systems	10	** DCCLs in - process of being up - dated.	
<u>DISCIPLINE</u>	<u>REV.</u>														
** Civil	7														
** Electrical	9														
Plant Design															
Control Systems	10														
** DCCLs in - process of being up - dated.															
RECOMMENDED CORRECTIVE ACTION 1. Take corrective action to correct the above noted deficiency. 2. Take action to preclude recurrence. 3. Report all actions taken to PQA.															
RESPONSIBILITY FOR CORRECTIVE ACTION R. S. Trickovic, Project Engineer		SCHEDULED COMPLETION DATE July 31, 1981													
CORRECTIVE ACTION TAKEN															
RESPONSE SUBMITTED BY (NAME & TITLE)		DATE													
QA VERIFICATION BY		DATE													

DATE 5/18-6/5/81	 JOB NO. 5645	GRAND GULF NUCLEAR STATION QUALITY ASSURANCE FINDING	QAF NO. 3 PAGE 1 OF 1
DESCRIPTION OF AUDIT: Project Engineering's method for controlling, identifying and documenting the off-project design review of selected O and non-O design documents by use of DCCL and DRYs		AUDITOR L. D. Vaughan	
WHERE FOUND: Plant Design, Control System, Electrical		DISCUSSED WITH: F. Lolli, L. Jha, W. Turner, J. Catlin, L. Stouffer AUDIT NO. PE-08-02	
REFERENCE DOCUMENT PEPM Change Notice #38, Sect. 6.2, Para. 6.2.2.G		TYPE OF AUDIT FIELD OFFICE X	
REQUIREMENT PEPM Change #38, Sect. 6.2, Para. 6.2.2.G states "Each discipline group shall maintain a "working copy" of the DCCL in an updated and current status identifying added or deleted items and when required, the group supervisor shall issue the revised DCCL for review and approval."			
FINDING During a review of each discipline's working copy of the DCCL and a review of Project Engineering's DCCL file (0161) the following deficiencies were noted:			
<u>DISCIPLINE</u>	<u>DCCL LOCATED IN DISCIPLINE</u>	<u>DCCL LOCATED IN PE FILE 0161</u>	
Control System	Rev. 10 dated (7/3/79)	Rev. 10 dated (6/22/79)	
Electrical	Rev. 9 dated (6/18/79)	Rev. 8 (old form) dated (12/17/77)	
Plant Design	Rev. 7 dated (6/12/79) (layout) Rev. 8 dated (9/12/79) (stress)	Rev. 10 dated (3/5/80) (only objective evidence of Rev. 10 was a microfilmed copy of the DCCL revision cover sheet)	
RECOMMENDED CORRECTIVE ACTION 1. Take corrective action to correct the above noted deficiency. 2. Take action to preclude recurrence. 3. Report all actions taken to PQA.			
RESPONSIBILITY FOR CORRECTIVE ACTION R. S. Trickovic, Project Engineer		SCHEDULED COMPLETION DATE July 31, 1981	
CORRECTIVE ACTION TAKEN			
RESPONSE SUBMITTED BY (NAME & TITLE)		DATE	
QA VERIFICATION BY		DATE	

GPO-12891-A 9/79

DRN's reviewed during the course of the audit.

DISCIPLINE	DOCUMENT DESCRIPTION (NO.)	REV. #	PE APPROVAL DATE
Arch.	Design Criteria Manual	8	10/22/80
Civil	Dwgs. C-0651A	0	4/6/81
	C-0651B	0	4/6/81
Civil	Design Criteria Manual	12	3/25/81
Control System	Cal. #J-702.0-902	0	7/31/80
Control System	Spec. #J-312.0	0	2/2/81
Elec.	Dwg. E-0725 Sheet 3AA-1	0	2/12/81
Elec.	Dwg. #E-0657 Sheet A (Index)	28	4/1/81
	" " 6	10	"
	" " 7	4	"
	" " 8	4	"
	" " 16	6	"
	" "17A	5	"
Mech.	Project Design Criteria Manual	10	11/18/80
Mech.	Project Summary Q-List, Page, 1, 2, and 26	11	12/28/80
Plant Design	DCCL (Design Control Checklist)	9	11/20/80

DCCLs reviewed during the course of the audit.

DISCIPLINE	DCCL LOCATED IN DISCIPLINE	DCCL LOCATED IN FILES
Architectural	Rev. 11, dated 4/9/81	Rev. 11, dated 4/9/81
**Civil	Rev. 7, dated 6/4/79	Rev. 7, dated 6/4/81
Control System	Rev. 10, dated 6/22/79	Rev. 10, dated 7/3/79
**Electrical	Rev. 9, dated 6/18/79	Rev. 8, dated 12/15/77
**Mechanical	Rev. 12, dated 1/14/80	Rev. 12, dated 1/14/80
Plant Design	Rev. 7, dated 6/12/79 (Layout) Rev. 8, dated 9/12/79 (Stress)	Rev. 10, dated 3/5/80 (only the DCCL revision cover sheet available in file)

** in process of being up-dated.

Resubmitted DRN's reviewed during the course of the audit.

<u>DISCIPLINE</u>	<u>DOCUMENT DESCRIPTION (NO.)</u>	<u>REV. #</u>	<u>PE APPROVAL DATE</u>
Civil	Spec. #A-004.3	0	2/26/81
Control System	Dwg. #J-1279 Sheets 1 and 2	4	11/21/80
Control System	Dwg. #J-0172G Detail 2 Calc. (J-702.0-909)	1	5/16/80
Electrical	Dwg. #E-0725 Sheet 14C	2	4/23/80
Plant Design	Spec. #M-280.0	0	4/9/80
Plant Design	Spec. #M-280.1	0	8/15/80
Mechanical	Project Summary Q-List	11	1/21/81
Mechanical	Mechanical Design Control Checklist	12	1/10/80

DRNs submitted for changes to each discipline's DCCL.

<u>DISCIPLINE</u>	<u>DOCUMENT DESCRIPTION</u>	<u>REV. #</u>	<u>PE APPROVAL DATE</u>
Architectural	DCCL	11	3/18/81
Civil	DCCL	7	6/4/79
Control System	DCCL	10	6/22/79
Electrical	DCCL	9	6/15/79
Mechanical	DCCL	13	4/14/81
Plant Design	DCCL	10	3/10/80

6.2.2. C

REVIEWED PROJECT Q LIST REVISIONS 10 & 11.
SELECTED ARCH DRAWING A-0754 FOR INCORPORATION
INTO DISCIPLINE DCCL. ARCH DRN REVIEWED AND
APPROVED, DRAWING WAS ADDED TO DCCL REV. 11
APX 2 WKS AFTER Q LIST ISSUE.

SELECTED MECHANICAL SPECS M-181, M-181.1. FOR
INCORPORATION INTO DISCIPLINE DCCL. REVISION
13 OF DCCL ADDED SPECIFICATIONS, HOWEVER NO
DRN FOR REV 13 IN PE-0161 FILE. THIS ITEM
WAS NOTED AS BEING IN PROCESS OF BEING
UPDATED DURING BECHTEL PROJECT AUDIT REPORT
PE-08-02.

6.2.2. D, E

REVIEW OF DISCIPLINE DCCL'S ^{VERIFIED} ~~INDICATE~~ _B CONFORMANCE
TO THESE PARAGRAPHS.

6.2.2. G

DISCUSSION WITH DISCIPLINE GROUP SUPERVISOR
AND EXAMINATION OF GROUP'S DCCL ON HAND
VERIFIES CONFORMANCE.

6.2.2 I

REVIEW AND EXAMINATION OF PE FILE 0161 VERIFIED
CONFORMANCE.

* NOTE: THERE WAS VARIANCE IN REVISION LEVELS
OF THE DCCL IN PROJECT FILES AND
IN DISCIPLINE. FOR THE FOLLOWING DISCIPLINES
CIVIL
ELEC.
MECH.
P.D.

THE GROUP DCCL'S ARE OF LATER REVISION.
DURING PE-08-02, THE NOTATION WAS
MADE THAT EACH GROUP'S ^{DCCL} WAS IN PROCESS
OF BEING UPDATED. THIS WAS DISCUSSED
WITH DISCIPLINE GROUP SUPERVISORS,
VERIFIED AND EXPLAINS GROUP DCCL
BEING OF LATER REVISION THAN THAT
ON FILE. LOCATED CIVIL DCCL IN TYPING.

BGA-81/15-29

SHT 2 OF 2

J. BOUMAN
7.15.81

PERSONNEL CONTACTED:	B STANCHFIELD	PQE
	G MILLER	CIVIL
	G SINGH	ARCH
	J CATLIN	CONT SYS
	G VAN FOSSEN	ELEC.
	F LOLLI	P.D.

OBJECTIVE EVIDENCE EXAMINED:

PROJECT Q LIST	REV 11	3.25.81
PROJECT Q LIST	REV 10	5.7.80

<u>DOCL'S-</u>	<u>PE FILE 0161</u>	<u>DISCIPLINE</u>
ARCH	REV 11 4.9.81	REV 11 4.9.81
CIVIL	REV 7 6.4.79	REV 8 6.29.81 (INTYPING)
ELEC	REV 8 12.15.77	REV 9 6.18.79
MECH	REV 12 1.14.80	REV 13 5.21.81
CONT SYS	REV 10 7.3.79	REV 10 7.3.79
RT DES	REV 7 6.12.79	REV 9 1.8.80
	* REV 10 EXAMINED ON	RE
	MICROFISH, COPY MADE	
	& PUT IN FILE	

DRN'S REVIEWED FOR DOCL REVISIONS

DRN
ARCH REV.11 4.9.81
ADDED A-0734

MECH REV 13 ADDED SPECS
M-181, M-181.1

QLIST ITEM FOR VERIFICATION

A-0734, QLIST REV.11
3-25-81

* SPECS M-181
M-181.1 FROM
QLIST REV 11, 3-25-81

* BECHTEL AUDIT PE-08-02 QAF'S INDICATE SCHEDULED DUE
DATE OF 7.31.81. THIS ^{CHECKLIST} WOULD BE OF VALUE IN FOLLOW-UP
AUDIT.

AUDIT CHECKLIST

MAP REF.	COMMITMENT	METHOD OF VERIFICATION	FINDINGS/ COMMENTS	*CLASS TION
C45.00	PEPM 4.2.18. WP/P-C-5, 3.0 & 6.0.	Verify CAR 289. ① VERIFIED ISSUANCE OF PEPM change Notice No. 16B through review. ② Reviewed processing of Coairdelling Request Forms in accordance with Change Notice 16B paras: 4.3.1.6.3.d.1 4.3.1.6.3.d.3 4.3.1.6.3.d.5 For the following report numbers: #4 #135 #235 #7 #160 #236 #8 #189 #9 #190 #10 #223 #26 #224 #27 #225 #28 #226 #29 #233 #30 #234 #31 ③ REVIEWED RESPONSE TO FINDING "B" (Attachment C to CAR 289). The applicable NQAM Policy for this activity is QGG 3.2. The process being utilized meets these requirements.	① ALL AREAS found to be in compliance ② All areas found to be in compliance These reports were associated with the following WPTR's QSY10-W-40137-YOA NBY10-W-40137-YOA QIT22-W-00266-MOA transmitted by FE-81/0360 std. 6/4/81 FE-81/0229 std. 4/6/81 All areas found to be in compliance.	① C V ② C V ③ C V

*Classification Code:

- C=Conformance
- N=Nonconformance
- NC=Nonconformance Corrected during audit
- ND=Nonconformance Documented by audited organization
- A=Not Audited
- V=Verified Corrective Actions

(More than one classification can be used)

PERSONS CONTACTED:

NANCY Lee - Document Control Supv.

J.T. Vogel - Civil Group Supv.

I.L. Chereick - GAE

S.B. Baidis - Civil Engineer

COMPLETED BY: S.F. Jannin

DATE: 7/13/81

CHECKLIST NUMBER:
BGA 81/15-31

(By Audit No.)

Bechtel Power Corporation

Engineers — Constructors

Post Office Box 41

Port Gibson, Mississippi 39150

33-437-8011

March 31, 1981



RECEIVED

APR 08 1981

GGNS PROJECT
M.P. & L. CO.

Mr. T. E. Reaves, Jr.
Manager Of Quality Assurance
Mississippi Power & Light Company
Grand Gulf Project
City Center North
210 South Lamar Street
Suite 320
Jackson, Mississippi 39201

Dear Mr. Reaves:

Nuclear QA Is Applicable
Middle South Energy, Inc.
Grand Gulf Nuclear Station
Bechtel Job No. 9645
File 0262/0494
Interim Response for CAR 289
(MP&L Audit GBA #9)
MQBC-81/173

Attached is an interim response for CAR 289. This response to CAR 289 is an interim response for item A and a final response for item B.

This CAR cannot be closed and verified until a procedure is issued for the control of data associated with core drilling. This procedure is scheduled to be issued by June 4, 1981. A draft copy of this procedure is included for your information.

Additional time is needed for the review, comment, approval and distribution process for this procedure, therefore, an extension to June 18, 1981, for the final response is requested.

The request for an extension of the response due date to June 18, 1981, was discussed by telephone with A. T. Ramsey on March 31, 1981.

If you have any questions on the matter, contact W. F. Houston, OAE, at extension 408.

Very truly yours,

R. L. Scott

Mr. T. E. Reaves, Jr.
Mississippi Power & Light Company

-2-

Bechtel Power Corporation

March 31, 1981
MQBC-81/173

cc: Mr. L. F. Dale, w/l
Dr. D. C. Gibbs, w/o
Mr. C. K. McCoy, w/l
Mr. J. P. McGaughy, Jr., w/l
Mr. W. L. Nail, w/l
Mr. N. L. Stampley, w/o
Mr. J. W. Yelverton, w/l
Mr. J. K. Cenway, w/o
Mr. E. C. Fratz, w/l
Mr. C. D. Wood, w/o
Mr. L. E. Ruhland, w/o
Mr. J. N. Ward, w/o
Mr. R. S. Trickovic, w/o
Mr. D. C. Kansal, w/o

Quality Assurance Form 16.10(C), Page 1 of 1, Revision 5, 8/11/80

CORRECTIVE ACTION REQUEST
(CAR)

(1) Issued To R. L. Scott
POAM
Audit No. BCA #9
Person Contacted Fratz, OAE



(2) Number 289
Data Due 2/15/81
Unit No. 1
Significant? Yes No X *th*
Indeterminate By
PRD Initiated? Yes No
PRD No.

NONCONFORMANCE: (3)

See Attachment A.

A. T. Ramey
A. T. Ramey
(S. F. Tanner, Identifier) 1-16-81
Initiator Date

T. E. Reaves, Jr.
T. E. Reaves, Jr. 1-16-81
Manager of Quality Assurance Date

RECOMMENDED CORRECTIVE ACTION: (4a)

Bechtel to determine.

CORRECTIVE ACTION TAKEN: (4b)

See Attachment "C".

Responsible Supervisor/Manager Date

NONCONFORMANCE: (3)

NQAM, Policies QGG 3.2, Rev. 2, QGG 3.5, Rev. 4 and QGG 6.2, Rev. 3, dated May 1979

I. Commitment:

- A. QGG 3.2, para. 5.1, states in part: "Project Engineering procedures shall provide for the following:

5.1.1 ...

5.1.4 Incorporation, as appropriate, of design information transmitted between interfacing organizations in design documents."

- B. QGG 6.2, para. 4.2, states in part: "The review and approval of changes and prompt inclusion in design documents shall be in accordance with Policy QGG 3.5..."

QGG 3.5, para. 5.1, states in part: "Project Engineering procedures shall provide for the following:

5.1.1 ...

5.1.2 Time limitations within which changes must be dispositioned and/or incorporated in affected documents."

II. Findings:

- A. Contrary to I.A. above, Project Engineering procedures do not provide for the incorporation of design information associated with core drilling operations transmitted by Civil Field Engineering to Project Engineering, into design documents. (Reference Core Drilling Form submitted to Project Engineering per the requirements of WP/P-C-5, Rev. 0).
- B. Contrary to I.B. above, Project Engineering procedures do not provide for time limitations or control of changes resulting from FDI's/FDDR's to assure the affected documents are actually being revised.

MISSISSIPPI POWER & LIGHT COMPANY
INSTRUCTION TO RESPONSIBLE ORGANIZATION
FOR
COMPLETING CORRECTIVE ACTION REQUEST (CAR)

I. GENERAL

- A. All entries shall be typed or made in reproducible ink.
- B. Return the CAR original to MP&L Quality Assurance. Please keep neat.
- C. When there is insufficient space in Block (4) of the CAR to complete the information required, the additional information shall be placed on an attachment to the CAR. The attachment shall reference the CAR Number and the applicable block of the CAR. The attachment shall be numbered by the alphabet (i.e. Attachment A, B, etc.). The CAR shall reference the attachment letter in Block (4). Page numbering on the attachment should be in numerical sequence (i.e. Page 1 of 3, Page 2 of 3, etc.).

- 16.5.3 D. Corrective Action Taken shall include: 1. action taken to correct the noted nonconformance and 2. action taken to prevent recurrence.
- E. In the event that corrective action cannot be completed prior to Date Due, submit an interim report by letter, memorandum or telecon indicating current status of the nonconformance(s), estimated date of completion and justification for requested extension.

F. Description of entries:

<u>BLOCK NO.</u>	<u>ENTRY</u>
4a	<ul style="list-style-type: none"> • Enter a description of action to be taken. • Contact/Submit to MP&L QA for concurrence and document. *
4b	<ul style="list-style-type: none"> • Enter a concise description of action taken to correct the nonconformance and action taken to prevent recurrence. • Enter signature and date. This signature indicates that the action noted in Block (4) has been completed. • Return to MP&L QA for verification.

Attachment "C" to CAR No. 289

Audit Finding A:

Project Engineering procedures do not provide for the incorporation of design information associated with core drilling...etc.

Response A:

Project Engineering has initiated action for a procedure to control core drilling data. This procedure is in the draft state and is currently being coordinated with the Field. Project Engineering estimates that this procedure should be issued by May 8, 1981.

Enclosed for your reference is a draft copy of the procedure to control data associated with core drilling, reference Attachment "D".

Finding B:

Project Engineering procedures do not provide for time limitations or control of changes resulting from FDIs/FDDRs...etc.

Response B:

An investigation has been performed and it has been determined that current procedures satisfy the intent of the referenced NQAM Policies.

Rationale:

Design changes generated as a result of a FDI/FDDR are controlled by PEPM Procedures, Paragraphs 4.2.14, 4.3.1.6 and 4.3.1.6.1. Hence, should a FDI/FDDR require a design change to a Bechtel drawing, a means of incorporating the change may be by drawing revision (see PEPM 4.3.1.6) or change notice (see PEPM 4.2.14 and 4.3.1.6.1). PEPM Procedures 4.2.14 and 4.3.1.6.1 dictate time limitations for the incorporation of the change into the "established" Bechtel design. However, Project Engineering procedures do not provide for a time limitation on design changes which are issued against a vendor's "established" design, such as FDI/FDDRs. The FDIs/FDDRs are General Electric (GE) documents used for changing GE design/drawings (see PEPM 4.2.18, Paragraph 3.0 for definitions). Some Bechtel drawings can and have been affected by these documents. However, Bechtel cannot always incorporate the design changes from the FDI/FDDR without additional GE software or in other cases without having the FDI/FDDR revised because of insufficient information or errors in the documents. Therefore, Project Engineering views the Bechtel's NQAM statement regarding "time limitations" as a requirement only when the change has been issued by Bechtel on a Bechtel drawing or Bechtel change notice. A PEPM procedure to specify "time limitation" on an interface cases with a vendor is inappropriate and not having such a procedure does not violate 10 CFR 50 Appendix B.

Project Engineering's position is that the PEPM Procedures for change control and processing of FDIs/FDDRs are adequate and that the process and control comply with the Bechtel NQAM.

Appendix "D"

4.2.22 Recording Procedures for Cut Outs and Corebores1.0 Objective

- 1.1 The objective of this procedure is to direct the handling and distribution of the cut out and corebore request forms from Field Engineering to Project Engineering.

2.0 Scope

- 2.1 The scope of this procedure covers all cut out and corebore request form documentation for all reinforced concrete structures and concrete masonry walls.

3.0 Procedure3.1 Field Engineering Record Processing

- 3.1.1 Field Engineering shall record all of the information for cut outs and corebores as required by Paragraph 6.0 of Specification 9645-C-103.0, Appendix CB in a legible manner along with sequential report numbers for each building/structure. These report numbers shall be unique for each building/structure and a record of such (log) shall be maintained by Field Engineering.

- 3.1.2 If a cut out or corebore is requested by a Design Change Notice, Field Change Notice or Field Change Request, this information shall be referenced on the request form by DCN, FCN or FCR number as additional information.

- 3.1.3 Approval of request forms shall be in accordance with Specification 9645-C-103.0, Appendix CB, Paragraph 2.4. The request form information shall than be transmitted to Project Engineering within 30 days after the approval of the cut out or corebore. The transmittal letter shall identify all request from the FCN, FCR, or DCN enclosed stating the building/structure and without having the corresponding report number for each cut out or corebore. If the construction of the cut out or corebore is not completed within 60 days after the issuance of approval, the cut out or corebore shall be voided on a new form referencing the original approval.

3.2 Project Engineering Record Processing

- 3.2.1 Project Engineering Document Control shall maintain a log and file consisting of all cut out and corebore request forms received from Field Engineering.

- 3.2.2 Project Engineering Document Control shall then distribute copies of the cut out and corebore request forms. The distribution shall consist of the following disciplines:
- a. Plant Design Layout Group
 - b. Civil Group
 - c. Electrical Group
 - d. Architectural Group
 - e. Control Systems Group
- 3.2.3 If the information is illegible, incomplete or a discrepancy exists which prevents Project Engineering incorporation, the request forms will be returned to Field Engineering for compliance with a statement describing the deficiencies. Field Engineering shall then complete the request form and return it to Project Engineering within 30 days. Drawing incorporation shall then proceed in accordance with Paragraphs 4.2.223.2.4.
- 3.2.4 The Mechanical Group drawings will assign unique penetration numbers to the penetrations that are used for different system services, such as conduit, piping, and instrument tubing which require closure review by Project Engineering. These penetrations shall be shown on appropriate Plant Design and Civil Group drawings. In addition, the Civil Group drawings shall show all other cut outs and corebores, such as those required for temporary penetrations or anchor bolts. This work shall be completed and issued within 90 days of receipt of this information by Project Engineering Document Control.

Quality Assurance Form 16.10(C), Page 1 of 1, Revision 5, 8/11/80

CORRECTIVE ACTION REQUEST
(CAR)

(1) Issued To R. L. Scott
POAM
Audit No. BGA #9
Person Contacted Fratz, OAE



(2) Number 289
Date Due 2/15/81
Unit No. 1
Significant? Yes No Y *th*
Indeterminate By
PRD Initiated? Yes No
PRD No.

NONCONFORMANCE: (3)

See Attachment A.

A. T. Ramey
A. T. Ramey
(S. F. Tanner, Identifier) 1-16-81
Initiator Date

T. E. Reaves, Jr.
T. E. Reaves, Jr.
Manager of Quality Assurance 1-16-81
Date

RECOMMENDED CORRECTIVE ACTION: (4a)

Bechtel to determine.

CORRECTIVE ACTION TAKEN: (4b)

See Attachment "C", and Attachment "D"

A. A. Brown
Responsible Supervisor/Manager 3/1/81
Date

(5) Corrective Action Verified by:

Quality Assurance

NONCONFORMANCE: (3)

NQAM, Policies QGG 3.2, Rev. 2, QGG 3.5, Rev. 4 and QGG 6.2, Rev. 3,
dated May 1979

I. Commitment:

- A. QGG 3.2, para. 5.1, states in part: "Project Engineering procedures shall provide for the following:

5.1.1 ...

5.1.4 Incorporation, as appropriate, of design information transmitted between interfacing organizations in design documents."

- B. QGG 6.2, para. 4.2, states in part: "The review and approval of changes and prompt inclusion in design documents shall be in accordance with Policy QGG 3.5..."

QGG 3.5, para. 5.1, states in part: "Project Engineering procedures shall provide for the following:

5.1.1 ...

5.1.2 Time limitations within which changes must be dispositioned and/or incorporated in affected documents."

II. Findings:

- A. Contrary to I.A. above, Project Engineering procedures do not provide for the incorporation of design information associated with core drilling operations transmitted by Civil Field Engineering to Project Engineering, into design documents. (Reference Core Drilling Form submitted to Project Engineering per the requirements of WP/P-C-5, Rev. 0).
- B. Contrary to I.B. above, Project Engineering procedures do not provide for time limitations or control of changes resulting from FDI's/FDDR's to assure the affected documents are actually being revised.

MISSISSIPPI POWER & LIGHT COMPANY
INSTRUCTION TO RESPONSIBLE ORGANIZATION
FOR
COMPLETING CORRECTIVE ACTION REQUEST (CAR)

I. GENERAL

- A. All entries shall be typed or made in reproducible ink.
- B. Return the CAR original to MP&L Quality Assurance. Please keep neat.
- C. When there is insufficient space in Block (4) of the CAR to complete the information required, the additional information shall be placed on an attachment to the CAR. The attachment shall reference the CAR Number and the applicable block of the CAR. The attachment shall be numbered by the alphabet (i.e. Attachment A, B, etc.). The CAR shall reference the attachment letter in Block (4). Page numbering on the attachment should be in numerical sequence (i.e. Page 1 of 3, Page 2 of 3, etc.).

16.5 3 D. Corrective Action Taken shall include: 1. action taken to correct the noted nonconformance and 2. action taken to prevent recurrence.

- E. In the event that corrective action cannot be completed prior to Date Due, submit an interim report by letter, memorandum or telecon indicating current status of the nonconformance(s), estimated date of completion and justification for requested extension.

F. Description of entries:

<u>BLOCK NO.</u>	<u>ENTRY</u>
4a	<ul style="list-style-type: none"> • Enter a description of action to be taken. • Contact/Submit to MP&L QA for concurrence and document.
4b	<ul style="list-style-type: none"> • Enter a concise description of action taken to correct the nonconformance and action taken to prevent recurrence. • Enter signature and date. This signature indicates that the action noted in Block (4) has been completed. • Return to MP&L QA for verification.

Audit Finding A:

Project Engineering procedures do not provide for the incorporation of design information associated with core drilling...etc.

Response A:

Project Engineering has initiated action for a procedure to control core drilling data. This procedure is in the draft state and is currently being coordinated with the Field. Project Engineering estimates that this procedure should be issued by May 8, 1981.

Enclosed for your reference is a draft copy of the procedure to control data associated with core drilling, reference Attachment "D".

Finding B:

Project Engineering procedures do not provide for time limitations or control of changes resulting from FDIs/FDDRs...etc.

Response B:

An investigation has been performed and it has been determined that current procedures satisfy the intent of the referenced NQAM Policies.

Rationale:

Design changes generated as a result of a FDI/FDDR are controlled by PEPM Procedures, Paragraphs 4.2.14, 4.3.1.6 and 4.3.1.6.1. Hence, should a FDI/FDDR require a design change to a Bechtel drawing, a means of incorporating the change may be by drawing revision (see PEPM 4.3.1.6) or change notice (see PEPM 4.2.14 and 4.3.1.6.1). PEPM Procedures 4.2.14 and 4.3.1.6.1 dictate time limitations for the incorporation of the change into the "established" Bechtel design. However, Project Engineering procedures do not provide for a time limitation on design changes which are issued against a vendor's "established" design, such as FDIs/FDDRs. The FDIs/FDDRs are General Electric (GE) documents used for changing GE design/drawings (see PEPM 4.2.18, Paragraph 3.0 for definitions). Some Bechtel drawings can and have been affected by these documents. However, Bechtel cannot always incorporate the design changes from the FDI/FDDR without additional GE software or in other cases without having the FDI/FDDR revised because of insufficient information or errors in the documents. Therefore, Project Engineering views the Bechtel's NQAM statement regarding "time limitations" as a requirement only when the change has been issued by Bechtel on a Bechtel drawing or Bechtel change notice. A PEPM procedure to specify "time limitation" on an interface bases with a vendor is inappropriate and not having such a procedure does not violate 10 CFR 50 Appendix B.

Project Engineering's position is that the PEPM Procedures for change control and processing of FDIs/FDDRs are adequate and that the process and control comply with the Bechtel NQAM.

Appendix "D"

4.2.22 Recording Procedures for Cut Outs and Corebores1.0 Objective

- 1.1 The objective of this procedure is to direct the handling and distribution of the cut out and corebore request forms from Field Engineering to Project Engineering.

2.0 Scope

- 2.1 The scope of this procedure covers all cut out and corebore request form documentation for all reinforced concrete structures and concrete masonry walls.

3.0 Procedure3.1 Field Engineering Record Processing

- 3.1.1 Field Engineering shall record all of the information for cut outs and corebores as required by Paragraph 6.0 of Specification 9645-C-103.0, Appendix CB in a legible manner along with sequential report numbers for each building/structure. These report numbers shall be unique for each building/structure and a record of such (log) shall be maintained by Field Engineering.

- 3.1.2 If a cut out or corebore is requested by a Design Change Notice, Field Change Notice or Field Change Request, this information shall be referenced on the request form by DCN, FCN or FCR number as additional information.

- 3.1.3 Approval of request forms shall be in accordance with Specification 9645-C-103.0, Appendix CB, Paragraph 2.4. The request form information shall then be transmitted to Project Engineering within 30 days after the approval of the cut out or corebore. The transmittal letter shall identify all request forms enclosed stating the building/structure and corresponding report number for each cut out or corebore. If the construction of the cut out or corebore is not completed within 60 days after the issuance of approval, the cut out or corebore shall be voided on a new form referencing the original approval.

3.2 Project Engineering Record Processing

- 3.2.1 Project Engineering Document Control shall maintain a log and file consisting of all cut out and corebore

3.2.2 Project Engineering Document Control shall then distribute copies of the cut out and corebore request forms. The distribution shall consist of the following disciplines:

- a. Plant Design Layout Group
- b. Civil Group
- c. Electrical Group
- d. Architectural Group
- e. Control Systems Group

3.2.3 If the information is illegible, incomplete or a discrepancy exists which prevents Project Engineering incorporation, the request forms will be returned to Field Engineering for compliance with a statement describing the deficiencies. Field Engineering shall then complete the request form and return it to Project Engineering within 30 days. Drawing incorporation shall then proceed in accordance with Paragraphs 4.2.223.2.4.


3.2.4 The Mechanical Group drawings will assign unique penetration numbers to the penetrations that are used for different system services, such as conduit, piping, and instrument tubing which require closure review by Project Engineering. These penetrations shall be shown on appropriate Plant Design and Civil Group drawings. In addition, the Civil Group drawings shall show all other cut outs and corebores, such as those required for temporary penetrations or anchor bolts. This work shall be completed and issued within 90 days of receipt of this information by Project Engineering Document Control.

ATTACHMENT "E" TO CAR 289

The core drilling procedure has been implemented via Change Notice No. 168 issued June 8, 1981. A copy of this change notice is included as Attachment "F".

All corrective actions have been completed for CAR 289. Objective evidence of corrective action is submitted for your verification and close out.

ATTACHMENT "F"

 <h2>PEPM CHANGE NOTICE</h2> <p>PROJECT NO. 0645</p>		1. PAGE <u>1</u> OF <u>4</u> ATTACHMENT YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	2. CHARTERED BY CL. NO <u>158</u> 3. NO DAY YR DATE <u>5</u> <u>8</u> <u>81</u>
4. PROCEDURE NO. <u>4.3.1.6.3 (Newly Assigned)</u>		5. TITLE <u>INCORPORATION OF COREDRILLING INFORMATION</u>	
6. EXISTING CONDITION - (Not Applicable. New Procedure)		RE: CAR No. 289 OIL No. 81-015	
7. CHANGE TO READ Ref: Page 4.3-20 <u>4.3.1.6.3 INCORPORATION OF COREDRILLING INFORMATION</u> a. <u>PURPOSE</u> To describe the responsibilities for receipt, distribution, and incorporation into design drawings of a Request to Coradrill, Page 3 of 4, originated by Field Engineering at the jobsite. b. <u>SCOPE</u> This procedure applies to all personnel responsible for receiving and incorporating drawing changes into Engineering drawings.			
8. PREPARED BY <u>R. J. G. G. G.</u> <u>5/7/81</u> DATE		9. APPROVED BY <u>[Signature]</u> <u>5/7/81</u> DATE	

PEPM CHANGE NOTICE
SUPPLEMENTAL SHEET
PROJECT NO. 0005

CHANGE NOTICE
NO. 168

PAGE 2 of 4

c. GENERAL

The Request to Coredrill is initiated at the jobsite and approved for implementation by Field Engineering. The criteria for location, size, and reporting requirements are described in performance specification C-103.0, Appendix C2. Construction procedure WP/P-C-5 describes the jobsite process for origin, review, approval, and processing of the request.

d. PROCEDURE

<u>Responsibility</u>	<u>Action</u>
Project Administration	1. Receive transmittal; date stamp; route copies to Plant Design Layout, Civil, Electrical, and Architectural Group Supervisors; file original in C-103.0.
Group Supervisor	2. If request form is illegible, incomplete, or discrepant, return to Field Engineering using transmittal form, Page 4 of 4, with a request for correction and resubmittal.
	3. When the information on the request is complete, incorporate the information into applicable drawings; process revised drawings through review and approval in accordance with PEPM Section 4.3.1.6.
	4. Draft transmittal (Page 4 of 4); route transmittal and revised drawings to Project Administration.
Project Administration	5. Type transmittal; obtain required signatures; process and distribute in accordance with PEPM Section 4.3.1.3.2.

1. REQUEST TO COREDRILL																																																					
WP&IR No. _____		Report No./R.D.M. _____																																																			
Originator/Owner _____		Date _____																																																			
Dwg. _____		Rev./Sht _____		Sheet, of _____																																																	
Description _____																																																					
Spec. C-103.0 Appendix CD, Rev.																																																					
<div style="display: flex; justify-content: space-between;"> <div style="width: 20%;"> <p style="text-align: center;">N</p> <p>Hole Dia. _____</p> <p>Elev. _____</p> <p>Wall Location _____</p> <p>Plan View at Elev. _____</p> </div> <div style="width: 80%;"> <p style="text-align: center;">DESCRIPTION</p> </div> </div>																																																					
SECTION 1.1 COREDRILL																																																					
Project Fld. _____		Date _____																																																			
Instr. Fld. Eng. _____		Date _____																																																			
Struct. Fld. Eng. _____		Date _____																																																			
Piping Fld. Eng. _____		Date _____																																																			
Civil Fld. Eng. _____		Date _____																																																			
Resid. Civil Eng. _____		Date _____																																																			
2. AS-BUILT INFORMATION																																																					
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="4" style="text-align: center;">Rebar Cut</th> </tr> <tr> <th style="width: 10%;">No.</th> <th style="width: 10%;">Dia.</th> <th style="width: 10%;">Y</th> <th style="width: 10%;">D</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>1/2"</td> <td></td> <td></td> </tr> <tr> <td>2</td> <td>1/2"</td> <td></td> <td></td> </tr> <tr> <td>3</td> <td>1/2"</td> <td></td> <td></td> </tr> <tr> <td>4</td> <td>1/2"</td> <td></td> <td></td> </tr> <tr> <td>5</td> <td>1/2"</td> <td></td> <td></td> </tr> <tr> <td>6</td> <td>1/2"</td> <td></td> <td></td> </tr> <tr> <td>7</td> <td>1/2"</td> <td></td> <td></td> </tr> <tr> <td>8</td> <td>1/2"</td> <td></td> <td></td> </tr> <tr> <td>9</td> <td>1/2"</td> <td></td> <td></td> </tr> <tr> <td>10</td> <td>1/2"</td> <td></td> <td></td> </tr> </tbody> </table>			Rebar Cut				No.	Dia.	Y	D	1	1/2"			2	1/2"			3	1/2"			4	1/2"			5	1/2"			6	1/2"			7	1/2"			8	1/2"			9	1/2"			10	1/2"			<p style="text-align: center;">Adjustments From Above</p> <p>Hole Dia. _____</p> <p>A. _____ B. _____ C. _____</p> <p>D. _____ E. _____ F. _____</p>		
Rebar Cut																																																					
No.	Dia.	Y	D																																																		
1	1/2"																																																				
2	1/2"																																																				
3	1/2"																																																				
4	1/2"																																																				
5	1/2"																																																				
6	1/2"																																																				
7	1/2"																																																				
8	1/2"																																																				
9	1/2"																																																				
10	1/2"																																																				
<p>Verification of (As-Built Info) _____</p>																																																					
Comments _____																																																					
GATHERSOUND POWER DIVISION		Doc# 112 WP/P-C-5		Rev. 0	Date 10/5/77																																																
				Rev. A1	Rev. A2																																																

Request to Coredrill

070-1331 Rev. 3-81

TRANSMITTAL

BECHTEL POWER CORPORATION
GAITHERSBURG POWER DIVISION

15740 Shady Grove Road
Gaithersburg, Maryland 20878



<p>TO: FIELD CONSTRUCTION BECHTEL POWER CORPORATION P. O. BOX 41 PORT GIBSON, MISSISSIPPI 39150</p> <p>ATTN: C. D. WOOD</p>	<p>DATE: _____ COT - _____</p> <p>MIDDLE SOUTH ENERGY, Inc. BECHTEL JOB 9845 SPECIFICATION NO. _____</p> <p>BECHTEL FILE NOS. _____</p>																								
<table border="0" style="width: 100%;"> <tr> <td style="width: 30%;">_____ Series</td> <td style="width: 10%;">Encl. <input type="checkbox"/></td> <td style="width: 30%;">Under Sep. Covr. <input type="checkbox"/></td> <td style="width: 30%;"></td> </tr> <tr> <td>_____ Prints</td> <td>Encl. <input type="checkbox"/></td> <td>Under Sep. Covr. <input type="checkbox"/></td> <td></td> </tr> <tr> <td>_____ Microfilm</td> <td>Encl. <input type="checkbox"/></td> <td>Under Sep. Covr. <input type="checkbox"/></td> <td></td> </tr> <tr> <td>_____ Specs</td> <td>Encl. <input type="checkbox"/></td> <td>Under Sep. Covr. <input type="checkbox"/></td> <td></td> </tr> <tr> <td>_____ Volumes</td> <td>Encl. <input type="checkbox"/></td> <td>Under Sep. Covr. <input type="checkbox"/></td> <td></td> </tr> <tr> <td>_____ Other</td> <td>Encl. <input type="checkbox"/></td> <td>Under Sep. Covr. <input type="checkbox"/></td> <td></td> </tr> </table> <p>QA (IS) (IS NOT) APPLICABLE</p>	_____ Series	Encl. <input type="checkbox"/>	Under Sep. Covr. <input type="checkbox"/>		_____ Prints	Encl. <input type="checkbox"/>	Under Sep. Covr. <input type="checkbox"/>		_____ Microfilm	Encl. <input type="checkbox"/>	Under Sep. Covr. <input type="checkbox"/>		_____ Specs	Encl. <input type="checkbox"/>	Under Sep. Covr. <input type="checkbox"/>		_____ Volumes	Encl. <input type="checkbox"/>	Under Sep. Covr. <input type="checkbox"/>		_____ Other	Encl. <input type="checkbox"/>	Under Sep. Covr. <input type="checkbox"/>		<p>ACTION NUMBER</p> <p>1. Approved - Manufacturing may proceed. 2. Approved - Submit final dwg. - Mfg. may proceed. 3. Approved except as noted - Make changes and submit final dwg. - Mfg. may proceed as approved. 4. Not Approved - Correct and resubmit. 5. Review not required - Mfg. may proceed. 6. Comment/Approval Due Date _____ 7. Information Only. 8. Other _____</p>
_____ Series	Encl. <input type="checkbox"/>	Under Sep. Covr. <input type="checkbox"/>																							
_____ Prints	Encl. <input type="checkbox"/>	Under Sep. Covr. <input type="checkbox"/>																							
_____ Microfilm	Encl. <input type="checkbox"/>	Under Sep. Covr. <input type="checkbox"/>																							
_____ Specs	Encl. <input type="checkbox"/>	Under Sep. Covr. <input type="checkbox"/>																							
_____ Volumes	Encl. <input type="checkbox"/>	Under Sep. Covr. <input type="checkbox"/>																							
_____ Other	Encl. <input type="checkbox"/>	Under Sep. Covr. <input type="checkbox"/>																							

DESCRIPTION

Action No.	Vendor/Bechtel Document No.	Master Parts List Number	Rev.	Date Issued	Title
------------	-----------------------------	--------------------------	------	-------------	-------

cc: L. F. Dineen
C. K. McCoy
T. E. Reeves
D. D. C. Gibbs

Very truly yours,

R. S. Trickett
Project Engineer

Transmittal
PROJECT FORM



BECHTEL POWER CORPORATION
GRAND GULF NUCLEAR STATION

RECEIVED

FEB 20 1981



TELEPHONE CALL

TCI-81/52

GGNS PROJECT
MP&L CO.

Logged
3/2

ROUTE R.L. SCOTT

BY W.F. Houston OF GGNS-QA

TO A.T. Ramey OF MP&L

DATE 2-17 19 81 TIME 10:50 AM

SUBJECT Audit BGA #9 - MP&L Audit of GPD

JOB NO. 9645

NUCLEAR QA (IS) (~~IS NOT~~) APPLICABLE

FILE NOS. 1

ACTION REQUIRED (YES) (~~NO~~) BY (DATE)

COPY TO MP&L (YES) (~~NO~~)

Requested an extension of the due date to March 20, 1981 for

The following:

CAR #288

DEC R # 147

CAR #289

DEC R # 148

CAR #290

DEC R # 149

CAR #291

DEC R # 150

DEC R # 151

DEC R # 153

Additional time is needed to coordinate and schedule corrective action for the above CAR's + DEC R's identified during the MP&L management audit of GPD.

This extension was discussed with A.T. Ramey, MP&L and the extension was granted.

W.F. Houston

AUDIT CHECKLIST

MAP REF.	COMMITMENT	METHOD OF VERIFICATION	FINDINGS COMMENTS	*C T
C18.00	<u>PROJECT ENGINEERING PROCEDURES MANUAL</u> SECTION 4.3.2.6 PROJECT ENGINEERING REVISION OF SUPPLIER DRAWINGS AND MODIFICATION OF EQUIPMENT BY FIELD CONSTRUCTION SUBPARAGRAPH 4.3.2.6.1	Verify compliance with procedures outlined in sub- paragraph 4.3.2.6.1 in the conduct of modification to supplier equipment by Field Construction.	<i>Verified to require Attachment 1 and 2</i>	<i>Conformance See pages</i>

*Classification Code:

C=Conformance

N=Nonconformance

NC=Nonconformance Corrected during audit

ND=Nonconformance Documented by audited organization

A=Not Audited

V=Verified Corrective Actions

(More than one classification can be used)

PERSONS CONTACTED:

R. Gibson

COMPLETION DATE:

16, 1981

CHECKED BY:

BGA-8

(By Auditor)

4.3.2.6 PROJECT ENGINEERING REVISION OF SUPPLIER DRAWINGS AND MODIFICATION
OF EQUIPMENT BY FIELD CONSTRUCTION

4.3.2.6.1 GENERAL

Should it become necessary to modify any Supplier equipment which has been delivered to the jobsite, the procedures noted below shall be followed to provide Field Construction with the necessary information/guidance to make the modification.

- A. Changes which would alter the functional or seismic properties of delivered equipment, shall not be performed by Field Construction without prior approval by Project Engineering.
- B. Project Engineering shall insure that the modifications will not prevent the equipment from meeting its safety design function.
- C. When issuing drawings or specifications that modify equipment which has been seismically qualified by the Supplier, Project Engineering shall review the proposed modification with the Supplier to determine the effects on the seismic qualification.
 1. All physical modifications to equipment which involve structural dynamic properties should be directed by the Supplier to the extent necessary to maintain original equipment qualification.
 - a. Resubmittal of Supplier drawings by the Supplier is not required.
However, a re-qualification certificate shall be issued by the Supplier to Bechtel.
 2. If C1 above cannot be achieved, i.e.; the Supplier equipment qualification cannot be maintained. Project Engineering shall evaluate the equipment to determine if qualification can be achieved or if the equipment shall be replaced.

The analysis and/or data used in the evaluation shall be included with the original qualification document package.
 3. Should new or additional components be required for class II, ASME III



PEPM CHANGE NOTICE

PROJECT NO. 9645

1. PAGE 1 OF 2

2. CHANGE NOTICE
NO 155

ATTACHMENT:

YES ☐ NO ☒

3. DATE 1 23 81
MO DAY YR

4. PROCEDURE NO.
4.3.2.6

5. TITLE PROJECT ENGINEERING REVISION OF SUPPLIE
DRAWINGS AND MODIFICATION OF EQUIPMENT BY
FIELD CONSTRUCTION

6. EXISTING CONDITION: -

4.3.2.6.1 GENERAL

Re: PE-28-01
OIL No. 80-153

D.4 The revised drawings... ...for action (Figure 4-3n).

7. CHANGE TO READ

4.3.2.6.1 GENERAL

D.4 The revised drawings... ...for action (Figure 4-3n).

5. When a Bechtel revision to a supplier drawing or the associated SDRN do not have sufficient space to detail, describe, instruct or list affected equipment numbers, a supplemental drawing may be initiated to accomodate the modification.

When issuing a supplemental drawing, cognizant discipline personnel shall:

- Apply Bechtel Revision stamp/sticker.
- Apply supplement stamp. "THIS SUPPLEMENTS AN EXISTING SUPPLIER DOCUMENT."
- Assign the same Bechtel-MP&L unique identification number, with the following exceptions.

CONTINUED ON NEXT PAGE

8. Prince C. Sandfield 1/23/81
PREPARED BY DATE

William J. Wynn 1/23/81
FOR CONCURRENCE DATE



PEPM CHANGE NOTICE

PROJECT NO. 9645

1. PAGE 1 OF 1

2. CHANGE NOTICE
NO. 151

ATTACHMENT:

YES ☐ NO ☒

3. DATE 12/22/80
MO DAY YR

4. PROCEDURE NO.

4.3.2.6

5. TITLE

PROJECT ENGINEERING REVISION OF
SUPPLIER DRAWINGS AND MODIFICATION OF
EQUIPMENT BY FIELD CONSTRUCTION

6. EXISTING CONDITION:

4.3.2.6.1 GENERAL

D. All changes to...

2. A Supplier Drawing Revision Notice (Figure 4-3m) shall...

- a. Submittal of...
- b. The Q designation shall...
- c. A copy of the RN shall...

7. CHANGE TO READ

4.3.2.6.1 GENERAL

D. All changes to...

2. A Supplier Drawing Revision Notice (Figure 4-3m) shall...

- a. Submittal of...
- b. (Delete)
- c. (Delete)

The sequence number changes to the next available number

8.

Prepared by Patrice C. Standfield 12/22/80
PREPARED BY - DATE

For concurrence [Signature] 12/22/80
FOR CONCURRENCE DATE

mandatory that the components be obtained from the original equipment Supplier or from a Project Engineering approved Supplier providing equipment that meets Project Engineering requirements. A statement of conformance shall be required from the Supplier certifying that the components meet the applicable specification requirements.

- D. All changes to Supplier equipment performed by Bechtel Field Construction and/or Bechtel changes to Supplier drawings shall be documented as Bechtel

revisions or DCNs in accordance with procedure 4.3.1.6.1. Those revisions shall be accomplished using reproducibles produced from the latest applicable Supplier drawing. The reproducibles shall be processed the same as Bechtel P&ID drawings (Ref. paragraph 4.3.1.6.2) with the following exceptions:

- a. Circling of the revision on the back of the drawing is optional. The revision notice must contain the revision description.
- b. The review and approval requirements shall be as defined in P.E.P.M. paragraph 4.3.1.2.3. However, the review and approval by the Chief Engineer is not required.
1. The reproducibles shall be given a Bechtel revision block (see example below), conspicuously placed, in close proximity (as conditions permit) to the Supplier drawing title block.

REV	DATE	RE	CHK.	DESCRIPTION	GRP. SUP.	PROJ. ENGR.
BECHTEL REVISION						

- a. The Bechtel revision block shall indicate the next sequential revision number/ letter from the unique identification number.

PREPARED BY: The revision number shall also be indicated accordingly in the

2. A Supplier Drawing Revision Notice (figure 4-3m) shall be prepared by Project Engineering in accordance with P.E.P.M. paragraph 4.3.1.6.2 with the following exceptions;

a. Submittal of the RN to the Chief Engineers for review and approval is not required.

b. The Q designation shall be placed on Supplier drawings and the RNs for safety related equipment.

~~A copy of the RN shall be filed with the reproducibles of the Bechtel Revision only.~~

d. The Supplier Drawing Revision Notice shall be filed in general subject file 0081.

3. In addition to the P&ID RNs, (figure 4-3f) the Supplier Drawing RNs may be used to supplement the revised drawings by:

a. Providing written instructions for the execution of the field modification and where applicable,

b. May provide a list of components needed to complete the modification.

4. The revised drawings/documents and revision notices shall be transmitted to Field Construction for action (figure 4-3n).

SEE CHANGE NOTICE NO 155 (PEPM)
E. The Supplier Print Control Register (Part of ADCR) shall be updated to reflect Bechtel Revision data.

1. The next higher revision assigned by Project Engineering.

2. The "date in" shall be the Bechtel revision date.

3. The "date out" shall be the transmittal date to Field Construction.

4. The transmittal number.

5. The words "Bechtel Revision" in the remarks column.

SDRN procedure has been implemented by the Electrical Group to accommodate unique discipline requirements.



PEPM CHANGE NOTICE

PROJECT NO. 9545

1. PAGE 1 OF 1

2. CHANGE NOTICE NO. 167

ATTACHMENT:
YES ☐ NO ☒

3. DATE MO DAY YR
4 20 81

4. PROCEDURE NO.

4.3.2.6 (Page 4.3-28)

5. TITLE PROJECT ENGINEERING REVISION OF SUPPLIER DRAWINGS AND MODIFICATION OF EQUIPMENT

6. EXISTING CONDITION -

BY FIELD CONSTRUCTION.

Re: PE-28-01
OIL No. 80-153

Figure 4-3m

SUPPLIER DRAWING
REVISION NOTICE



JOB NO.	DRAWING NO.	REV. NO.
9645		
RN NO.	PAGE OF	
BY:	DATE	

7. CHANGE TO READ

Figure 4.3m

SUPPLIER DRAWING
REVISION NOTICE



JOB NO.	DRAWING NO.	REV. NO.
9645		
	PAGE OF	
BY:	DATE	

8.

PREPARED BY

R. L. Scott 4/16/81
DATE
C. L. A. L. R. L. Scott

FOR CONCURRENCE

William H. Danner 4/16/81
DATE

<u>P.O. #</u>	<u>Supplier</u>	<u>Supplier Doc #</u> <u>Client Doc #</u>	<u>Rev</u>	<u>SDEN</u>	<u>Revised Rev. Block</u>
1-004.0	S.W. Eng. Co.	01.305 2E73680 00716811	11	App. 4-16-81	✓
1-018.0	Delaware Eng + Comp	01.4 20 52454 00716826	02	App. 4-17-81	✓
1-050.0	Engelbert-Rand	01.101 144418 00717200	01	App. 5-8-81	✓
1-063.0	P+H	01.4 13 101E11639 00716077	E	App. 4-8-81	✓
1-143.0	CB+J	01.1 01 N 10629 00716955	07	App. Supersedes draws	✓
1-202.0	Magnetics	01.102 20815M2P471 00716801	E	App. 3-27-81	✓
1-203.0	Reliance	01.4 07 W99X05820 00716471	03	App. 4-3-81	✓
1-301.0	Rosemount	01.102 H33763A102 00715868	10	App. 2-24-81	✓
E-005.0	H.K. Porter	U & 7-16-81 01.113 4122200X1 00718603	05	App. 6-3-81	✓
<hr/>					
		5 0075984 4-7-16-81			
E-017.0	ITE	01.401 3350481E125 00717137	10	App. 4-23-81	✓

Reviewed the above drawings to verify that Project Engineering is complying with requirements for modifying supplier drawings. No documented evidence is maintained to show that all modifications to drawings and equipment are reviewed for engineering impact.

AUDIT CHECKLIST

MAP REF.	COMMITMENT	METHOD OF VERIFICATION	FINDINGS/ COMMENTS	*CLASSIFICA- TION CODE
	GGNS Quenchers-Design Authority	<p>Review the design of the GGNS Quenchers. Bechtel procured the quenchers using G. E. design documents without G. E. authorization. Are GGNS Quenchers equivalent in design to those "qualified" by G. E.?</p> <p>Discussed quencher situation with M. Archdeacon. Mr. Archdeacon stated that G.E. San Jose had been hired as a consultant by MSS. Bechtel has submitted design information to GEST through MSS for approval. This review and approval process is currently proceeding.</p>	C - Satisfactory. No adverse conditions noted	C

*Classification Code:

C=Conformance

N=Nonconformance

NC=Nonconformance Corrected during audit

ND=Nonconformance Documented by audited organization

A=Not Audited

V=Verified Corrective Actions

(More than one classification can be used)

PERSONS CONTACTED:

Bill Turner

Mike Archdeacon

COMPLETED BY: WJH

DATE: 7/17/81

CHECKLIST NUMBER:

BGA-81/15-53

(By Audit No.)

MP&L AUDIT OF BECHTEL-GAITHERSBURG
SEPTEMBER 28-OCTOBER 2, 1981

SUMMARY OF ATTACHED CHECKLIST APPLICABLE TO DESIGN CONTROL OR DESIGN INTERFACE

<u>CHECKLIST NUMBER</u>	<u>SUBJECT</u>	<u>NONCONFORMANCE IDENTIFIED</u>
BCGA-81/27-08	Procurement SQ Department Procedure (Unauthorized use of Unapproved Revisions)	CAR 412

NONCONFORMANCES IDENTIFIED DURING
MP&L QA AUDIT OF BECHTEL GAITHERSBURG
SEPTEMBER 28-OCTOBER 2, 1981

CAR Number 412

1. COMMITMENT: Specification No. 9645-M-181.0, Revision 2, 12/15/78, which applies to supplier of high density fuel storage racks, states in part:

"... 6.10.1 Welding Procedure Qualifications

All supplier and subsupplier welding procedures (including weld repair procedures) ... shall be submitted ... to the buyer for review and approval prior to beginning production work ...

... 7.1 Prior to beginning nondestructive examination, the seller shall submit his examination procedures to the Buyer for approval ..."

2. FINDING: Contrary to the above, the prime supplier (Exxon) authorized the fabricator (Portland Engineering) to use revisions to special process procedures that were not approved by Bechtel.

Additionally, although the above deficiency was documented on a Bechtel Quality Surveillance Deficiency Report #1 on 1/14/81 which was subsequently closed on 9/2/81, there was no evidence available to indicate that all revisions had been approved by Bechtel nor that subsequent corrective actions included an engineering evaluation of work performed to those unapproved procedures.

The specific procedures identified by the MP&L auditor were:

WPS-1401CPS-194
WPS-1404LP-2202
WPS-1501VEP-2102
WPS-1508WRP-1705

3. CORRECTIVE ACTION:

Bechtel has investigated and determined that only one procedure WPS-1501, Revision 3, was utilized and that only one item (base subassembly weld of a Control Rod Storage Rack) was involved. The cited condition has not resulted in any adverse effects to the quality of the subject storage racks. The difference in revisions of procedure WPS-1501 was such that succeeding revisions made the work less restrictive by broadening the parameters. Specifically, Revision 5 of WPS-1501, as approved by Bechtel encompasses the parameters used by Revision 3, which was not reviewed and approved by Bechtel. Bechtel has determined

that the condition was an isolated case. MP&L QA will investigate and resolve the condition during the next audit in the Bechtel Gaithersburg offices.

MAP REF.	COMMITMENT	METHOD OF VERIFICATION	FINDINGS/ COMMENTS	*CLASSIFICATION CODE
007.30	<p>PROCUREMENT SQ DEPARTMENT PROCEDURE</p> <p>PSQP-PS-9.5</p> <p>Handling of Nonconformances (QSDR Procedure)</p>	<p>INFORMATION ONLY NOT REQUIRED TO BE AUDITED</p>		
	<p>3.0 GENERAL</p> <p>3.1 The two basic types of supplier nonconformances are hardware related and quality program related. Both types are documented on the same form, the Quality Surveillance Deficiency Report (QSDR) Form PSQ-222 (Attachment 1).</p> <ul style="list-style-type: none"> A Hardware QSDR covers a violation of procedure, nonconforming hardware, and/or deficiencies noted in the documentation that can be related to a single item or group of materials or equipment. <p>Hardware QSDRs are found during surveillance inspection activities.</p> <p>Close-out of hardware type QSDRs require remedial action only, i.e., correction of the hardware/problem only.</p> <ul style="list-style-type: none"> A Programmatic QSDR covers the lack of implementation to an established quality program requirement. <p>They arise in three instances:</p> <ol style="list-style-type: none"> During the course of Quality Program Verification (Reference Procedure No. PSQP-PS-9.4). Repetitive hardware related QSDRs. A breakdown in one or more quality program elements found during normal surveillance inspection. <p>Programmatic QSDRs require an investigative, a remedial and a corrective action as described below:</p> <ul style="list-style-type: none"> <u>Remedial Action</u> - Steps taken to correct the nonconformance. Usually involves fixing existing defects produced prior to identification of the problem. <u>Investigative Action</u> - Steps taken to determine the extent, depth, and cause of the problem. <u>Corrective Action</u> - Steps taken to preclude recurrence of conditions significantly adverse to quality. 			

*Classification Code:

C=Conformance
N=Nonconformance
NC=Nonconformance Corrected during audit
ND=Nonconformance Documented by audited organization
A=Not Audited
V=Verified Corrective Actions
(More than one classification can be used)

PERSONS CONTACTED:

See page 3 of 4

COMPLETED BY:

DATE: 9/28/81

49 CHECKLIST NUMBER: BCGA-81/27-08
Page 1 of 4

(By Audit No.)

MAP REF.	COMMITMENT	METHOD OF VERIFICATION	FINDINGS/ COMMENTS	*CLASSIFICA- TION CODE
	<p>3.2 The seven general rules regarding whether or not to write a QSDR are as follows:</p> <ol style="list-style-type: none"> 1) When the SQR discovers a nonconformance either prior to the supplier's inspection or at the same time and the supplier is preparing to take appropriate action in accordance with his quality program, no QSDR shall be written. Instead, the event shall be briefly mentioned in the body of the CS Report and tracked through an "open-items" list until close-out. 2) When the supplier has previously accepted the material and the SQR discovers a nonconformance during subsequent inspection, a hardware type QSDR shall be written. A QSDR is not required on routine workmanship related items, which are corrected before the end of the report period. Instead, workmanship items shall be tracked through an open items list until closeout and closed out items briefly mentioned in the body of the CS Report. 3) When hardware type nonconformances become numerous and/or repetitive to the extent that the SQR can identify a trend, then a programmatic QSDR shall be written. The SQR should contact the Area Supervisor for guidance on the subject of whether a trend exists. The Project SQR may also be contacted for guidance. 4) The SQR shall not duplicate on programmatic QSDRs nonconformances previously identified as audit findings that remain open for reaudit activity. 5) When a breakdown in one or more quality program elements is discovered during normal surveillance inspection, a programmatic type QSDR shall be written. 6) When the supplier bypasses a hold point, a hardware type QSDR shall be written. 7) When either type of QSDR is issued to a sub-supplier, the SQR shall forward a copy to the assigned SQR at the prime supplier's shop for action and follow-up. (In the event that no SQR is assigned at the prime, the Project SQR will issue a QSDR to the prime supplier or take other appropriate action.) 	<p>INFORMATION ONLY NOT REQUIRED TO BE AUDITED</p>		

***Classification Code:**
C=Conformance
N=Nonconformance
NC=Nonconformance Corrected during audit
ND=Nonconformance Documented by audited organization
A=Not Audited
V=Verified Corrective Actions
(More than one classification can be used)

PERSONS CONTACTED:
See page 3 of 4

COMPLETED BY:
[Signature]
DATE: 9/28/81
CHECKLIST NUMBER: BCGA-81/27-08
Page 2 of 4
(By Audit No.)

HAP REF.	COMMITMENT	METHOD OF VERIFICATION	FINDINGS/ COMMENTS	CLASSIFICATION CODE														
4.0 PROCEDURE	<p>4.1 Following the identification of a nonconformance, the SQR shall initiate a QSDR as follows:</p> <p>A. Identify the nonconformance as either a Programmatic or Hardware type. The Programmatic type shall be numbered sequentially per calendar year, e.g., 80-1, 80-2, and the hardware type sequentially per assignment, e.g., 1, 2, 3,</p> <p>B. Complete entries 1 through 5 on the QSDR Form PSQ-222.</p> <p>C. Discuss the nonconformance with cognizant supplier personnel. List the name and title of the individual.</p> <p>D. Contact the Project SQR for nonconformances that will have a significant impact on the delivery schedule.</p> <p>E. Make copies of the QSDR and distribute each type as follows:</p> <table border="1"> <thead> <tr> <th>Hardware Type</th> <th>Programmatic Type</th> </tr> </thead> <tbody> <tr> <td>SQR (original)</td> <td>SQR (original)</td> </tr> <tr> <td>Supplier</td> <td>Supplier</td> </tr> <tr> <td>PSQR</td> <td>PSQR</td> </tr> <tr> <td>Area Supervisor</td> <td>Area Supervisor</td> </tr> <tr> <td></td> <td>Other Affected Projects</td> </tr> <tr> <td></td> <td>Technical Services Manager</td> </tr> </tbody> </table> <p>F. Log the nonconformance on the QSDR Log, Form PSQ-222A contained in each QS Assignment Folder.</p> <p>G. Enter the QSDR number on the Quality Surveillance Report and continue to reference it until close-out.</p> <p>4.2 The SQR shall actively follow-up and periodically report the status of open QSDRs until each is closed-out. When a supplier is unresponsive to a QSDR, the SQR shall contact the Area Supervisor for guidance and assistance in handling the situation. If the supplier remains unresponsive following these efforts, the Project shall be contacted for assistance.</p> <p>4.3 Following receipt of the supplier's written response on the QSDR, the SQR shall</p> <p>A. Verify that the action taken has corrected the nonconformance.</p> <ol style="list-style-type: none"> 1) Hardware type nonconformances require correction of the hardware/problem only. 2) Programmatic type nonconformances require correction of the hardware/problem/program as well as measures to prevent repetition. <p>B. Verify that the supplier's action is complete. Sign and date the QSDR to close the nonconformance.</p> <p>C. Make copies of the closed QSDR and distribute to the original QSDR distribution.</p> <p>D. Update the QSDR Log to show close-out.</p> <p>E. Show close-out of the QSDR on the next Quality Surveillance Report.</p>	Hardware Type	Programmatic Type	SQR (original)	SQR (original)	Supplier	Supplier	PSQR	PSQR	Area Supervisor	Area Supervisor		Other Affected Projects		Technical Services Manager	<p>SELECT A SAMPLING OF QSDRS & VERIFY COMPLIANCE</p>	<p>REVIEWED THE FOLLOWING LIST OF QSDRS AND FOUND THEM TO BE IN COMPLIANCE</p> <p>REF. # 45-J-606.D QSDR, 5, 6, 79-1, 79-2</p> <p>REF # 645-J-359.1 QSDR, 81-1 THRU 81-12</p> <p>Reviewed QSDRs associated with Spec # 945-M-181.0 and found that QSDR #1, identified on 1/14/81 was properly turned on QDRs while its checkout on 3/2/81 per QSR #31. However, the QSDR was improperly closed out in that there was no evidence available to indicate all revisions to specific process procedures had been approved by Bachtel nor that there was an examination of work performed to warranted procedures.</p>	<p>C</p> <p>C</p> <p>N</p> <p>CAR 412</p>
Hardware Type	Programmatic Type																	
SQR (original)	SQR (original)																	
Supplier	Supplier																	
PSQR	PSQR																	
Area Supervisor	Area Supervisor																	
	Other Affected Projects																	
	Technical Services Manager																	

*Classification Code:

C=Conformance
N=Nonconformance

NC=Nonconformance Corrected during audit

ND=Nonconformance Documented by audited organization

A=Not Audited

V=Verified Corrective Actions
(More than one classification can be used)

PERSONS CONTACTED:

E. DUDA, PROJECT SQ REP

COMPLETED BY:

J. M. Porter

DATE:

7-28-81

CHECKLIST NUMBER: BEGA-8/27-08

PAGE 3 OF 4

(By Audit No.)

QUALITY ASSURANCE FORM 18.10(D), Rev. 5, 6/22/81

MAP
REF.

COMMITMENT

METHOD OF VERIFICATION

FINDINGS/
COMMENTS*CLASSIFICA-
TION CODE
 QUALITY SURVEILLANCE ATTACHMENT 1
 DEFICIENCY REPORT
 PSQ-222

 PAGE 1 OF 1
 HARDWARE QSR NO.
 PROGRAMMATIC QSR NO.
 DATE

 1. SUPPLIER NAME & LOCATION: ☐ PRIME ☐ SUB-SUPPLIER ☐ 2. NAME OF SQ REP. (Print)

3. CONTROLLING DOCUMENT(S): (QA Manual, Specification, Procedures, Drawing Controls, etc.) ASSIGNMENT NUMBER

4. REQUIREMENT (Paraphrase or other reference from the operating document. (Quote or paraphrase the requirement. Include document number or reference code.)

5. DEFICIENCY (Provide complete description, i.e. What, where, when, how many, parts etc., etc.)

 POTENTIAL IMPACT ON PREVIOUSLY SHIPPED HARDWARE ☐ YES ☐ NO IF YES, ATTACH DETAILS

6. DISCUSSED WITH SUPPLIER PERSONNEL NAME & TITLE 7. BECTEL PROJECT(S) AFFECTED

 8. ACTION TAKEN (How taken to resolve the deficiency, in accordance with applicable IMPACT ON PREVIOUSLY SHIPPED HARDWARE ☐ YES ☐ NO IF YES, SUPPLY DETAILS

SUPPLIER SIGNATURE DATE COMPLETED:

9. ACTION TAKEN VERIFIED BY: (Signature of SQ Rep.) 10. DATE VERIFIED:

 11. DISTRIBUTION
 1. Assigned SQ Rep. (For follow-up & close out.)
 2. Supplier (For action to resolve the deficiency.)
 3. Attached Project Engineer to QSR (For info & action deemed appropriate - Hardware)
 4. Attached Project Engineer to QSR (For info & action deemed appropriate - Programmatic)
 5. SPCO Technical Services Manager - Programmatic only
 (Use PSQO Continuation Sheet, if)

REV. 1, JULY 1980

0	4/16/80	Original Issue for Implementation	JLS
REV	DATE	DESCRIPTION	BY

 INFORMATION ONLY, NOT
 REQUIRED TO BE
 AUDITED

*Classification Code:

C-Conformance

N-Nonconformance

NC-Nonconformance Corrected during audit

ND-Nonconformance Documented by audited organization

A-Not Audited

V-Verified Corrective Actions

(More than one classification can be used)

PERSONS CONTACTED:

See page 3 of 4

COMPLETED BY:

DATE: 9/28/81

CHECKLIST NUMBER: BCGA-81/27-08

Page 4 of 4

(By Audit No.)

DESIGN CONTROL FOR THE GRAND GULF NUCLEAR STATION

UNITS 1 AND 2

I. INTRODUCTION

A. GENERAL CONCEPT OF DESIGN CONTROL

Bechtel Power Corporation, as Architect-Engineer for the Grand Gulf Nuclear Station, has performed safety related design work under an approved Quality Assurance Program. This program complies with the criteria of 10 CrR 50, Appendix B, and is supplemented by implementing departmental procedures. The Quality Assurance Program provides the basis for addressing the general requirements in the design, construction and checkout testing performed for Grand Gulf.

The following sections describe how the Bechtel QA program, through use of detailed procedures and audits, has assured the proper level of design control. In addition, major efforts providing further design verification are briefly described.

The result of this Quality Assurance Program and associated design verification efforts is a high degree of confidence in the design and construction of the Grand Gulf Nuclear Station.

B. BECHTEL POWER CORPORATION EXPERIENCE

Bechtel Power Corporation has been employed as the architect-engineer since the inception of the Grand Gulf Project. Bechtel has had extensive experience in the power plant industry, including 30 years in the nuclear energy area. It has designed and/or constructed 91 nuclear power plant units worldwide, with 34 units now in operation. Bechtel plants include Skagit and Kuosheng, both Mark III plants, the latter being the first Mark III in operation. Total nuclear power capacity designed and/or constructed by Bechtel accounts for 78,000 MWe.

II. BECHTEL QA PROGRAM

The Bechtel QA program is and has been an integral part of the daily activities of the project. Adherence to the program and various procedures by the hundreds of personnel assigned to the project is borne out in the results of inspections and surveillances conducted by organizations both on and off project.

Bechtel's matrix organization (project and staff) requires that the Bechtel QA program provide coverage over both areas. In this regard, the project's activities either directly or indirectly are subject to audit/surveillance by:

- NRC - which audits Bechtel home office activities, as well as the operations at the jobsite.
- Owner - which performs audits and surveillances of project and corporate staff activities as well as the jobsite activities via an on site QA organization.
- ASME - the project is committed to a code stamping program of piping systems and, therefore, both home office and jobsite activities are audited every three years; additionally, audits are performed twice annually by Kemper Insurance (ANI).
- Departmental Staffs - periodically review the work and procedures being followed on project to assure conformity to approved standards.

- Bechtel QA Management - conducts annual audits of project, jobsite and staff functions to assure conformance to the approved project and division QA manuals.
- Bechtel Division Management - assures compliance to the approved QA manuals via the division QA manager as well as through the annual review of all QA activities in the division.

The project receives support in both quality and non-quality related functions from a number of corporate level departments. Among these services are:

- Supplier Quality Services - which provides the link between engineer and supplier.
- Codes and Standards - which is the prime interface between Bechtel and ASME.
- Materials and Quality Services - which provides expertise to all projects in the area of welding, NDT, and coatings.
- Technical Services Agreements - which are formal agreements with outside organizations possessing unique skills and whose QA programs are acceptable to Bechtel.

III. DIVISION QA MANAGEMENT

Day to day work activities on the project are guided by established procedures. These procedures, in turn, have been developed in accordance with the quality programs and policies bearing on the project, namely:

- 10CFR 50 Appendix B
- SAR Chapter 17
- MP&L QA Program
- Bechtel QA Manual
- Departmental Policies

The implementation of the Bechtel QA Program is subject to regularly scheduled audits by the NRC. During the course of these audits, the Grand Gulf project has been visited to verify implementation. In the past four years alone, the NRC audit activities have resulted in eighteen (18) visits to the Grand Gulf project in Gaithersburg.

Division QA management is committed to scheduled audits of project and jobsite activities. In the past ten years, GGNS project engineering has been subject to fourteen (14) comprehensive audits. These have resulted in sixty-nine (69) findings, primarily of a procedural nature. In each case, prompt corrective action was taken; two items remain open pending verification. The audits for the most part involved program verification although technical areas were also addressed.

In addition to audit responsibilities, the Division QA management provides a coordination function by reviewing deficiency reports which originate in the Gaithersburg Power Division as well as in the other Bechtel divisions. Information which is applicable to GPD projects is disseminated via QA flyers or by routing the project originated deficiency reports for information or follow up.

IV. PROJECT QA PROGRAM

The QA program is implemented on project by means of on-project groups both in Gaithersburg and at the jobsite. The program scope includes all quality related activities performed by Bechtel, suppliers and contractors.

A comprehensive system of planned and scheduled audits is carried out to verify compliance with all aspects of the Quality Assurance program and to determine the effectiveness of the program. The audits are performed in accordance with written procedures or checklists by appropriately trained personnel not having direct responsibilities in the areas being audited and cover all elements of the program on an annual basis. Audit results are documented and reviewed by management having responsibility in the area audited. Follow-up action, including re-audit of deficient areas, is taken as indicated.

Since the inception of the project, 183 audits of project engineering activities have been conducted; similarly, 350 audits of field activities have been conducted.

Project QA personnel are responsible for screening deficiencies for reportability under the provisions of 10CFR50.55(e) or 10CRF21. This program has been closely coordinated with the requirements of Mississippi Power and Light Company (MP&L). The diligence in carrying out the program is evident in the results where there have been:

185 Potentially Reportable Deficiencies

78 Reportable Deficiencies

18 Part 21 Reportable Events

In each case, whether the deficiency was identified by MP&L or Bechtel, prompt resolution was undertaken. The same diligence in monitoring day to day activities is demonstrated in the number of Stop-Work orders which have been issued by MP&L and Bechtel. Since project inception, MP&L has issued six (6) such orders while Bechtel has issued 36 Stop Work orders.

Project QA personnel also coordinate the ASME program at the jobsite. The program is described in the Bechtel Quality Assurance Manual (BQAM) for ASME Section III, Division 1. All activities are controlled by this manual and are audited by the ASME every three years to re-accredit the site ASME certificates. The BQAM is audited twice annually by the Kemper Insurance Company (ANI), which also has resident inspectors assigned to the jobsite.

V. PROJECT ENGINEERING QUALITY PROGRAM

Bechtel management has established a system for quality assurance on Bechtel nuclear projects and has emphasized the point that project engineering is responsible for control and verification of the quality of engineering design work. That is, basic responsibility for quality is assigned to the activity performing the work and the first line of control is with the individual actually designing or performing the engineering work.

The Project Engineer has the overall responsibility for the quality of engineering work on his project. The Quality Engineer and a supporting staff are assigned to the project to perform the detailed work involved in verifying that the quality program is implemented effectively and efficiently among each of the disciplines.

Samples of the detailed work performed by the Project Quality Engineer, who verifies compliance with the Quality Assurance Program, are as follows:

- Performs monitoring and surveillance of the engineering activity to assure general compliance with procedures. During the time period 1974 through the end of the year in 1981, a total of 260 surveillances were performed. A review of these records reveals that findings were primarily of an administrative nature and did not reflect technical problems. It should be noted that while these surveillances do not reflect technical reviews in all cases, the safety-related engineering documents such as drawings,

- specifications, calculations, etc. are subject to the discipline Chief Engineer's review, in concert with engineering procedures.
- Develops, coordinates, and schedules indoctrination and training sessions on the engineering procedures. The Project Quality Engineer established a schedule, by which training sessions have been performed approximately every six months from its inception in 1974. This training has been performed to include the Project Engineer, Assistant Project Engineers, Group Supervisors, Group Leaders, selected discipline responsible engineers, quality engineers, and the project administrator.
 - Prepares engineering procedures that assure compliance with the Quality Assurance Program. The Project Quality Engineer prepares procedures with the assistance of the project team; coordinates review and approval; and monitors the issuance of the procedures and their change.
 - Coordinates the development, preparation, and maintenance of the Design Control Checklist. This includes verification that design reviews are completed in a timely manner, and that the resulting design review notices are properly completed. The Design Control Checklist identifies those safety related documents, such as drawings, specifications, calculations, etc., which require a review by the applicable discipline Chief Engineer and the Nuclear Chief Engineer, when required. (NOTE: These off-project reviews provide added assurance of design adequacy.)

- Reviews engineering specifications and their revision for inclusion of documentation requirements, quality program requirements, and acceptance criteria.
- Reviews vendor Quality Assurance Programs to ensure compliance with the governing criteria and project requirements.
- Reviews vendor deviations to ensure compliance with project quality and engineering requirements and concurs in the engineering disposition.

In summary, the Bechtel system of design and review is based on the project system which provides as many as four levels of review above the responsible engineer who performs the work. These levels of review include the checker, the discipline group leader, the discipline group supervisor and the Project Engineer.

Due to the depth of expertise available within the organization, the Bechtel Project Engineer has utilized very few Technical Services Agreements on Grand Gulf. This has had the effect of minimizing the number of design interfaces on the project. The organizations with which Bechtel has Technical Services Agreements were audited to assure their compliance with the applicable QA program.

Engineering on-project technical reviews provide for a departmental evaluation of design work by the discipline groups. The cognizant Chief Engineers provide an intra-departmental monitoring of Project Engineering

design activities. The Grand Gulf project has had twenty-six (26) technical reviews since the inception of the program in 1978.

In addition, each discipline Chief Engineer reviews selected documents specified on the project Design Control Checklist. The Chief Engineer's review and approval is accomplished on drawings which are to be "issued for construction" and on specifications which will be transmitted outside Bechtel offices for client approval, or for bids, purchase orders, etc. All drawing and specification revisions thereafter will require the same internal project review and approval as the original design. The Chief Engineer's review and approval is required for document changes that affect design concepts, design criteria and SAR commitments. The approval of these documents by the discipline and Nuclear Chief Engineer are documented on the Design Review Notice form. The Design Review Notice form provides the means by which the documents identified by the Design Control Checklist are submitted for the Chief Engineer's review and approval.

In addition, GPD Chief Engineers issue problem alerts whenever a significant problem is identified by projects or the industry and when action to prevent its recurrence is required. The alerts are distributed to the following personnel in the Bechtel Gaithersburg Division, as well as to other Bechtel divisions.

- Managers of Engineering and Engineering Managers
- Supervisors of Quality Engineering
- Project Engineers of affected projects
- Group Supervisors of affected disciplines of affected projects

VI. BECHTEL SUPPLIER QUALITY PROGRAM

Suppliers are qualified for procurements by survey, quality assurance manual evaluation and overall capability evaluation. The results of these activities are reviewed by Project Engineering as an interface activity. The results of these activities are also entered into a computer data bank, which currently contains approximately 750 suppliers of safety related material, equipment and services in use, within the last 24 months, on Bechtel projects.

Bechtel conducts supplier audits utilizing personnel trained in accordance with ANSI N45.2.23. These audits examine the implementation of supplier quality programs and, concurrently, a supplier's compliance with the technical requirements of engineering specifications.

Noncompliances discovered during the audit are presented to the supplier as Audit Finding Reports (AFRs). The Bechtel Audit Team may impose restrictions in conjunction with each finding if the condition warrants such action to assure appropriate material or process control.

Three hundred and four (304) audits have been conducted on 102 Grand Gulf project suppliers, with 478 AFRs generated. Of these AFRs, 83 resulted in 79 hold on shipment restrictions, and 3 resulted in 3 stop work notifications. The stop work notifications to Grand Gulf suppliers have been: Fisher Controls, R.T.E. Delta and Turbonetics. Each of these stop work notifications was removed upon verification of the implemented corrective actions.

Bechtel's follow-up program on open AFRs is tracked on a computer program with actions at prescribed time intervals. This monthly report provides users with a status of all open supplier AFRs for all Bechtel projects.

Bechtel's Quality Surveillance activities are defined as the selective review, observation and evaluation of processes, procurement, manufacturing operations, quality control systems and programs to determine supplier compliance with contractual quality requirements. Also, included in this activity is the review of documentation in accordance with purchase document requirements. This review is performed at the supplier's facility prior to each shipment of safety related equipment, with the exception of minor "off-the-shelf" items.

Surveillance is performed in accordance with a plan based on the commodity complexity, supplier history and specification requirements. This plan is reviewed and approved by Engineering.

The performance of surveillance activities is documented in reports. These reports are reviewed by the Supplier Quality organization and distributed to Engineering, Quality Assurance, and client personnel.

Assistance is provided to individuals performing surveillance to solve technical problems; e.g., metallurgy, welding and nondestructive examination (NDE). This assistance is provided from various organizations such as Engineering, and Materials and Quality Services. In the aforementioned description, there is an added degree of confidence that material and equipment produced and shipped to the jobsite by Bechtel suppliers meet contractual requirements.

VII. ON SITE QUALITY PROGRAM

Translation of engineering requirements into the constructed plant involves the document control system as well as the field quality control organization. Both activities at the project site are under the supervision of experienced personnel and are fully described in auditable procedures.

Field control of design drawings and specifications is established and maintained by a system of control logs and approved controlled drawing stations. Incoming documents are logged into master distribution logs. These logs indicate the latest revision of each document and in which controlled drawing stations each document is maintained. Control documents are distributed and controlled by the Document Control Center. The print coordinator/clerk distributes new revisions and removes superceded copies of controlled documents at each control station. Superceded copies are destroyed by the print coordinator/clerk once new revisions are in place at the control station. Verification of this process is accomplished through sign-off on a distribution verification sheet. Information copies used by craft personnel are checked against the control copy and verified by sign-off.

Field Engineering, Quality Control, Quality Assurance and Field Supervision are notified of new revisions by the Document Control Center. This is accomplished through updating the area master distribution log and posting copies of distribution verification sheets daily at the control stations. A quarterly configuration survey of each control station is performed by field document control center personnel. The configuration survey is a process of verifying the revisions of the documents at the control station against the master distribution log. This controlled drawing system is also audited by the Bechtel and client Quality Assurance Departments.

Vendor manuals and Design Standards and Codes Libraries are maintained under lock. Standard library sign-out cards are used for control. If necessary, the manual or book will be recalled for any update.

Quality control personnel, in addition to performing surveillance on the construction activities, also perform a number of functions which relate directly to the design drawing verification process, namely:

- The responsible quality control engineer (QCE) performs a periodic check of the Master Control Log or his area stick file to verify that the latest applicable drawing is being utilized during work processes, prior to performing inspections/tests.

- Upon final acceptance, the QCE verifies the latest drawing and records the drawing and revision numbers on the Work Plan and Inspection Record (WP&IR). The lead discipline QCE, or his designee, performs a final review of the WP&IR, verifies the drawing revision and submits the completed WP&IR to the QC records vault.
- Final acceptance is withheld on inspections performed to redline drawings until the drawing is revised and QC verifies that the redline has been incorporated into the latest drawing revision.
- Prior to signing systems release packages, the discipline QCEs review the latest drawings and verify that documentation for each piece, spool and weld number is in the vault. Open items are listed on a punch list for resolution.

VIII. OBJECTIVE EVIDENCE OF A/E QUALITY ASSURANCE PROGRAM

The Quality Assurance program implemented by Bechtel has been an integral part of the design process since inception. This philosophy has been adopted as well on field activities. Several organizations, internal and external to Bechtel, have performed audits of the project activities. Audits have generally shown design control to be satisfactory. Findings, where identified, have been handled expeditiously; and, where required, definitive action has been taken to modify procedures to prevent recurrence.

The number of instances where procedural changes were required is not large. A representative list of the instances and the actions taken are summarized below for review:

1. Audit - September 1976

Finding

The method of handling and routing "Management Corrective Action Reports" by the Project Engineer was not consistent with the Nuclear Quality Assurance Manual (NQAM).

Action

The Project Engineering Procedures Manual was revised to comply with the NQAM requirements. The review of past practices disclosed that Management Corrective Action Reports were not affected in routing and handling.

2. Audit - March 1977

Finding

An audit by Bechtel of Turbonetics, a GGNS supplier, resulted in the imposition of a "stop work" order following consultation with the Project Engineer.

Action

Non conformances which were found involved the use of unapproved welding procedures and an unapproved QA program. Follow up by the supplier and Bechtel resulted in the review and approval of the required documents by Bechtel and the lifting of the "stop work" in September 1977. All shipments by the supplier were certified to be manufactured in accordance with the approved manual and procedures.

3. Audit - September 1978

Finding

Project Engineering Procedures specify that the Design Criteria Manual for the project contain specific references to applicable codes and standards employed on the project.

Action

The Design Criteria Manual was thoroughly reviewed; codes and standards were identified by applicable date and revision number. Current practice until the issuance of the finding, involved the use of the applicable code or standard; and, as a result, no backfits were required.

4. Audit - September 1978

Finding

Section 6.2 of the Project Engineering Procedures Manual (PEPM) requires initiation, review, approval, maintenance, and monthly monitoring of the Design Control Checklist (DCCL). Conformance to the procedure was not evident as indicated by the following: deletions from the DCCL were not properly identified; the methods of maintaining the DCCL were not consistent; the monitoring process was not recorded; Design Review Notices (DRNs) were not available for all revisions to the DCCL.

Action

Design Control Checklist (DCCL) procedures and DRN procedures were reviewed and revised. The DCCL form was revised to list DCCL requirements only. Project files were established for the DCCL.

5. Audit - May 1979

Finding

Project Engineering Procedures Manual Section 4.10, Licensing Commitment Tracking System, does not adequately define certain aspects of the process as it actually transpires.

Action

A thorough review of the procedure and the work process disclosed a requirement to modify practices to be consistent with the procedure and also to make modifications to the procedure to more clearly delineate personnel responsibilities and related procedures.

Appropriate changes were effected and a review of past practices was undertaken to assure that they were in conformance with the intent of the PEPM.

6. Audit - June 1980

Finding

A review of the system of controlling Supplier Drawing Revisions (SDRNs) disclosed numerous nonconformances and resulted in the imposition of a "stop work" order.

Action

A full review of all SDRNs was performed, for nonconformance to the existing procedure, and documented by nonconformance reports. As a result of the remedial actions taken, the "stop work" was lifted in March 1981; nonconformances were tracked until properly dispositioned.

The foregoing examples indicate the diversity of the audit program, the responsiveness of the A/E in taking action, and the relative importance of the findings which have been identified.

IX. DESIGN VERIFICATION

Design verification activities have been an integral part of the design process for the Grand Gulf Nuclear Station. These activities have been augmented by NRC design verification requirements and by independent third party technical reviews conducted by national laboratories under contract to NRC. A brief description of major efforts in design verification follows.

A. DISCIPLINE CHIEF ENGINEERS REVIEW

The Bechtel discipline Chief Engineers' reviews are technical reviews of on-project engineering activities by the cognizant Chief Engineer and/or his staff, who are not associated directly with the project engineering team. These reviews are conducted annually by the Chief Engineer for a departmental evaluation of selected design work on project.

Follow-up corrective measures, when deficiencies are discovered, are established and documented. Additionally, follow-up actions for design improvement purposes, when appropriate, are established and implemented.

A typical system review will normally include a review of applicable design criteria, regulatory commitments, codes and standards. The system reviewers will normally evaluate the use of appropriate feedback information from suppliers, startup, other projects, etc. This review provides additional assurance of the technical accuracy and completeness of design activities.

B. MARK III CONTAINMENT LOADS EVALUATION (NEW LOADS ADEQUACY)

All safety related structures, systems and components in the Grand Gulf containment building were reanalyzed between 1978 and 1981.

The most significant issue in the design of the Grand Gulf containment has been the incorporation of dynamic loads associated with the suppression pool that were not included in the original design of the containment. Initial design of the containment was released and construction had begun and progressed considerably when, in late 1975, it was determined that the Mark III pressure suppression containment concept had not recognized certain dynamic loads. These loads would develop during operation of the safety relief valves which vent into the suppression pool, or might be imposed in the event of a loss-of-coolant-accident. At the time these loads were recognized, the structure was already under construction and pipe supports and equipment had been released for fabrication based upon only the seismic criteria.

The suppression pool hydrodynamic load criteria was a continually evolving design loading criteria as information became available from a variety of full-scale and reduced-scale testing facilities and analyses. Structural redesign work was initiated in 1975 and during the ensuing years numerous redesigns took place while the load testing program was in progress. In March, 1978, Bechtel determined that the basic hydrodynamic loads which were being used for the design may not totally envelop the test program results. It was then necessary to once again reanalyze all safety-related structures, systems and components within the Grand Gulf containment.

Previously established detailed procedures for design control were used for the reanalysis. In March, 1978, the reanalysis and redesign began. This reanalysis and redesign included safety-related piping, supports, HVAC (heating, ventilating, air conditioning) duct work and associated supports, conduit supports, cable tray and associated supports, structures, and equipment. This reanalysis and redesign work, carried out under stringent design control, gives us additional confidence that safety related systems have been designed properly.

C. SEISMIC ANALYSIS FOR AS-BUILT SAFETY RELATED PIPING SYSTEMS
(NRC I&E BULLETIN 79-14)

NRC I&E Bulletin 79-14 requires that computer analyzed seismic Category I piping be inspected to ensure that the as-built condition

agrees with the as-analyzed condition. Piping systems are walked down by trained personnel utilizing a written procedure. The walkdown team is independent from the construction team and works under the direction of the Bechtel Project Plant Design Engineering Supervisor. The walkdown team documents the as-built condition; and the data collected are evaluated by stress analysts for reconciliation with the original analysis. All open items are then tracked on a system punch list. Several walkdowns are performed until all the open items for a given system are closed (i.e., the as-built condition agrees with the as-designed condition). Finally, a report is prepared by the stress analyst summarizing the results of inspection. Reanalysis/rework necessary to ensure compatibility between as built and as designed conditions is completed under the direction of the Bechtel Project Engineer and Project Field Engineer.

D. STARTUP RELATED DESIGN VERIFICATION RESPONSIBILITIES

The startup activities at Grand Gulf are categorized into three phases: the Checkout and Turnover Organization (CTO phase) and pre-operational and startup testing phases. Each group is responsible for a particular type of testing and each operates within its respective quality assurance program.

Bechtel Checkout and Turnover Organization

The Checkout and Turnover Organization (CTO) testing consists of individual component testing, component and pipe flushing and cleaning, reactor and major steam plant hydrostatic testing.

The test program is organized and controlled by the CTO manual in the following chronological order:

- System Release

CTO performs a pre-release walkdown with the responsible construction engineer and quality control engineer (as applicable) to determine component/system completion and to generate a discrepancy list (punchlist). The walkdown is conducted using Bechtel Project Engineering and/or Field Engineering approved documents to which the build must conform.

- Component Tests

Component tests are performed on individual equipment components and systems in accordance with written and approved test, flushing, cleaning, energization, and special test procedures. These procedures are based on approved project and field engineering design documents and Project Engineering approved vendor technical data. Test data is recorded in standard formats, as prescribed in the CTO Administrative Manual. Test data sheet entries are verified to be within acceptable limits by personnel certified to act in this capacity.

- Startup Field Report (SFR)

In the event that a design deficiency, component failure, safety hazard, or as-built condition not per design is discovered during the course of testing, the SFR is the vehicle

used by CTO to communicate these discrepancies to Project Engineering or Field Engineering. All SFRs are reviewed by CTO and jobsite Quality Control (QC) personnel for reportability in accordance with 10 CFR 50.55(e) and 10 CFR 21.

- Construction Work Permit (CWP)

The CWP is the vehicle used by CTO to communicate equipment deficiencies and system build configurations that do not meet design intent to the construction force. It is a jobsite document that controls access to and rework on equipment released to CTO or turned over to Mississippi Power and Light Company. Additionally, the CWP documents work performed. It is reviewed by jobsite QC forces for compliance with approved design.

- Construction Master Punchlist

The construction master punchlist is used to track SFRs, CWPs and other component/system open items and discrepancies. It is monitored by QC forces to ensure that safety related design and construction documents are stored in the QC vault before the discrepancy is removed from the punchlist.

- CTO System Status Index

The status index is a listing of commodities by startup system. It documents the testing requirements, test status and the organization that has custody and control of the equipment. It is monitored by QC and QC personnel accompany CTO test

engineers during the conduct of testing to further ensure design-build compatibility and conformance to approved test procedures.

- Component/System Turnover

When CTO testing is nearing completion, a turnover package is assembled by CTO to transfer custody and control of the system/component to the client. The turnover package contains all drawings, data sheets, and test procedures used during testing and includes appropriate signatures verifying that the as-built condition satisfies the design logic of the included documents. All discrepancies are entered on the Construction Master Punchlist and SFRs and CWPs are issued as required. When the necessary discrepancies are corrected, custody and control of the equipment is transferred to Mississippi Power & Light Company for preoperational and startup testing.

E. ENGINEERING REVIEW TEAM

The purpose of the Bechtel Engineering Review Team (ERT) is to review the installation of all safety-related equipment for possible exposure to conditions or hazards that may affect the ability of the

equipment to perform its safety function. The ERT does not relieve Project Engineering or Field Engineering of their respective design responsibilities. The intent is to have an independent review to assure that all possible conditions or hazards have been identified.

The Bechtel design criteria used as a basis of review for potentially hazardous conditions are as follows:

- Design Criteria Manual, "Failure of Non-Seismic Category I Equipment Which May Strike Safety-Related Equipment During a Seismic Event"
- Specification M-195.0: "High Energy Pipe Whip"
"Jet Impingement From a High Energy Pipe Break"
"Flooding or Spray Wetting"
- FSAR Section 3.5: "Missile Protection"
- Specification J-702.0: "Separation of Redundant Safety-Related Off-Line Instruments"

The review itself is accomplished by a team composed of representatives from the various project and field disciplines, as determined by the Project Engineering ERT Coordinator. The ERT performs a walkdown of all areas containing safety-related equipment on a room by room basis. Any potential hazards are reported and logged in accordance with Bechtel Project Engineering Procedure 3.2.6. Each room reviewed has a unique walkdown cover sheet and safety related equipment list to be signed off by the members of the walkdown team. These forms are also logged and filed in accordance with Bechtel Project Engineering Procedure 3.2.6.

The Project ERT Coordinator organizes the walkdown teams, plans the walkdown schedules, logs all documentation, and monitors all outstanding ERT items. The final ERT walkdown effort has been completed and all outstanding ERT reports have been assigned to the disciplines responsible for evaluation and disposition.

After final walkdown of a given area, Field Engineering is notified of the walkdown completion. Field Engineering then monitors all additional construction activities in that area and notifies the Project ERT Coordinator of any additional ERT evaluation that may be required.

F. INDEPENDENT TECHNICAL DESIGN VERIFICATION AUDITS

As a part of NRC's technical review of the Grand Gulf Nuclear Station Final Safety Analysis Report, two independent technical design verification audits were conducted. These audits are briefly described as follows:

1. Structural Design Verification Audit

In March 1980, the NRC Structural Engineering Branch, assisted by EG&G Idaho, Inc., conducted an independent structural design verification audit of Grand Gulf. This extensive technical audit was conducted to review and assess the techniques and methodology employed to demonstrate compliance of all Category I structural design to applicable codes, standards and regulatory guidance.

This week long audit included extensive review and verification of the following as identified in pre-audit checklists (attached) provided to Grand Gulf by the NRC.

- Civil/structural design criteria for all loadings
- Methods of analysis (emphasis on seismic analysis)
- Final design calculations
- Final design drawings
- Conformance to acceptance criteria

Major review areas were identified and additional action was performed to alleviate any identified concerns. These areas included the following:

- Grand Gulf FSAR civil/structural design load combinations were compared with latest SRP load combinations.

- Additional seismic analyses for five Category I structures were performed by Bechtel to compare Regulatory Guides 1.60 and 1.61 seismic criteria to Grand Gulf FSAR criteria.
- Containment suppression pool loads in the General Electric Company Interim Containment Loads Report, Revision 2, were categorized against the NRC/SEB Branch Technical Position.

Civil/structural design criteria, sample final design calculations, design drawings, and other requested information as noted below were transmitted to the NRC consultant for further technical review.

General calculations submitted for further review included:

- Tornado missile design
- Soil - structure interaction analysis using lumped parameter approach

Containment building calculations submitted for further review included:

- Suppression pool boundary loads for SRV/LOCA
- Enclosure building mass and stiffness

- Torsional analysis for filter demineralizer room
- Calculations for governing concrete and steel stresses
- Tangential reinforcing
- Pool swell at elevation 135'-4"
- Enclosure building bracket design
- Comparison of containment liner stress to ACI-359
- Modified working stress methodology

Control building calculations submitted for further review included:

- CMU wall design
- Floor framing
- Shear walls
- Column design

Auxiliary building calculations submitted for further review included:

- Comparison of 2D versus 3D seismic mathematical models
- 3D mass and stiffness calculations
- Spent fuel pool hydrodynamic analysis
- Floor framing
- 150 ton crane calculations
- Comparison of spent fuel pool liner stress to ACI-359

Standby service water cooling tower basin calculations submitted for further review included:

- Calculation of loads, load combinations
- Piping attachments to building

Category I yard structure calculations submitted for further review included:

- Piping analysis in free field and at building interface
- Electrical duct banks
- Buried diesel oil storage tank

Review of and response to audit action items were coordinated with Final Safety Analysis Report (FSAR) first and second round requests for additional information.

A comparison of finite element versus elastic half-space seismic analysis methods was performed by Bechtel for major Category I structures.

During the audit, all phases of design were reviewed.

Independent sample calculations were performed; assumptions

verified; data application checked. After the initial audit, EG&G performed an extensive independent seismic analysis of the Grand Gulf containment and auxiliary building. EG&G independently developed seismic mathematical models and used independent computer codes in performing the analysis. The EG&G analysis confirmed the acceptability of the Grand Gulf analysis.

In summary, independent design verification found techniques, methodologies, and compliance to codes, standards, and regulatory guidance acceptable.

2. Confirmatory Piping Stress Analysis

During the FSAR second round review, Pacific Northwest Laboratories (Battelle), under contract to NRC's Mechanical Engineering Branch, conducted an independent confirmatory analysis of a major Grand Gulf stress problem.

The piping system chosen was a main steam safety relief valve line. This piping is subjected to a wide range of loading conditions which include static (weight and thermal), seismic (OBE and SSE), dynamic (steam hammer force-time history), and hydrodynamic (SRVA, chugging, etc.) conditions.

Battelle confirmed calculated stresses, strains and displacements. The confirmatory analysis verified that the methodology used by Bechtel in the analysis was correct.

The methodology used in this analysis is similar to that used by Bechtel for all other Grand Gulf piping analysis.

G. FIRE PROTECTION - SAFE SHUTDOWN ANALYSIS

The fire protection-safe shutdown analysis was performed to verify that adverse spatial and process coupling of systems would not exist; a safe shutdown analysis and walkdown was performed for all areas of the plant in which safety-related equipment, components, or cables are installed.

An independent review was performed to ensure that no single fire could prevent the plant from being safely shutdown and maintained in a safe shutdown condition. Where existing design features were not adequate to comply with defense-in-depth fire protection concepts, additional fire protection measures were provided. The analysis verified that the fire protection systems provide a high degree of assurance of design adequacy.

This analysis was also used to verify that requirements of NRC Branch Technical Position ASB 9.5-1 and 10 CFR 50, Appendix R, were met.

H. VERIFICATION OF EQUIPMENT ADEQUACY

Bechtel engineering procedures have ensured that purchased equipment was appropriate for its intended application.

These procedures provided direction in the following areas related to equipment technical specifications:

- Licensing and technical requirements to be considered
- Provisions for independent checks and reviews
- Quality Assurance considerations
- Documentation and control measures
- Vendor correspondence provisions

Late in the design process, additional verification of equipment adequacy was performed under the NUREG-0588 (environmental) and SQRT (seismic) programs.

The NUREG-0588 program involved the following:

- Recalculation of equipment service conditions to stringent criteria.
- Audit of vendor documentation to ensure compliance with NRC and industry guidance.
- MP&L and NRC concurrence in Bechtel audit findings.
- Systematic resolution of open items by fuel load or justification for interim plant operation.

The SQRT program involved the following:

- Independent and objective re-evaluation of vendor seismic qualification documentation.
- MP&L and NRC concurrence in the results of the re-evaluation.
- Systematic resolution of open items by fuel load or justification for interim plant operation.

As a final verification of equipment adequacy, an extensive test program is conducted prior to and following fuel load. This program tests components individually and as part of systems to ensure proper application.

PRE-AUDIT CHECKLIST

STRUCTURAL DESIGN VERIFICATION AUDIT

GRAND GULF NUCLEAR STATION

STRUCTURAL AUDIT CHECKLIST

Plant GRAND GULF

Structure Containment and Internals

Applicant

Architect/Engineer

Auditor

The purpose of the audit is to review and assess the techniques and methodology employed by the applicant to demonstrate compliance of all Category I structures with the applicable SRP's, Reg. Guides, Codes and Standards.

The general procedure of the audit will be to review some structures in considerable detail and others will be spot checked. Emphasis will be placed upon verifying the validity of the methods used and compliance with the applicable codes and standards; however, actual mathematical computations may also be checked and should be available at the audit.

The following audit sheets are intended to be used for the following purposes:

1. A checklist to be used by the auditor in reviewing the procedures and computations of the A-E.
2. A guideline to help the A-E prepare for the audit.

STRUCTURAL AUDIT OF GRAND GULF CONTAINMENT

Part I General Analysis

I. BASIC DESIGN CRITERIA

- A. Dead Load (Items included, method of determining)
See FSAR Sections 3.8.1.3, 3.8.1.3.1 for Containment
See FSAR Sections 3.8.3.3, 3.8.3.3.1 for Containment Internal Structures
- B. Live Load (Values for operating floors, base slab, etc., also
method for determination)
See FSAR Sections 3.8.1.3, 3.8.1.3.1 for Containment
See FSAR Sections 3.8.3.3, 3.8.3.3.1 for Containment Internal Structures
- C. Thermal Loads
See FSAR Sections 3.8.1.3, 3.8.1.3.1 for Containment
See FSAR Sections 3.8.3.3, 3.8.3.3.1 for Containment Internal Structures
- D. Pressure (Internal and external)
See FSAR Sections 3.8.1.3, 3.8.1.3.1 for Containment
See FSAR Sections 3.8.3.3, 3.8.3.3.1 for Containment Internal Structures
- E. Wind Loads
See FSAR Section 3.8.1.3
 - 1. Design basis wind
See FSAR Section 3.8.1.3.3.b
 - 2. Tornado loads
See FSAR Section 3.8.1.3.4.b
- F. Seismic Criteria
See FSAR Sections 3.8.1.3, 3.8.1.3.3.a, 3.8.1.3.4.a, 3.8.3.3 and 3.8.3.3.1
 - 1. "g" value free field
See FSAR Section 3.7.1.1.1, 3.7.1.1.2
 - 2. Spectra
See FSAR Section 3.7.1, 3.7.1.1

3. Damping
See FSAR Section 3.7.1.3.1
4. Artificial time history and corresponding spectra
See FSAR Section 3.7.1.2
5. Motion duration
See FSAR Section 3.7.1.2
6. Components of motion
See FSAR Section 3.7.2.6
- G. Hydrstatic and Hydrodynamic Loads
See FSAR Section 3.7.2.1.1.2.2, 3.8.1.3.1
- H. Earth Pressure
Not Applicable
- I. Abnormal Plant Loads
See FSAR Section 3.8.1.3.5 for Containment
See FSAR Section 3.8.3.3.1.5 for Containment Internal Structures
 1. Missiles (Impact)
See FSAR Sections 3.8.1.3.4.b, 3.8.1.3.5 for Containment
See FSAR Section 3.8.3.3.1.5 for Containment Internal Structures
 2. Pressure
See FSAR Section 3.8.1.3.5.b for Containment
See FSAR Section 3.8.3.3.1.5 for Containment Internal Structures
 3. Local Reactions
See FSAR Section 3.8.1.3.5 for Containment
See FSAR Section 3.8.3.3.1.5 for Containment Internal Structures
 4. Other special loads
See FSAR Section 3.8.1.3.5 for Containment
See FSAR Section 3.8.3.3.1.5 for Containment Internal Structures
- J. Misc. Loads (Example: crane loads)
See FSAR Section 3.8.1.3.1
- K. Load Combinations Conformance with ACI 359 and SRP
See FSAR Section 3.8.1.3.8 for Containment
See FSAR Section 3.8.3.3.2 for Containment Internal Structures
See Response to NRC Questions 130.29, 130.30, 130.33

II. ANALYSIS METHOD

A. Seismic Analysis

See FSAR Section 3.7.2.1

1. Mathematical model including mat, shell, liner, and internals-general description with sketch.
See FSAR Section 3.7.2.1.1.3, 3.7.2.1.1.3.1

a. Parameters used

- (i) Concrete modulus
See FSAR Section 3.8.1.4.1.1.4
- (ii) Rebar modulus and yield strength
See FSAR Section 3.8.1.4.1.2
- (iii) Poisson's ratio
See FSAR Section 3.8.1.4.1.1.4
- (iv) Damping
See Section 3.7.1.3.1
- (v) Structural steel modulus and yield strength
See Section 3.8.1.6.4 for Containment
See Section 3.8.3.6.4 for Containment Internal Structures
- (vi) Properties of foundation materials (Shear modulus, subgrade reactions, bearing capabilities, etc.)
See Section 3.7.1.3.2, 3.7.2.4, 3.7.1.4; FSAR Table 3.7-7
- (vii) Other parameters
See FSAR Section 3.7

b. Stiffness calculations

- (i) Concrete shell (Method of incorporating different layers of materials--concrete, rebars, and slip

surface. State the method used to account for containment shell cracking due to preoperational pressure tests.)

See FSAR Sections 3.7.2.1.1.3.1 and 3.7.2.3.1

(ii) Internals

See FSAR Section 3.7.2.3.1, 3.7.2.3.2

2. Method of Analysis

- a. Method of analysis used (Time history, response spectrum methods, etc.) and consideration of torsional and translational response

(i) General description

See FSAR Section 3.7.2.1.1, 3.7.2.1.1.1, 3.7.2.1.1.2, 3.7.2.1.2

(ii) Findings and comments

- b. Selection of number of masses and degrees of freedom

(i) General description

See FSAR Section 3.7.2.3, 3.7.2.4

(ii) Findings and comments

- c. Number of modes considered

(i) General description

See FSAR Section 3.7.1.1.1

(ii) Findings and comments

d. Combining modal responses

(i) Actual procedures used

See FSAR Sections 3.7.2.1.1.4, 3.7.2.1.2.3, 3.7.2.7, 3.7.3.7

(ii) General findings

e. Consideration of three components of motion

(i) Actual procedures used

See FSAR Section 3.7.2.6

(ii) General findings

f. Consideration of soil-structure interaction and
interaction among adjacent buildings

(i) General description

See FSAR Sections 3.7.1.4, 3.7.1.3.2, 3.7.2.1.1.4, 3.7.2.4,
3.7.2.15, 3.7.2.8

(ii) Findings and comments

g. Decoupling criteria for subsystems

(i) General procedure

See FSAR Section 3.7.3.1

(ii) Key examples

See FSAR Section 3.7.3.3.2

(iii) General findings and comments

3. Development of in-structure response spectra

a. General procedures
See FSAR Section 3.7.2.5

(i) Smoothing (describe specific smoothing method used)
See FSAR Section 3.7.2.5

(ii) Peak widening
See FSAR Section 3.7.2.5

b. Typical results (attach figures)

(i) Basement spectra
See FSAR Section 3.7.2.5

(ii) Reactor supports spectra
See FSAR Section 3.7.2.5

(iii) Drywell spectra
See FSAR Section 3.7.2.5

(iv) Weir wall spectra
See FSAR Section 3.7.2.5

(v) Operating floor and crane support spectra
See FSAR Section 3.7.2.5

(vi) Interior floors spectra (Key floors with floor
elevations identified)
See FSAR Section 3.7.2.5

4. Vertical Dynamic Analysis
See Part II A.1

a. Mathematical Model - general description with sketch
See Part II A.1

- b. Development of stiffnesses, including floor stiffness, as applicable.

See Part II, A.1

- c. Method of Analysis (Description of method used as well as each item considered in the analysis)

See Part II, A.1

5. Seismic Analysis for Buried Piping and/or Electrical Conduits

- a. Method of Analysis

See FSAR Section 3.7.3.12; Calc C-X51, Rev. 2; Calc C-C100.0, Rev. 2

- b. Stiffness calculations

See FSAR Section 3.7.3.12; Calc C-X51, Rev. 2; Calc C-C100.0, Rev. 2

- c. Inputs

See FSAR Section 3.7.3.12; Calc C-X51, Rev. 2; Calc C-C100.0, Rev. 2

- d. Key analysis results.

See Calc C-X51, Rev. 2; Calc C-C100.0, Rev. 2

B. Stress Analysis

1. Containment shell

- a. Mathematical model (General description w/sketch)

Finel Model, Calc. C-G100 Pg. 45, 46

ASHSD Analysis Model, Calc. C-G100 Pg. 48 and drawing SKC-375
FSAR Section 3.8.1.1

- b. Method of analysis (Incorporation of torsion)

Finite Element Computer Analysis

FSAR Sections 3.8.1.4, 3.8.1.5

- c. Load combinations

Calc. C-G100 Pg. 47-51B-2 & Design Criteria

FSAR Sections 3.8.1.3, 3.8.1.3.8

- d. Key results

Calc. C-G125 & FSAR Tables 3.8-2, 3, 3a, 3b

2. Drywell

- a. Mathematical model (General description w/sketch)
 - "SAP" Model, FSAR Fig. 3.8-73, 3.8-74; FSAR Sections 3.8.3.1, 3.8.3.4,
 - "Finel" Model, FSAR Fig. 3.8-56 3.8.3.4.1
 - "ASHSD" Model, FSAR Fig. 3.8-54
- b. Method of analysis (Incorporation of torsion)
 - See FSAR Section 3.8.3.4.1 and Calc C-G291.1, Rev. 0
- c. Load combinations
 - See FSAR Section 3.8.3.3.2.1
- d. Key results (Figures, etc.)
 - FSAR Fig. 3.8-75
 - FSAR Stress Tables 3.8-7, 3.8-8 & 3.8-9

3. Weir Wall

- a. Mathematical model (General description w/sketch)
 - Calc. G478 (Axi-Symmetric FINEL); Calc. G479 (Asymmetric ASHSD)
 - FSAR Section 3.8.3.1.2; FSAR Fig. 3.8-1, 3.8-60, 3.8-76
 - Torsion not considered
- b. Method of analysis (Incorporation of torsion)
 - Calc. G-500
 - FSAR Sections 3.8.3.4.2, 3.8.3.5.2
 - FSAR Fig. 3.8-1, 3.8-60, 3.8-76
- c. Load combinations
 - Project Design Criteria
 - FSAR Section 3.8.3.3.2.2
- d. Key results (Figures, etc.)
 - Drawing C-1048A, C-1052
 - See FSAR Section 3.8.3.4.2 and Stress Table 3.8-13

4. Reactor Pedestal and Shield Wall

- a. Mathematical model (General description w/sketch)

<u>RPV Pedestal</u>	<u>Shield Wall</u>
Calcs. C-G478.0 (Axisymmetric) & C-G479.0 (Asymmetric)	Calcs. C-G460.0, C-G460.1 & C-G463.0
FSAR Sections 3.8.3.1.5 & 3.8.3.4.5	FSAR Sections 3.8.3.1.6 & 3.8.3.4.5; FSAR Figures 3.8-1, 3.8-60, 3.8-76 & 3.8-54
- b. Method of analysis (Incorporation of torsion)

<u>RPV Pedestal</u>	<u>Shield Wall</u>
FSAR Section 3.8.3.4.5	FSAR Sections 3.8.3.1.6 & 3.8.3.4.5 (torsion is not applicable)
FSAR Section 3.8.3.5.3	FSAR Figures 3.8-1 & 3.8-60
Calc C-G480.0	
Calc C-G490.0	Calcs C-G460.0, C-G460.1 & C-G460.2
FSAR Figure 3.8-1	Calcs C-G461.0, C-G462.0
FSAR Figure 3.8-60	Calcs C-G463.0, C-G463.1 & C-G463.2
FSAR Figure 3.8-76	

- c. Load combinations
RPV Pedestal
 Project Design Criteria
 FSAR Section 3.8.3.3.2.2
- d. Key results (Figures, etc.)
RPV Pedestal
 FSAR Tables 3.8-14 & 3.8-15
 Drawings C-1048A, C-1070A,
 C-1070B, C-1071 & C-1057
- 5. Foundation mat
- Shield Wall
 Project Design Criteria
 FSAR Section 3.8.3.3.2.3
- Shield Wall
 FSAR Table 3.8-16
 Drawings C-1068A & C-1068B
- a. Mathematical model (Description of boundary conditions)
 Full containment structure model, Calc. C-G100 Pg. 45, 46 (Finel);
 Pg. 48 (ASHSD), SKC-375, FSAR Section 3.8.1.1, FSAR Fig. 3.8-1
 Drawings C-1022, C-1023, C-1024, C-1026
- b. Method of analysis
 Finite Element Computer Analysis
 See Calculation C-G100, C-G102
 See FSAR Section 3.8.1.4
- c. Load combinations
 Calc. C-G100 pg. 47-51B-2
 See FSAR Sections 3.8.1.3 and 3.8.1.3.8
 Project Design Criteria
- d. Key results (Figures, etc.)
 Calc. C-G125 & FSAR Table 3.8-3
 FSAR Section 3.8.1.5
- 6. Computer programs used in analysis
 See FSAR Appendix 3B
- a. Assumptions and limitations
 See FSAR Appendix 3B
- b. Applicability
 See FSAR Appendix 3B. See FSAR Sections 3.7, 3.8.1, 3.8.3
- c. Verification (Sensitivity study in case of numerical
 solutions; e.g., finite element analysis)
 See FSAR Appendix 3B
- d. Load input (Include all cases)
 See FSAR Sections 3.8.1.3 and 3.8.3.3
- e. Output (Include all cases)
 FSAR Stress Tables 3.8-2 through 3.8-34 report the maximum
 resultants for all cases listed in part d above.
- f. Other discussions

7. Overall stability

- a. Forces and moments from seismic analysis
Loads used in design:
Calc. C-G102 Pg. 3-8R; Calc. C-G120 Pg. 3-6; Calc. C-G110 Pg. 3-8
- b. Various cases considered
SSE, OBE, OBE (Flooded)
FSAR Section 3.8.1.3.8
- c. Bearing pressure versus bearing capacity and safety
factor against bearing failure
FSAR Fig. 2.5-90; Geotech Calc. No. 51
- d. Factors of safety
 - (i) Sliding
F.S. 1.313 Ref: Calc. C-G040 Pg. 4 (1.10 Required)
F.S. 1.17 Ref: Calc. C-G040 Pg. 4a (Unit 2)
 - (ii) Overturning (Vertical displacement)
F.S. 2.073 Ref: Calc. C-G040 Pg. 5 (1.50 Required)

8. Interaction of non-category I structures with the containment

- a. Identification of pertinent non-category I structures
See FSAR Section 3.7.2.8
- b. Consideration given to potential failure of
non-category I systems on Category I systems
See FSAR Section 3.7.2.8
- c. General findings and comments

III. CONFORMANCE TO CC-3000 AND SRP

- A. Identification of deviations, if any
Containment complies with ACI 349 Title 69-2 (1/72)
See Response to NRC Questions 130.29 and 130.33
- B. Justification of deviations and disposition of the deviations
See Response to NRC Questions 130.29 and 130.33
- C. Comparison of reevaluation results with the original design bases
and discussions.
See Response to NRC Questions 130.29 and 130.33
- D. General comments

PART II - AUDIT OF KEY DESIGNS

For each key design area audited, the design calculations should be reviewed together with applicable drawings, sketches, etc. Also, key details and/or sections, as appropriate, in this audit report should be included.

1. Specific Check of Key Locations

A. Containment liner design

- 1. Cylinder-base mat junction
Calc. G130
Calc. G130.1

- a. Sketch

- Drawings C-1007B, C-1009, C-1010, C-1011
See FSAR Section 3.8.1.1.2

- b. Forces and displacements obtained from computer analysis
 - Calc. G21 Calc. G130.0
 - Calc. G31
 - Calc. G110
- c. Controlling stress, strain from analysis considering
 - various load combinations
 - Calc. G130 FSAR Stress Table 3.8-4, 3.8-5
 - Calc. G130.1 FSAR Fig. 3.8-2
 - Calc. G130.2 FSAR Section 3.8.1.3.8
- 2. Anchorage between the liner and interior concrete slab
 - Calc. G130.0
 - Drawing C-1006 A&B
 - Drawing C-1007 A&B
- 3. Liner anchor design (Model, analysis, procedure, assumptions)
 - BC-TOP-1 Calc. G130.2
 - Calc. G130
 - Calc. G130.1 FSAR Sections 3.8.1.4.2, 3.8.1.5.2
- 4. Other embedment design
 - Calc. G160.0
 - Calc. G170.0
- 5. Key penetration design
 - Calc. G141 Calc. G150.0 Calc. G154.0-154.3
 - Calc. G142 Calc. G151.1-G151.6 FSAR Section 3.8.1.1,
 - Calc. G143 Calc. G153.0-153.4 3.8.1.4.1.1.3
- 6. Conformance with Div. 2 - Article CC-3000
 - Art. CC-3000 not used for this design
 - See Response to NRC Question 130.30
- 7. Preliminary audit findings

B. Foundation slab design

- 1. Design requirements
 - Load combinations in Calc. C-G100 Pg. 47-51B-2
 - Updated load combinations in FSAR Section 3.8.1.3.8 (incorporating SRV & Dynamic Loadings). See FSAR Section 3.8.1.1 & Figures 3.8-2, 3.8-3, and 3.8-4
- 2. Forces and Moments at key sections
 - Calc. C-G125
- 3. Elastic deformation curve of the slab
 - none plotted
- 4. Detailed design of rebar placement at key section.
 - Summary of Rebar Requirements - Calc. C-G102 Pg. 108-109, 124-125
 - Key Section Designs Calc. C-G102 Pg. 47-107, 119-124

5. Conformance to CC-3000
Containment Designed to ACI Title No. 69-2
See FSAR Question 130.29
6. General comments and preliminary audit findings

C. Containment cylinder design

1. Design requirements
Load combinations in Calc. C-G100 Pg. 47-51B-2; updated load combinations in FSAR Section 3.8.1.3.8 (incorporates SRV & LOCA Dynamic Loading)
2. Forces and moments at key sections
Calc. C-G125 & FSAR Fig. 3.8-5, FSAR Table 3.8-2
3. Detailed design of rebar. Summary of rebar requirements Calc. C-G110 Pg. 72E, 104, 105 (diag. & vert. & EPT); Pg. 122, 124, 528 (meridional); Pg. 140, 536 (diag.); Pg. 185, 513 (Hoop); Pg. 196 (Shear); Pg. 530. Key Section Designs, Calc. C-G110 Pg. 46-72 (Meridional); Pg. 74-103 (Diag. Pg. 107-122 (Meridional); Pg. 125-139 (Diagonal); Pg. 515-527 (Meridional Pg. 532-535 (Diagonal); Pg. 194-197 (Shear); Pg. 491-512 (Hoop); Pg. 529 530 (Shear)
4. Conformance to CC-3000
Containment Designed to ACI Title No. 69-2
5. General comments and preliminary audit findings.
6. Design for tangential shear
 - a. Criteria used
2 Methods used See Calc. C-G110 Pg. 90
ACI/ASME 359 Code See Calc. C-G110 Pg. 97
ACI 349 Code
 - b. Comparison with SRP criteria
containment designed to ACI Title 69-2
See Response to NRC Question 130.29
 - c. Actual tangential shear
Shear envelope tabulation C-G110 Pg. 88A, 532. Max. Rebar Stress 64100 psi; Reference: Calc. C-G110 Pg. 102A
 - d. Allowable tangential shear
Allowable rebar stress 68800 psi; Reference: Calc. C-G110 Pg. 102C
 - e. Factor of safety obtained
$$F.S. = \frac{68.8}{64.1} = 1.07$$

D. Containment dome design

1. Design requirements and model
Full containment structure model, Calc. C-G100; Finel Pg. 45, 46; ASHSD, P. 48 and SKC-375. Load combinations in Calc. C-G100 Pg. 47-51B-2 Updated load combinations in FSAR Section 3.8.1.3.8 (incorporated SRV & LOCA Dynamic Loads)
2. Forces and moments at key sections
Calc. C-G125 & FSAR Fig. 3.8-3a
3. Detailed design of rebar. Calc. C-G120
Summary: Meridional Pg. 55,56
Hoop Pg. 116 Diagonal Pg. 126
Shear Pg. 120
Key Section Designs
Meridional Pg. 32-54
Hoop Pg. 58-115
Shear Pg. 118-120
5. General comments and preliminary audit findings

E. Drywell design

1. Design requirements and model
Calc. C-G350.0
Calc. C-G352.0
FSAR Section 3.8.3.4.1
2. Forces and moments at key sections
Calc. C-G351.0, C-G390.0 & C-G391.0
Calc. C-G353.0, C-G350.1, C-G360.0, FSAR Section 3.8.3.4.1
3. Detailed design of rebar.
Calc. C-G351.0 & C-G351.1
Calc. C-G390.0, C-G391.0 & C-G392.0
Calc. C-G353.0, C-G360.0
4. Conformance to CC-3000
FSAR Sections 3.8.3.5.1, 3.8.3.4
Design conforms to ACI 349 Title 69-2 (1/72)
See Response to NRC Question 130.33
5. General comments and preliminary audit findings

F. Weir Wall design

1. Design requirements and model
Calc. G478 FSAR Section 3.8.3.4.2; Drawing C-1048A
Calc. G479 FSAR Fig. 3.8-1, 3.8-60; FSAR Stress Table 3.8-13
Calc. G500

2. Forces and moments at key sections
Calc. G500 FSAR Fig. 3.8-60
Drawing C-1048A FSAR Table 3.8-13
FSAR Section 3.8.3.4.2
3. Detailed design of rebar.
Calc. G500
4. Conformance to CC-3000
CC 3000 Not used for the design
5. General comments and preliminary audit findings

G. Reactor Vessel Pedestal design

1. Design requirements and model
Calc. G478 Calc. G490 Drawing C-1048A
Calc. G479 FSAR Sections 3.8.3.4.3, 3.8.3.1.5
Calc. G480 FSAR Figures 3.8-60, 3.8-76
2. Forces and moments at key sections
Calc. G480 FSAR Stress Table 3.8-14
Calc. G490
FSAR Fig. 3.8-1, 3.8-60, 3.8-76
3. Detailed design of rebar
Calc. G480
Calc. G490
Drawing C-1048A, C1057
4. Conformance with SRP requirements
FSAR Section 3.8.3.1.5, 3.8.3.4.3
FSAR Fig. 3.8-1, 3.8-60, 3.8-76
FSAR Stress Tables 3.8-14, 3.8-15
5. General comments and preliminary audit findings

H. Containment wall-base mat junction design

1. Design requirements and model. Full containment structural model Calc. C-G100; Finel Pg. 45, 46, ASHSD Pg. 48 and SKC 375. Load combinations in Calc. C-G100 Pg. 47-51B-2. Updated load combinations in FSAR Section 3.8.1.3.8 (incorporates SRV & LOCA Dynamic Loads).
2. Forces and moments at key sections
Calc. C-G102 Pg. 105-107
3. Detailed design of rebar
Calc. C-G102 Pg. 105-107
Drawing C-1024

4. Waterstop membranes at the joint, their design considerations and installations
none provided at wall-base slab interface; waterstop at base slab-Aux. Bldg. interface shown on drawing C-1026.
5. Conformance to CC-3000
Containment Designed to ACI Title No. 69-2

I. Dome-to-cylinder junction design

1. Design requirements and model. Full containment structural model, Calc. C-G100 Pg. 45, 46 (Finel) Pg. 48 (ASHSD) SKC-375. Load combinations in Calc. C-G100 Pg. 47-51B-2. Updated load combinations in FSAR Section 3.8.1.3.8 (incorporates SRV & LOCA Dynamic Loads).
2. Forces and moments at key sections
Calc. C-G120.0, Pg. 3-27
3. Detailed design of rebar placement at key sections
Calc. C-G120.0, Pg. 28-436.
4. Conformance to CC-3000
Containment designed to ACI titled No. 69-2
5. General comments and preliminary audit findings

J. Primary shield wall design

1. Design requirements and model
FSAR 3.8.3.1.6, FSAR 3.8.3.4.5.4 & FSAR Fig. 3.8-60
Calc. C-G463.0, C-G463.1, C-G463.2
2. Forces and moments at key sections
FSAR Stress Table 3.8-16
Calcs. C-G460 & Calcs. C-G463.2
3. Detailed design of rebar placement at key sections
Calc. C-G464
4. Code jurisdiction, boundary definition and anchor treatment
at interface
Shield wall design conforms to AISC code.

5. Conformance to SRP requirements
Shield wall designed to AISC "Manual of Steel Construction," 1969.
FSAR Sections 3.8.3.1.6, 3.8.3.4.5.4
6. General comments and preliminary audit findings

K. Operating floor design

1. Design requirements and model
FSAR 3.8.3.1.3 (b); FSAR 3.8.3.4.5.2
FSAR 3.8.3.5.5.3; FSAR Fig. 3.8-60
2. Forces and moments at key sections
Calc. C-G230
FSAR Stress Table 3.8-24

L. Containment hatch design

1. Design requirements and assumptions
Spec. C-153.0 Drawing C-1015A&B
Calc. G150.0
2. ~~Calc.~~ G151.1-G151.6
Model
Calc. G150
Calc. G151.1-151.6
Drawing C-1015A
3. Analysis procedure and results
Spec. C-153.0
Calc. G150
Calc. G151.1-G151.6
4. Key controlling loads including appropriate load combinations
Spec. C-153.0
Calc. G150
Calc. G151.1-G151.6
5. Key stresses and strains for section designs
Calc. G150
Calc. G151.1-G151.6
6. Conformance to CC-3000
CC 3000 not used for design
7. General comments and preliminary audit findings

M. Crane support design

1. Design requirements and model
Calc. G-170.0
Drawing C-1098, C-1099
2. Forces and moments at key sections
Calc. G160 PSAR Sections 3.8.1.1.3, 3.8.1.5.3, 3.8.1.4.3
Calc. G-170.0
Drawing C-1098, C-1099
3. Detailed design of rebar placement at key sections
Calc. G160
Calc. C-G110.0
Calc. C-G120.0
4. Interface with containment shell, if applicable
Calc. G160
5. Conformance with SRP requirements and re-evaluation criteria
PSAR Section 3.8.1.1.3, 3.8.1.5.3, 3.8.1.4.3
6. General comments and preliminary audit findings.

STRUCTURAL AUDIT CHECKLIST

Plant GRAND GULF

Structure AUXILIARY BUILDING

Applicant _____

Architect/Engineer _____

Auditor _____

The purpose of the audit is to review and assess the techniques and methodology employed by the applicant to demonstrate compliance of all Category I structures with the applicable SRP's, Reg. Guides, Codes and Standards.

The general procedure of the audit will be to review some structures in considerable detail and others will be spot checked. Emphasis will be placed upon verifying the validity of the methods used and compliance with the applicable codes and standards; however, actual mathematical computations may also be checked and should be available at the audit.

The following audit sheets are intended to be used for the following purposes:

1. A checklist to be used by the auditor in reviewing the procedures and computations of the A-E.
2. A guideline to help the A-E prepare for the audit.

STRUCTURAL AUDIT OF GRAND GULF
SEISMIC CATEGORY I STRUCTURES
OTHER THAN CONTAINMENT

Structure Audited Auxiliary Building

Part I General Analysis

1. BASIC DESIGN CRITERIA

- A. Dead Load (Items included, method of determining
Items included - Ref. Civil Design Criteria, Sec. 7.1
Method of determination - Conc = 150 lbs/cu. ft; Stl=490 lbs/cu. ft.;
CMU= 145 lbs/cf (Normal)
Equip. Wt. - From approved Vendor drawings
Pipe Loads - From Hanger drawing for structural adequacy.
- B. Live Load (Values for operating floors, base slab, etc., also
method for determination)
Design Criteria Sect. 7.2 & 7.2.3.4 and Live Load Drawings C-0355 thru C-0361
Crane Loads - by Vendors
Fuel & Fuel Handling Equipment - by G.E. Section 7.2.3.4
- C. Thermal Loads
Design Criteria - Sect. 7.10; Paragraph C;f
Paragraph C - Steam pipe tunnel; 70° F differential temperature
Paragraph f - Spent fuel pool; Unit - 1 - 150° F Design Accident Temp.
Unit - 2 - 165° F Design Accident Temp.
- D. Pressure (Internal and external)
See Section I, Abnormal plant loads for "Pressure."
- E. Wind Loads
 - 1. Design basis wind
Design Criteria - Section 3.8.1 & F.S.A.R. Sect. 3.3.1
0 to 50 Ft. above grade = 90 MPH
50 to 150 Ft. above grade = 105 MPH
 - 2. Tornado loads
Design Criteria - Sect. 3.8.2 & FSAR Sect. 3.3.2
Tornado force - Design criteria Sect. 3.8.2 a (1); 360 MPH ($q=0.00256V^2$)
Depressurization - Design criteria Sect. 3.8.2 a (2); 3 psig

F. Seismic Criteria

1. "g" value free field

<u>Horz.</u>	<u>Vertical</u>
SSE - 0.15g	0.10g : FSAR - 3.7.1.1.1
OBE - 0.075g	0.05g : FSAR - 3.7.1.1.2
 2. Spectra
See FSAR Sect. 3.7.1, 3.7.1.1.
 3. Damping
FSAR: Table 3.7-3 and Sect. 3.7.1.3.1
 4. Artificial time history and corresponding spectra
FSAR: Sect. 3.7.1.2 & Fig. 3.7-3 thru 3.7-15
 5. Motion duration
24 seconds: FSAR - Sect. 3.7.1.2
 6. Components of motion
FSAR: Sect. 3.7.2.6 - 3 Components of motion: 2 Horizontal & 1 Vertical and SRSS Combination.
- G. Hydrostatic and Hydrodynamic Loads
Ground Water Pressure - Design Criteria Sect. 3.4 & 7.6 & FSAR: Table 3.4-1 & Figure 2.5-91. Hydrodynamic Load on External Wall - See Calc. C-H013.0
Refueling Pools - Hydrodynamic Load - See Calc. C-H031.0: Based on TID-7024 by NTIS.
- H. Earth Pressure
Design Criteria - Sect. 3.10 & Sect. 7.5
FSAR: Figure -2.5-91 (Later: Earth pressure design)
- I. Abnormal Plant Loads
1. Missiles (Impact)
Design Criteria - Sect. 3.8.2 a (3) & 3.8.2.b and
FSAR: Sect. 3.5.1.1; Table 3.5-1 Internally generated missiles
FSAR: Sect. 3.5.1.3; Table 3.5-7 Turbine missiles
FSAR: Sect. 3.5.1.4: Natural missiles, FSAR: Figure 3.5-8, Calc.C-H044.1
 2. Pressure
Design criteria: Sect. 7.10 & FSAR: Appendix-3E, Figure: 3E-1 through 16
Steam tunnel = 15.4 psig
RWCU pipechase = 15.4 psig
S.T. blowout shaft = 11.0 psig For all other rooms see Calcs. C-H017.2
RCIC pipechase = 5.12 psig
 3. Local Reactions
Pipe attachments: Structural adequacy check-Calcs. C-H078.0 thru C-H078.1
MSL & FWL Moment guide: FSAR: Figure 3.6A-2; 3.6A-34; Calcs.C-H045.0; Dwg. C-1310E; Other pipe restraints: FSAR: Figure 3.6A-4; 3.6A-6; 3.6A-8; 3.6A-13B. Calc. C-H047 & C-H047.1; Dwg. C-1310H; C-1356E & C-1356G.
 4. Other special loads
Construction loads - Design criteria 7.3
Heavy Hauling and Rigging - RPV erection. See calcs. C-H013.0 & C-H113.0 (Ext. Wall.)
Jet impingement loads: FSAR: Sect. 3.6

- J. Misc. Loads (Example: crane loads)
Design criteria - Sect. 7.4
Fuel cask crane: 150 ton capacity - Ref. Spec. 9645-M-063.0
New fuel bridge crane: 5 ton Cap. - Ref. Spec. 9645-M-067.0
- K. Load Combinations Conformance with ACI 349 and/or 318
Design criteria - 8.2.2
(ACI 318-71 Combinations are used)

II. Analysis Method

A. Seismic Analysis

- 1. Mathematical model - general description with sketch
Aux. Bldg. Math. Models: FSAR: Fig. 3.7-19 & 3.7-20
Lumped parameter, geometrically coupled model,
soil structure interaction.

- a. Parameters used

- (i) Concrete modulus
 $E_c = w^{1.5} 33\sqrt{f'_c} = 3834 \text{ ksi}; f'_c = 4000 \text{ psi}$
 $w = 150 \text{ lbs/cu. ft.}$
- (ii) Rebar modulus and yield strength
 $E = 29 \times 10^6 \text{ psi}; F_y = 60,000 \text{ psi (A615, GR.60)}$
- (iii) Poisson's ratio
 $\nu = 0.17$ Ref. Theory of Plates and Shells, by Timoshenko
- (iv) Damping
FSAR Table: 3.7-3
Concrete: OBE = 0.02 & SSE = 0.05
- (v) Structural steel modulus and yield strength
 $E = 29 \times 10^6 \text{ psi}; F_y = 36,000 \text{ psi}$
- (vi) Properties of foundation materials (Shear modulus,
subgrade reactions, bearing capabilities, etc.)
See FSAR Table 3.7-7 shear modulus = 8400-9500 Ksf
Subgraded reaction = $D+L = 17.5$; SSE = 5.5 Ksf, Calcs. C-H011.0
Bearing Capacity = 88.8 KSF Ultimate FSAR Fig. 2.5-90
- (vii) Other parameters
Density = 120 pcf
Poisson's Ratio = 0.47
Shear Velocity = 1500 - 1600 ft/sec
Young Modulus = 24650 - 30384 KSF

For Catahoula
Formation

b. Stiffness calculations

- (i) Exterior walls
Moments of inertia were found by gross con.: section. Shear areas were found by considering effective shear areas for N-S & E-W directions.
- (ii) Interior walls
Same as exterior walls
- (iii) Floors
Wt. of floors were taken as lumped masses; mass moment of inertia for each horizontal direction were considered.
- (iv) Columns
Compared to shear wall stiffness, column stiffness is negligible.

2. Method of Analysis

See FSAR Table 3.7-9

- a. Method of analysis used (Time history, response spectrum methods, etc.) and consideration of torsional and translational response
Time history method used for floor response spectra: CE-920 and 917
Model response spectra method for stress analysis: CE917 & 918
For composite damping for soil structure interaction: CE-931.

(i) General description

FSAR: Sect. 3.7.2.1.1.3.2 & Figures 3.7-19 & 3.7-10
Floor response spectra evaluated from a 3-D stick model for comparison with the 2-dimensional stick model.

(ii) Findings and comments

See calc. C-H001.0 through C-H003.8

- b. Selection of number of masses and degrees of freedom
Base slab @ 93.0; F1 @ El. 119-0, 139-0, 166-0, 185-0 208-10, 228-0, 247-0 and 264-0 ft; 9 masses; 26 degrees of freedom for flexible base model for each horizontal direction.

(i) General description

FSAR: Sect. 3.7.2.1.1.3.2 & Figure 3.7-19 & 3.7.-20.
FSAR: Sect. 3.7.2.3.1.a for modeling procedure.

(ii) Findings and Comments

c. Number of modes considered

6 Modes for N-S direction:)
6 Modes for E-W direction:)
3 Modes for Vert. direction:)

FSAR: Table: 3.7-11

- (i) General description
In general higher modes corresponding to $f=33$ cps or more were neglected.
 - (ii) Findings and comments
- d. Combining modal responses
FSAR: Sect. 3.7.2.7
- (i) Actual procedures used
See FSAR Sections 3.7.2.1.1.4, 3.7.2.1.2.3, 3.7.2.7, 3.7.3.7
 - (ii) General findings
- e. Consideration of three components of motion
- (i) Actual procedures used
FSAR: Section 3.7.2.6
 - (ii) General findings
- f. Consideration of soil-structure interaction and interaction among adjacent buildings
FSAR: Sect. 3.7.1.3.2 & Tables 3.7-4; 3.7-5
No interaction between buildings due to isolation gap.
- (i) General description
FSAR: Sect. 3.7.2.4 & Tables 3.7-7; 3.7-8
 - (ii) Findings and comments
- g. Decoupling criteria for subsystems
FSAR: Sect. 3.7.2.3.1 and BC - Top 4 page 3-3
- (i) General procedure
There are no significant and heavy subsystems that were included in seismic analysis.
(Refer to Bechtel's response to Structural Audit-Action Item Question #3 to quantify the effect of coupled subsystems or a response spectra basis for a vertical earthquake)
Calc. C-H010.2

- (ii) Key examples
 - a) System (Cable trays, EVAC ducts, conduits, etc.) designed by using appropriate floor response spectra.
 - b) Equipment (Control system, elect. HVAC & other components) were analyzed and designed by vendors.

(iii) General findings and comments

- h. Modeling of hydrodynamic effects in spent fuel pool
Hand calculations were performed to determine hydrodynamic pressure on walls. Based on "TID-7024" NTIS publication. See calcs. C-H031.0. See (i) below.
- 1. Modeling of spent fuel pool wells and interior floor slabs and equipment therefor
The finite element model of the refueling pools (SFP; TC; CSA) consisted of shell elements and the ESAP computer program was used for the analysis. The analysis was performed for all (D.L, L.L., Hydrostatic, Hydrodynamics, Seismic, Thermal and Tornado) Loads. Spent fuel racks and other equipment were analyzed and designed by vendor (G.E.)
- 3. Development of in-structure response spectra
 - a. General procedures
FSAR: Sect. 3.7.2.5; CE 920 & CE-921
 - (i) Smoothing (describe specific smoothing method used)
Smoothed floor response spectra curves represent an envelope of the maximum peaks for each direction.
 - (ii) Peak widening
FSAR: Sect. 3.7.2.9; Min. 10 percent of peak frequency.
 - b. Typical results (attach figures)
See Calcs. C-H004.1 through C-H004.6 for floor response spectrum curves.
 - (i) Basemat spectra
See calcs. C-H004.1 through C-H004.6
 - (ii) Interior floors spectra (Key floors with floor elevations identified)
See calcs. C-H004.1 through C-H004.6
- 4. Vertical Dynamic Analysis
 - a. Mathematical Model - general description with sketch
Similar to FSAR: Figure 3.7-19 & 3.7-20
Calcs. No. C-H002.8

- b. Development of stiffnesses, including floor stiffness, as applicable.
Floors considered rigid, their masses were taken into account as lumped masses. Mass moment of inertia for floors were computed.
- c. Method of Analysis (Description of method used as well as each item considered in the analysis)
Modal response for Stress Analysis: CE-917 & CE-918
Time History for floor response spectra: CE-920 & CE-921
Soil-Structure Interaction was considered.

B. Stress Analysis

1. Shear Walls and Floors

- a. Mathematical model (General description w/sketch)
FSAR: Sect. 3.8.4.1.1.1 & Figures 3.8-77 through 3.8-85
- b. Method of analysis (Incorporation of torsion)
FSAR: Sect. 3.8.4.4.1 Floor :Calc. C-H021.0 through C-H029.0
Ext. Walls:Calc. C-H013.0
Int. Walls:Calc. C-H014.0, C-H016.0 & C-H017.0
Shear transferred by shear walls and distributed according to wall rigidities. Additional shear due to torsional effects is considered.
- c. Load combinations
FSAR: Sect. 3.8.6.2
- d. Key results
See Part II

2. Foundation mat

- a. Mathematical model (Description of boundary conditions)
FSAR: Sect. 3.8.5.1.2 & Sect. 3.8.5.4.2 & Figure 3.8-77.
- b. Method of analysis
The finite element model of the foundation consisted of shell elements supported on Catehouls SAP Program was used for analysis. Exterior walls considered as providing fixity around edges. Interior walls considered as stiffeners to foundation mat. All loads (D.L., L.L., Earth Pressure, Seismic, Hydrostatic) were considered for analysis. See calc. C-H011.0.
- c. Load combinations
FSAR: Sect. 3.8.6.2
- d. Key results (Figures, etc.)
See Part II

3. Material to protect against structure-to-structure

interaction

Rodofoem II was used between Containment & Auxiliary: Turbine & Auxiliary Diesel Generator and Auxiliary, and Control and Auxiliary

a. Mechanical properties

Under seismic testing - Load transfer at 50 percent compression , was 17.8 psi.

b. Additional pressure on walls

FSAR: Figure 3.7-21, 3-D Model for Auxiliary and Control Building
FSAR: Section. 3.7.2.1.1.3.2 for negligible interaction.

c. Findings and comments

4. Computer programs used in analysis

CE-650, 917, 918, 920, 931, 779, 800, 668, 309, 901

a. Assumptions and limitations

FSAR: Appendix - 3D

b. Applicability

FSAR: Appendix - 3D

c. Verification (Sensitivity study in case of numerical solutions; e.g., finite element analysis)

FSAR: Appendix - 3D

d. Load input (Include all cases)

FSAR: Appendix - 3D

e. Output (Include all cases)

FSAR: Appendix - 3D

f. Other discussions

FSAR: Appendix -3D

5. Overall stability

a. Forces and moments from seismic analysis

FSAR: Figure 3-7-38 - N - S: SSE

3-7-39 - N - S: OBE

3-7-40 - E - W: SSE

3-7-41 - E - W: OBE

3-7-42 - Vertical: SSE

3-7-43 - Vertical: OBE

b. Various cases considered

Sliding, overturning and stresses for bearing were considered:
Calcs. C-H002.9

c. Bearing pressure versus bearing capacity and safety

factor against bearing failure	Ultimate Cap.	S. F.
Maximum bearing pressure) = 17.5 KSF (D+L)	88.0 KSF	5.0
) = 23.0 KSF (D+L+E)	88.0 KSF	3.8

d. Factors of safety

FSAR: Table: 3.8-1

(i) Sliding

SF = 2.38

(ii) Overturning (Vertical displacement)

SF = 7.40

6. Interaction of non-category I structures with the structure

considered

No interaction considered. Adjacent non-Cat. I structure (Turbine Building) is designed to Cat. I requirements.

See FSAR: Section 3.8.4.1

a. Identification of pertinent Non-Category I structures

Turbine Building designed for Category I requirements.
to prevent adverse effects on Auxiliary Building

b. Consideration given to potential failure of

Non-Category I systems on Category I systems
See above

c. General findings and comments

7. Design Consideration for Tornado Missiles

a. Design requirements

FSAR: Section 3.5.1.4

Section 3.5.3.1

b. Models for

(i) Local damage

Penetration perforation and spalling criteria is satisfied as per PSAR: Section 3.5.3.1

(ii) Overall response

Structural response is satisfied as per PSAR: Section 3.5.3.1 and calculation E-020.0

c. Load combinations

PSAR: Section 3.8.6.2 and BC-TOP 3A

d. Forces

PSAR: Section 3.5.3.1

e. General comments and preliminary audit findings

III. CONFORMANCE TO ACCEPTABLE CRITERIA

A. Identification of deviations, if any

Auxiliary Building was designed to ACI 318-71.
See PSAR Section 3.8.4.

B. Justification of deviations and disposition of the deviations

See PSAR Section 3.8.4.

C. General comments

Part II - AUDIT OF KEY DESIGNS

For each key design area audited, the design calculations should be reviewed together with applicable drawings, sketches, etc. Also, key details and/or sections, as appropriate, in this audit report should be included.

1. SPECIFIC CHECK OF KEY LOCATIONS

A. Exterior Shear Walls

1. Design requirements

PSAR: Section 3.8.4.1.1.1; Section 3.8.4.4.1; Section 3.8.4.5

2. Design loads (from general analysis)

- | | |
|--------------|--|
| 1. Dead Load | 4. Tornado Missiles |
| 2. Live Load | 5. Wind and tornado (Include depressurization) |
| 3. OBE & SSE | 6. Soil pressure and ground water pressure |

3. Forces and moments at key sections

Calcs. C-H013.0

4. Detailed design of rebar placement at key sections

C-1334; C-1335, C-1350D and C-0204

5. General comments and preliminary audit findings

B. Interior Shear Walls

1. Design requirements

PSAR: Section 3.8.4.1.1.1; Section 3.8.4.4.1; Section 3.8.4.5

2. Design loads (from general analysis)

- | | |
|--------------|---|
| 1. Dead Load | 4. Tornado (Depressurization) |
| 2. Live Load | 5. Thermal - (SFP & Steam tunnel) |
| 3. OBE & SSE | 6. Pressure - Steam tunnel, RHR, RWCU See Calc.C-H017 |

3. Forces and moments at key sections

Calcs. C-H014.0

C-H016.0

C-H017.0

4. Detailed design of rebar placement at key sections

C-0204, C-1350D, C-1339 through C-1342

5. General comments and preliminary audit findings

C. Main Floors and Roofs (Elevation)

1. Design requirements

FSAR: Section 3.8.4.1.1.1; Section 3.8.4.4.1; Section 3.8.4.5

2. Design loads (from general analysis)

1. Dead Load

2. Live Load

3. OBE & SSE

4. Tornado (Depressurization included)

5. Crane and monorails

6. Tornado - Missiles

7. Thermal - SFP and Steam Tunnel

8. Pressure: Steam tunnel, RHR RWCU, etc.

See Calcs. C-H017.2

3. Forces and moments at key sections

Composite floor. Calcs. C-H011.1

See drawing C-1338 for typical reinforcement.

4. Detailed design of rebar placement at key sections
C-1338, C-0204

5. General comments and preliminary audit findings.

D. Steel Structural Bracing Systems (if any)

Not Applicable

1. Design requirements

2. Design loads

3. Forces and moments at key sections

4. General comments and preliminary audit findings

E. Foundation Mat

1. Design requirements

FSAR: Section 3.8.5.4.2

DRAFT A, WCB3, 13

2. Design loads (from general analysis)
 1. Dead Load
 2. Live Load
 3. OBE & SSE
 4. Earth Pressure
 5. Ground water pressure
 6. Construction Load
3. Forces and moments at key sections
Calcs. C-H011.0
4. Detailed design of rebar placement at key sections
C-1300B, C1301, C-1302, C-1303, C-1334, C-1335
5. General comments and preliminary audit findings

F. Main Frame Concrete Column Design (Key Columns)

1. Design requirements
FSAR: Section 3.8.4.1.1.1; Section 3.8.4.4.1; Section 3.8.4.5
2. Design loads (from general analysis)
 1. Dead Load
 2. Live Load
 3. OBE & SSE
 4. Crane and Monorails
3. Forces and moments at key sections
Steel columns and composite columns See calc C-H030.0
4. Detailed design of rebar placement at key sections
C-1350D, C-1355A
5. General comments and preliminary audit findings

G. Secondary Floors

- a. Steel platform @ El. 103'-0"
- b. Floor @ El. 245'-0"

1. Design requirements
FSAR: Section-3.8.4.1.1.1; Section 3.8.4.4.1; Section 3.8.4.5
2. Design loads (from general analysis)
 1. Dead Load
 2. Live Load
 3. OBE & SSE
3. Forces and moments at key sections
Similar to main floor - Ref. Item C on Page WCB3, 12

4. Detailed design of rebar placement at key sections
Drawing C-1358, C-1359, C-1360
Drawing C-1381B; C-1330
5. General comments and preliminary audit findings

H. Detailing at Floor-Wall Joints

To provide continuity for transmitting loads from slab into wall

1. Design requirements
FSAR: Section 3.8.4.1.1.1; Section 3.8.4.4.1; Section 3.8.4.5
2. Design loads (from general analysis)
 1. Dead Load
 2. Live Load
 3. OBE & SSE
 4. Earth Pressure
 5. Ground water Pressure
 6. Wind and Tornado
3. Forces and moments at key sections
See calc. C-H011.1
4. Detailed design of rebar placement at key sections
C-0204, C-1334, C-1335, C-1337 through C-1342
5. General comments and preliminary audit findings

1. Dynamic Effects Applied to Floors and Walls by Machinery
Dynamic effects from machinery were considered negligible
Major pump and machinery supports are designed to meet the vendor's requirement.

1. Design requirements
2. Design loads (from general analysis)
3. Forces and moments at key sections
4. Detailed design
5. General comments and preliminary audit findings

1. Design of bents (columns and roof trusses)

Not Applicable

- a. Design requirements
- b. Design loads (from general analysis)
- c. Forces and moments at key sections
- d. Detailed design
- e. General comments and preliminary audit findings

2. Design of girders supporting crane rails

1. Reinforced concrete corbel: Fuel cask crane - 250 ton capacity.
2. Structural steel bracket: New fuel bridge crane - 5 ton capacity.

a. Design requirements

FSAR: Section 3.8.4.1.1.1; Section 3.8.4.4.1 and Section 3.8.4.5

b. Design loads (from general analysis)

- | | |
|----------------|---------------|
| 1. Dead Load | 4. Crane Load |
| 2. Live Load | |
| 3. OBE and SSE | |

All loads furnished by
vendor

c. Forces and moments at key sections

See calcs. C-H013.0; C-H034.0; C-H035.0

d. Detailed design

C-1354-A to E, C-1381A, C-1381D, C-1382

e. General comments and preliminary audit findings

K. Design of spent fuel bridge

Fuel handling platform, purchased under Spec. 9645-M-001.0

1. Design requirements
Spec. 9645-M-001.0
2. Design loads (from general analysis)
 1. Dead Load
 2. Live Load (includes impact)
 3. OBE and SSE
3. Forces and moments at key sections
Calcs. not submitted by vendor (G.E.) yet.
4. Detailed design
Calcs. not submitted by vendor (G.E.) yet.
5. General comments and preliminary audit findings

L. Fuel Pool Liner Design

Spec. C-171.0 and C-171.1

Spec. C-131.0

Fuel pool liner is designed as form for concrete wall by vendor under Spec. C-171.0. Leak chase system developed @ liner joints, and leak tightness of fuel liner is maintained.

1. Stresses and strain controls
Governing stress: (Fresh concrete) =17,516 Psi
2. Conformance to code requirements
Liner : ASTM A240, Type 304, Hot-rolled, annealed and pickled.
Shear studs: ASTM A108, Grades 1008 through 1020
Bolt, screws: ASTM A320 Class B, A161 Type 304
Welding: ASME Code - Section IX
3. Analysis procedure and results
Analysed and designed by vendor
Stresses checked by Project. See calc. C-G300.0
4. Consideration of accidental drop of crane loads
Not considered in calculation.
5. Corrosion effects (e.g., pitting) on liner integrity
Negligible over 40 years Stainless steel liner ASTM A240 Type 304
6. preliminary findings of audit results

DRAFT A, WCB3

STRUCTURAL AUDIT CHECKLIST

Plant GRAND GULF

Structure CONTROL BUILDING

Applicant _____

Architect/Engineer _____

Auditor _____

DRAFT A, WCB3

The purpose of the audit is to review and assess the techniques and methodology employed by the applicant to demonstrate compliance of all Category I structures with the applicable SRP's, Reg. Guides, Codes and Standards.

The general procedure of the audit will be to review some structures in considerable detail and others will be spot checked. Emphasis will be placed upon verifying the validity of the methods used and compliance with the applicable codes and standards; however, actual mathematical computations may also be checked and should be available at the audit.

The following audit sheets are intended to be used for the following purposes:

1. A checklist to be used by the auditor in reviewing the procedures and computations of the A-E.
2. A guideline to help the A-E prepare for the audit.

STRUCTURAL AUDIT OF GRAND GULF

SEISMIC CATEGORY 1 STRUCTURES

OTHER THAN CONTAINMENT

Structured Audited Control Building

Part I General Analysis

I. BASIC DESIGN CRITERIA

See Plant Assignment, FSAR Fig. 3.4-1

A. Dead Load (Items included, method of determining)

See Design Criteria Part B, Sect. II, Para. 7.1

Equip. Loads from Supplier Dwg.	Material:	Calc.	150 PCF
Pipe Loads from hanger drawings.		Steel	490 PCF
		CMU	105 PCF

B. Live Load (Values for operating floors, base slab, etc., also method for determination.)

Design Criteria Part B, Sect. II, Para. 7.2.3.1 & 7.2.3.3
See Arch. floor load dwgs. A-0010 thru A-0017

C. Thermal Loads

N/A

D. Pressure (Internal and external)

N/A

E. Wind Loads

1. Design basis wind

See Design Criteria Par. 3.8.1 & FSAR Sect. 3.3.1

$$= 0.00256 V^2 = 20.7 \text{ psf (v = 90 mph)}$$

2. Tornado loads

See Design Criteria Par. 3.8.2 & FSAR Sect. 3.3.2

$$= 0.00256 V^2 = 332 \text{ psf (v = 360 mph)}$$

Exterior Walls & Roof Designed for $\Delta p = 3 \text{ psi}$

Interior walls designed for depressurization due to partial venting (temp. condition during Unit 2 const.) 25 psf

F. Seismic Criteria

1. "g" value free field

	Horiz.	Vert.	
SSE	0.15g	0.10g	(FSAR: 3.7.1.1.1)
OBE	0.075g	0.05g	(FSAR: 3.7.1.1.2)

2. Spectra

SSE: FSAR Fig. 3.7-1

OBE: FSAR Fig. 3.7-2

3. Damping

See FSAR Table 3.7-3

4. Artificial time history and corresponding spectra

See FSAR Par. 3.7.1.2 &
FSAR Figs. 3.7-3 thru 3.7-15

5. Motion duration

24 seconds per FSAR Par. 2.5.2 & 3.7.1.2

6. Components of motion

Three orthogonal components in the E-W, N-S, & vertical directions
Components combined by SRSS.
FSAR Par. 3.7.2.6

G. Hydrostatic and Hydrodynamic Loads (Groundwater Only)

Design Criteria 3.4 & 7.6

FSAR Fig. 2.5-91 & Table 3.4-3

Hydrostatic: See Calc. C-T-320.0

Hydrodynamic: None

H. Earth Pressure

Design Criteria 3.10 & 7.5

Exterior Walls Calc. C-T-300.0

FSAR Fig. 2.5-91 (Lateral Earth Pressure & Groundwater)

I. Abnormal Plant Loads

1. Missiles (Impact)

Internally Generated: FSAR 3.5.1.1 & Table 3.5-1, 3.5-2
(Rotating and Pressurized Components)

Turbine : FSAR 3.5.1.3 & Table 3.5-7

Natural Phenomena : FSAR 3.5.1.4

2. Pressure

Not applicable. No high energy lines in Control Building. No pipe break phenomena. (No breaks identified in FSAR Section 3.6)

3. Local Reactions

Not applicable. No high energy lines in Control Building-no pipe whip or jet impingement loads. (No breaks identified in FSAR Sect. 3.6)

4. Other special loads

None

J. Misc. Loads (Example: crane loads)

15 ton bridge crane (calculation C-T-270.0) located at El. 93'-0" for hot machine shop.

K. Load Combinations Conformance with ACI 349 and/or 318

ACI 318 combinations used
Design Criteria Paragraph 8.2.2

II. Analysis Method

A. Seismic Analysis

1. Mathematical model - general description with sketch

FSAR Paragraph 3.7.2.1.1.3.3, Figure 3.7-22
Lumped Mass Model
Soil - Structure interaction considered

a. Parameters used

(i) Concrete modulus

$$E_c = W^{1.5} 33 \sqrt{f'_c} \quad \begin{matrix} (W = 150 \text{ pcf}) \\ (f'_c = 4000 \text{ psi}) \end{matrix}$$
$$= 3834 \text{ Ksi}$$

(ii) Rebar modulus and yield strength

$$E_s = 29000 \text{ Ksi}; F_y = 60 \text{ Ksi} \quad (\text{A615, Gr 60})$$

(iii) Poisson's ratio (Concrete)

$$\nu = 0.17$$

(iv) Damping

FSAR Table 3.7-3
Concrete: OBE = 0.02; SSE = 0.05

- (v) Structural steel modulus and yield strength

$$E_s = 29000 \text{ Ksi}; F_y = 36 \text{ Ksi}$$

- (vi) Properties of foundation materials (Shear modulus, subgrade reactions, bearing capabilities, etc.)

Shear modulus = 8393 KSF (FSAR Table 3.7-7)

Ult bearing capacity = 93 KSF (FSAR Figure 2.5-90)

- (vii) Other parameters

Density of soil = 120 PCF

Poisson's Ratio = 0.47

Shearwave velocity = 1500 ft/sec

Catahoula
Formation

Young's modulus = 24692 KSF

Damping Ratio = 0.02

(Calculation C-T008.0)

(Above values in agreement with FSAR Table 3.7-7)

b. Stiffness calculations

- (i) Exterior walls

Program CE-650 used to compute the sectional moment of inertia and shear areas in both N-S and E-W directions (Calculation C-T-007).

Gross sections used for moments of inertia and effective sections used for shear areas.

- (ii) Interior walls

Not included. Interior walls are CMU and are isolated from floors and walls.

- (iii) Floors

Considered as lumped masses. Mass moment of inertia for each horizontal direction was considered.

- (iv) Columns

Not considered in stiffness calculations

2. Method of Analysis

Method of analysis used (Time history, response spectrum methods, etc.) and consideration of torsional and translational response

FSAR 3.7.2.1

(11) Findings and comments

FSAR 3.7.2.2 (Calculation C-T-050.)

b. Selection of number of masses and degrees of freedom

FSAR Section 3.7.2.1.1.3.3 and Figure 3.7-22

(1) General description

See FSAR 3.7.2.3.1-a for modeling procedure
7 masses (6 floors + base mat) and 8 dynamic degrees
of freedom for flexible base model for each horizontal
direction.

(11) Findings and comments

c. Number of modes considered

5 modes for N-S and E-W

2 modes for Vert.

See calculation C-T-013.0 and FSAR Table 3.7-11

(1) General description

Higher modes corresponding to $f = 33\text{cps}$ or more
were neglected

(11) Findings and comments

d. Combining modal responses

(1) Actual procedures used

SRSS used for each 3 orthogonal directions (CE918)
FSAR 3.7.2.7

(11) General findings

e. Consideration of three components of motion

(1) Actual procedures used

SRSS used for combining 3 orthogonal directions
FSAR 3.7.2.6

(11) General findings

f. Consideration of soil-structure interaction and interaction
among adjacent buildings

Interaction between buildings was considered and
determined to be negligible.

(1) General description

FSAR 3.7.1.3.2 and Tables 3.7-4, 3.7-5
FSAR 3.7.2.4 and Tables 3.7-7 and 3.7-8

FSAR 3.7.2.1.1.4,
3.7.2.8

(ii) Findings and comments

g. Decoupling criteria for subsystems

(1) General procedure

FSAR 3.7.3 - No significant subsystems exist that
required analysis.

(ii) Key examples

A) Systems (cable trays, HVAC ducts, conduit, etc.)
designed by using appropriate floor response
spectra.

B) Equipment (elect., HVAC and other components) were
analyzed and designed by vendors.

(iii) General findings and comments

h. Modeling of hydrodynamic effects in spent fuel pool

Not Applicable

i. Modeling of spent fuel pool wells and interior floor
flabs and equipment thereof.

Not Applicable

3. Development of in-structure response spectra

FSAR Section 3.7.2.5, Programs CE-920 and
CE-921

a. General procedures

(1) Smoothing (describe specific smoothing method used)

Envelope of maximum peaks for each direction.
FSAR Paragraph 3.7.2.5

(ii) Peak widening

FSAR Paragraph 3.7.2.5

b. Typical results (attach figures)

(1) Basemat spectra

Calculations T-016.0 thru T-021.0 —

(11) Interior floors spectra (Key floors with floor elevations identified).

Calculations T-016.0 thru T-021.0

4. Vertical Dynamic Analysis

a. Mathematical Model - general description with sketch

FSAR Figure 3.7-22

b. Development of stiffnesses, including floor stiffness, as applicable. Wall axial stiffness computed by Program CE-650. Floors considered rigid (lumped masses). Mass moments of inertia for each floor were considered.

c. Method of Analysis (Description of method used as well as each item considered in the analysis.)

Modal response CE 917, CE 918 (Load input for stress analysis)
Time history CE 920, CE 921 (Floor response spectra)
Soil-Structure interaction was considered

FSAR 3.7.2.1

B. Stress Analysis

1. Shear Walls and Floors

a. Mathematical model (General description w/sketch)

FSAR Figures 3.8-101 thru 110

FSAR Paragraph 3.8.4.1.1.5

3.8.4.4.5

b. Method of analysis (Incorporation of torsion)

FSAR Paragraph 3.7.2.11

Torsion considered by long-hand calculations (C-T-050.0)

c. Load combinations

FSAR Paragraph 3.8.6.2 for seismic Category I structures other than containment.

d. Key results

2. Foundation mat

a. Mathematical model (Description of boundary conditions)

FSAR Paragraph 3.8.5.4.3 and Figure 3.8-101
Calculation T-240.0 - base slab supported on soil with wall fixity on four sides taken into account along with 6 interior columns supported on base mat.

b. Method of analysis

Hand calculations using linear distribution of soil bearing pressures and checked by finite element methods.

c. Load combinations

FSAR Paragraph 3.8.6.2

d. Key results (Figures, etc.)

Drawings C-061A, C-061B

3. Material to protect against structure-to-structure interaction

Rodofoam II used between Control-Auxiliary and Control and Turbine Buildings (cellular plastic filler)

a. Mechanical properties

Under seismic testing, load transfer at 50% compression was 17.8 psi.

b. Additional pressure on walls

Negligible interaction per FSAR Paragraph 3.7.2.1.1.3.2.
3D model for Control and Auxiliary Buildings, see FSAR Figure 3.7-21.

c. Findings and comments

4. Computer programs used in analysis

ICES-STEUDL (McDonnell-Douglas)	CE-917	CE-921
CE-650	CE-918	CE-931
CE-901	CE-920	

a. Assumptions and limitations

FSAR Appendix 3D

b. Applicability

FSAR Appendix 3D

- c. Verification (Sensitivity study in case of numerical solutions; e.g., finite element analysis)

FSAR Appendix 3D

- d. Load input (Include all cases)

FSAR Appendix 3D

- e. Output (Include all cases)

FSAR Appendix 3D

- f. Other discussions

FSAR Appendix 3D

5. Overall stability

- a. Forces and moments from seismic analysis

FSAR Figures 3.7-44 E-W and N-S SSE
3.7-45 E-W and N-S OBE
3.7-46 VERT SSE and OBE

- b. Various cases considered

Sliding, overturning buoyancy calculation C-T-050.0

- c. Bearing pressure versus bearing capacity and safety factor against bearing failure

FSAR Figure 2.5-90
Maximum Bearing = 24.0 Ksf $FS = \frac{93}{24.0} = 3.9$
Ult. Bearing Capacity = 93 Ksf

- d. Factors of safety

FSAR Table 3.8-1

(1) Sliding

1.18

(11) Overturning (Vertical displacement)

2.35

6. Interaction of Non-Category I structures with the structure considered.

No interaction considered

Adjacent Non-Category I structure (Turbine Building) designed to Category I (See FSAR 3.8.4.1)

- a. Identification of pertinent Non-Category I structures
FSAR 3.7.2.8
FSAR 3.8.4.1
 - b. Consideration given to potential failure of Non-Category I systems on Category I systems.

See above
 - c. General findings and comments
7. Design Consideration for Tornado Missiles
- a. Design requirements

FSAR 3.5.1.4 and Figure 3.5-1
Design Procedures, FSAR Section 3.5.3.1
 - b. Models for
 - (i) Local damage

Penetration, perforation and spalling criteria is satisfied per FSAR 3.5.3.1.
 - (ii) Overall response

FSAR 3.5.3.1
Calculation E-020.0
 - c. Load combinations

FSAR 3.8.6.2
BC-TOP-3A
 - d. Forces

FSAR 3.5.3.1
 - e. General comments and preliminary audit findings

III. CONFORMANCE TO ACCEPTABLE CRITERIA

- A. Identification of deviations, if any.

None
- B. Justification of deviations and disposition of the deviations.
- C. General comments

Part II - AUDIT OF KEY DESIGNS

For each key design area audited, the design calculations should be reviewed together with applicable drawings, sketches, etc. Also, key details and/or sections, as appropriate in this audit report, should be included.

I. SPECIFIC CHECK OF KEY LOCATIONS

A. Exterior Shear Walls

1. Design requirements

FSAR Paragraphs 3.8.4.3, 3.8.4.4, 3.8.4.5

2. Design loads (from general analysis)

See Part I of this audit

Dead, Live, OBE and SSE, Wind and Tornado, and Tornado Missiles

3. Forces and moments at key sections

Calculations C-T-320 and C-T-330

4. Detailed design of rebar placement at key sections

Calculations T-280.0, T-320.0, T-330.0

Reference: Drawing C-0604A&B C-0622

C-0612

C-0609

5. General comments and preliminary audit findings

B. Interior Shear Walls - Not Applicable

Interior walls are CMU and are designed as "partition walls" only. Interior CMU walls have a gap between top of wall and underside of slab. Walls are doweled into floor slab at bottom and braced laterally at top by attachments connected to the floor slab above. Therefore, walls cannot transmit in-plane shear forces between floors.

1. Design requirements

Not Applicable

2. Design loads (from general analysis)

Not Applicable

3. Forces and moments at key sections

Not Applicable

4. Detailed design of rebar placement at key sections

Not Applicable

5. General comments and preliminary audit findings

C. Main Floors and Roofs (Elevation)

1. Design requirements

FSAR Paragraphs 3.8.4.3, 3.8.4.4 and 3.8.4.5

2. Design loads (from general analysis)

See Part I of this audit

Dead, Live, Tornado and Tornado Missile

3. Forces and moments at key sections

Calculations C-T-160, C-T-170 and C-T-187

4. Detailed design of rebar placement at key sections

Calculations: C-T-160, C-T-161, C-T-170

Drawings: C-0608 C-0634
C-0609 C-0638

5. General comments and preliminary audit findings

D. Steel Structural Bracing Systems (if any) Interior Columns

1. Design requirements

FSAR Paragraphs 3.8.4.3, 3.8.4.4 and 3.8.4.5

2. Design loads

See Part I of this audit

Dead, Live, SSE

3. Forces and moments at key sections

Calculation C-T-200

Drawing C-0632

4. General comments and preliminary audit findings

E. Foundation Mat

1. Design requirements

FSAR Paragraphs 3.8.4.3, 3.8.4.4 and 3.8.4.5

2. Design loads (from general analysis)

See Part I of this audit

Dead, Live, SSE

3. Forces and moments at key sections

Calculation C-T-240.0

4. Detailed design of rebar placement at key sections

Calculation C-T-240.0

Drawings C-0604A and C-0604B

5. General comments and preliminary audit findings

F. Main Frame Concrete Column Design (Key Columns)

Not Applicable

No conc. columns

1. Design requirements

Not Applicable

2. Design loads (from general analysis)

Not Applicable

3. Forces and moments at key sections

Not Applicable

4. Detailed design of rebar placement at key sections

Not Applicable

5. General comments and preliminary audit findings

G. Secondary Floors El. 177'-0", Mezzanine Floor and Viewing Gallery

1. Design requirements

FSAR Paragraphs 3.8.4.3, 3.8.4.4 and 3.8.4.5

2. Design loads (from general analysis)

See Part I of this audit

Dead, Live

3. Forces and moments at key sections

Calculations C-T-183 and C-T-185

4. Detailed design of rebar placement at key sections

Calculation T-183

Drawings C-0617 C-0641

C-0618 C-0642

5. General comments and preliminary audit findings

H. Detailing at Floor-Wall Joints

1. Design requirements

Same as floor and wall systems, above.

2. Design loads (from general analysis)

Same as floor and wall systems, above.

3. Forces and moments at key sections

Calculations C-T-160, C-T-170, C-T-187, C-T-320, C-T-330

4. Detailed design of rebar placement at key sections

See drawings C-0604A	C-0609	C-0620
C-0604B	C-0612	C-0622
C-0605	C-0613	C-0625
C-0608	C-0619	C-0204 for typical details

5. General comments and preliminary audit findings

I. Dynamic Effects Applied to Floors and Walls by Machinery

Control Building houses electrical and HVAC equipment which have negligible dynamic effects.

1. Design requirements

Not Applicable

2. Design loads (from general analysis)

Not Applicable

3. Forces and moments at key sections

Not Applicable

4. Detailed design

Not Applicable

5. General comments and preliminary audit findings

J. Crane and Supports - The only crane in the Control Building is at El. 93. Crane has 15 ton capacity with a span of 30 feet.

1. Design of bents (columns and roof trusses)

Not Applicable. No special support structures were required for this crane.

- a. Design requirements
Not Applicable
 - b. Design loads (from general analysis)
Not Applicable
 - c. Forces and moments at key sections
Not Applicable
 - d. Detailed design
Not Applicable
 - e. General comments and preliminary audit findings
2. Design of girders supporting crane rails
- a. Design requirements
FSAR 3.8.4.3, 3.8.4.4 and 3.8.4.5
Min. deflection criteria
 - b. Design loads (from general analysis)
From crane manufacturer
Dead and Live Loads
 - c. Forces and moments at key sections
 $F_B = 17 \text{ ksi}$
 $f_b = 16 \text{ ksi}$
 - d. Detailed design
See calculation C-T-270
Drawing C-0648
 - e. General comments and preliminary audit findings
- K. Design of spent fuel bridge
- Not Applicable. No spent fuel bridge.
- 1. Design requirements
Not Applicable

2. Design loads (from general analysis)

Not Applicable

3. Forces and moments at key sections

Not Applicable

4. Detailed design

Not Applicable

5. General comments and preliminary audit findings

L. Fuel Pool Liner Design, No Fuel Pools

Not Applicable

1. Stresses and strain controls

Not Applicable

2. Conformance to code requirements

Not Applicable

3. Analysis procedure and results

Not Applicable

4. Consideration of accidental drop of crane loads

Not Applicable

5. Corrosion effects (e.g., pitting) on liner integrity

Not Applicable

6. Preliminary findings of audit results

DRAFT A, WCB3

STRUCTURAL AUDIT CHECKLIST

Plant GRAND GULF

Structure DIESEL GENERATOR BUILDING

Applicant _____

Architect/Engineer _____

Auditor _____

DRAFT A, WCB3

The purpose of the audit is to review and assess the techniques and methodology employed by the applicant to demonstrate compliance of all Category I structures with the applicable SRP's, Reg. Guides, Codes and Standards.

The general procedure of the audit will be to review some structures in considerable detail and others will be spot checked. Emphasis will be placed upon verifying the validity of the methods used and compliance with the applicable codes and standards; however, actual mathematical computations may also be checked and should be available at the audit.

The following audit sheets are intended to be used for the following purposes:

1. A checklist to be used by the auditor in reviewing the procedures and computations of the A-E.
2. A guideline to help the A-E prepare for the audit.

STRUCTURAL AUDIT OF GRAND GULF

SEISMIC CATEGORY I STRUCTURES

OTHER THAN CONTAINMENT

Structure Audited Diesel Generator Building

Part I General Analysis

I. BASIC DESIGN CRITERIA

See FSAR Figure 3.4-1 "Plant Arrangement".

A. Dead Load (Items included, method of determining)

Items included: Civil design criteria Paragraph 7.1.

Method of Determining: Concrete 150 lbs./cu. ft., steel 490 lb./cu. ft.

Equipment weight: Vendor drawings

Pipe loads: Hanger drawings

B. Live Load (Values for operating floors, base slab, etc., also method for determination)

Base slab or operating floor	El 133':	250 psf]	See Live Load
Mezzanine	El 158':	100 psf]	Drawings C-0355
Roof	El 172':	30 psf]	through C-0361

C. Thermal Loads

Not Applicable.

D. Pressure (Internal and external)

Not Applicable.

E. Wind Loads

1. Design basis wind

See Civil Design Criteria Paragraph 3.8.1 and FSAR Section 3.3.1
 $q = 0.00256 V^2 = 20.7 \text{ psf (V=90 mph)}$.

2. Tornado loads

See Civil Design Criteria Paragraph 3.8.2 and FSAR Section 3.3.2
 $q = 0.00256 V^2 = 332 \text{ psf (V=360 mph)}$. In addition, tornado depressurization load of 3 psig was applied to all walls and roof.

F. Seismic Criteria

1. "g" value free field (seismic accelerations)

	<u>Horizontal</u>	<u>Vertical</u>	
SSE	0.15 g	0.10 g	(FSAR: 3.7.1.1,1)
OBE	0.075 g	0.05 g	(FSAR: 3.7.1.1,2)

2. Spectra

See FSAR Section 3.7.1, 3.7.1.1.

3. Damping

FSAR Table 3.7-3 and Section 3.7.1.3.1

4. Artificial time history and corresponding spectra

FSAR Section 3.7.1.2 and Figures 3.7-3 through 3.7-15.

5. Motion duration

24 seconds (FSAR Section 3.7.1.2)

6. Components of motion

FSAR Section 3.7.2.6: 3 components of motion; 2 horizontal, 1 vertical and SRSS combination.

G. Hydrostatic and Hydrodynamic Loads

Not Applicable.

H. Earth Pressure

Not Applicable.

I. Abnormal Plant Loads

1. Missiles (Impact)

Internally generated missiles FSAR Paragraph 3.5.1.1 and Table 3.5-1.
Turbine missiles FSAR Section 3.5.1.3 and Table 3.5-7.
Natural missiles FSAR Section 3.5.1.4.

2. Pressure

No pipe breaks inside D.G. building. See FSAR Paragraph 3.6.

3. Local Reactions

Pipe attachments to walls or floors are checked by structural adequacy program.

4. Other special loads

Not applicable.

J. Misc. Loads (Example: crane loads)

6 ton bridge crane supported from roof framing.

K. Load Combinations Conformance with ACI 349 and/or 318

ACI-318 combinations used. See Civil design Criteria Paragraph 8.2.2.

II. Analysis Method

A. Seismic Analysis

1. Mathematical model - general description with sketch

Refer to FSAR Figure 3.7-23 shows mathematical model. Lumped parameter, geometrically coupled, sort structure interaction on two layers of sort.

a. Parameters used

(i) Concrete modulus

$$E_c = w^{1.5} 33 \sqrt{f'_c} = 3834 \text{ ksi} \quad w=150 \text{ pcf} \\ f'_c=4000 \text{ psi}$$

(ii) Rebar modulus and yeild strength

$$E = 29 \times 10^6 \text{ psi}; F_y = 60,000 \text{ psi (A 615, GR 60)}$$

(iii) Poisson's ratio

$\nu = 0.17$ Reference, Theory of Plates and Shells, Timoshenko, Woinowski-Krieger.

(iv) Damping

FSAR Table 3.7-5. Concrete: OBE: 0.02, SSE: 0.05

(v) Structural steel modulus and yield strength

$$E = 29 \times 10^6 \text{ psi}; F_y=36,000 \text{ psi}$$

(vi) Properties of foundation materials (Shear modulus, subgrade reactions, bearing capabilities, etc.)

FSAR Table 3.7-7: shear modulus $1850 \pm 550 \text{ KSF}$
Maximum bearing pressure= 2.7 KSF ; Allow. bearing pressure= 6.0 KSF (on compacted fill).

(vii) Other parameters

FSAR Table 3.7-7 (for backfill materia'; 60' high)
Density of soil = 125 pcf
Poisson ratio (soil) = 0.4
Shear wave velocity = 690 fps
Young modulus (soil) = $4440 \pm 1320 \text{ ksf}$
Damping ratio (soil) = 0.08 ± 0.02

b. Stiffness calculations

(i) Exterior walls

Program CE-650 for sectional properties was used. Moments of inertia were found by gross concrete sections. Shear areas were found by considering effect of shear areas for N-S and E-W directions.

(ii) Interior walls

Same as exterior walls.

(iii) Floors

Weight of floors was taken as lumped mass; mass moment of inertias for each horizontal direction were considered.

(iv) Columns

Not Applicable.

2. Method of Analysis

See FSAR Table 3.7-9.

a. Method of analysis (Time history, response spectrum methods, etc.) and consideration of torsional and translational response

CE-920 & 921; Time history method was used for floor response spectra. CE-917 & 918; Modal response spectra method for stress analysis. CE-931 was used for composite damping for soil structure interaction.

(i) General description

FSAR Section 3.7.2.1.1.3.4., Figure 3.7-16. Torsional effects were examined by hand methods.

(ii) Findings and comments

b. Selection of number of masses and degrees of freedom

(Base mat, mezzanine and roof level) 3 masses and 8 degrees of freedom for flexible base model for each horizontal direction.

(i) General description

Refer to: FSAR 3.7.2.1.1.3.4, Figure 3.7-16
and Para. 3.7.2.3.1.a for modeling procedure.

(ii) Findings and comments

c. Number of modes considered (for modal response spectra analysis)

- 4 - modes for N-S direction
- 3 - modes for E-W direction
- 2 - modes for Vertical direction

(i) General description

In general, higher modes corresponding to $f=33$ cps or more were neglected.

(ii) Findings and comments

d. Combining modal responses

FSAR Paragraph 3.7.2.7

(i) Actual procedures used

See FSAR Sections 3.7.2.1.1.4, 3.7.2.1.2.3, 3.7.2.7, 3.7.3.7.

(ii) General findings

e. Consideration of three components of motion

(i) Actual procedures used

FSAR Paragraph 3.7.2.6

(ii) General findings

f. Consideration of soil-structure interaction and interaction among adjacent buildings

FSAR Paragraph: 3.7.1.3.2 and Tables: 3.7-4 and 3.7-5.
No interaction between buildings due to isolation gsp.

(i) General description

FSAR Paragraph: 3.7.2.4, Tables: 3.7-7 and 3.7-8

(ii) Findings and comments

g. Decoupling criteria for subsystems

FSAR Paragraphs: 3.7.2.3.1 and BC-TOP 4, Page 3-3

(1) General procedure

FSAR Paragraph 3.7.3

There are no significant subsystems that were accounted for in seismic analysis.

(ii) Key examples

- 1-Electrical tray, conduit and HVAC systems were designed by using floor response spectra curve.
- 2-Subsystem analysis for diesel generator Units and other equipment were performed by vendors.

(iii) General findings and comments

h. Modeling of hydrodynamic effects in spent fuel pool

Not applicable.

1. Modeling of spent fuel pool wells and interior floor slabs and equipment thereof

Not applicable.

3. Development of in-structure response spectra

a. General procedures

FSAR Section 3.7.2.5, CE-920 and CE-921

(i) Smoothing (describe specific smoothing method used)

Smoothed floor response spectra curves represent an envelope of the maximum peaks.

(ii) Peak widening

FSAR, Paragraph 3.7.2.9, minimum 10% of peak frequency.

b. Typical results (attach figures)

See calculations U-471.0 through U-476.0 (Volume 4) for floor response spectra curves.

(i) Basemat spectra

Calculations U-471.0 through U-476.0

(ii) Interior floors spectra (key floors with floor elevations identified)

Calculations U-471.0 through U-476.0

4. Vertical Dynamic Analysis

- a. Mathematical Model - general description with sketch

FSAR Figure 3.7-23

Calculation U-90.0 (Vol. 1)

- b. Development of stiffnesses, including floor stiffness, as applicable

Program CE-650 was used for wall areas to account for axial stiffness. Floors considered rigid; their weights were taken into account as lumped masses. Mass moments of inertia for floors were considered.

- c. Method of Analysis (Description of method used, as well as each item considered in the analysis)

Modal response for stress analysis - (CE-917, -918).

Time history for floor response spectra - (CE-920, -921).

Soil structure interaction was considered.

B. Stress Analysis

1. Shear Walls and Floors

- a. Mathematical model (General description w/sketch)

FSAR Figure 3.8-111, paragraph 3.8.4.1.1.6

- b. Method of analysis (Incorporation of torsion)

FSAR Paragraph 3.8.4.4.6 (wall calculations U-100.0; floor calculations U-120.0 and U-125.0). Calculation U-105.0-Torsion due to seismic by hand calculations FSAR Paragraph 3.7.2.11.

- c. Load combinations

FSAR Paragraph 3.8.6.2 for seismic Category I structures.

- d. Key results

See Part II.

2. Foundation mat

- a. Mathematical model (Description of boundary conditions)

FSAR Paragraphs 3.8.5.1.4 and 3.8.5.4.4 and Figure 3.8-111.

$$\frac{P \pm Mc}{A \quad I}$$

Base slab supported on soil, linear pressure distribution. Simply supported slab on 4 sides plus 2 intermediate supports under interior walls.

b. Method of analysis

Hand methods were used for load combinations plus rigidity requirements for vendor equipment was satisfied. See calculation U-110.0.

c. Load combinations

FSAR Paragraph 3.8.6.2.

d. Key results (Figures, etc.)

See Part II.

3. Material to protect against structure-to-structure interaction

Rodofoam II was used between auxiliary and diesel generator buildings.

a. Mechanical properties

Seismic testing: load transfer @ 50% compression was 17.8 psi.

b. Additional pressure on walls

FSAR Figure 3.7-21, 3-D model for auxiliary and control buildings; also Paragraph 3.7.2.1.1.3.2 for negligible interaction.

4. Computer programs used in analysis

CE-917, 918, 920, 921 and 931 and Lucon, CE-650. See FSAR Appendix 3D.

a. Assumptions and limitations

FSAR Appendix 3D.

b. Applicability

FSAR Appendix 3D.

c. Verification (Sensitivity study in case of numerical solutions; e.g., finite element analysis)

FSAR Appendix 3D.

d. Load input (Include all cases)

FSAR Appendix 3D.

e. Output (Include all cases)

FSAR Appendix 3D.

f. Other discussions

FSAR Appendix 3D.

5. Overall stability

a. Forces and moments from seismic analysis

FSAR Figure 3.7-49 N-S, SSE
FSAR Figure 3.7-50 N-S, OBE
FSAR Figure 3.7-51 E-W, SSE
FSAR Figure 3.7-52 E-W, OBE
FSAR Figure 3.7-53 Vertical, SSE
FSAR Figure 3.7-54 Vertical, OBE

b. Various cases considered

Sliding, overturning and stresses for bearing were considered.
(Calculation U-117.0).

c. Bearing pressure versus bearing capacity and safety factor
against bearing failure

Maximum bearing pressure = 2.7 ksf; allowable bearing
pressure = 6 ksf. $SF = \frac{6.0}{2.7} = 2.22$

d. Factors of safety

FSAR Table 3.8-1.

(1) Sliding

S.F. = 1.53

(11) Overturning (Vertical displacement)

S.F. = 7.70

6. Interaction of non-Category I structures with the structure considered

Not applicable.

a. Identification of pertinent non-Category I structures

b. Consideration given to potential failure of non-Category I
systems on Category I systems

c. General findings and comments

7. Design Consideration for Tornado Missiles

a. Design requirements

FSAR Paragraph 3.5.1.4
Design procedures 3.5.3.1

b. Models for

(i) Local damage

Penetration, perforation and spalling criteria is satisfied as per FSAR Paragraph 3.5.3.1.

(ii) Overall response

Structural response is satisfied as per FSAR Paragraph 3.5.3.1 and Calculation E-020.0.

c. Load combinations

FSAR Paragraph 3.8.6.2 and BC-TOP 3A.

d. Forces

FSAR Paragraph 3.5.3.1.

e. General comments and preliminary audit findings

III. CONFORMANCE TO ACCEPTABLE CRITERIA

A. Identification of deviations, if any

None

B. Justification of deviations and disposition of the deviations

-

C. General comments

Part II - AUDIT OF KEY DESIGNS

For each key design area audited, the design calculations should be reviewed together with applicable drawings, sketches, etc. Also, key details and/or sections, as appropriate, in this audit report should be included.

I. SPECIFIC CHECK OF KEY LOCATIONS

A. Exterior Shear Walls

1. Design requirements

FSAR Paragraphs 3.8.4.3, 3.8.4.4 and 3.8.4.5; also Sections 3.8.4.4.6 and 3.8.4.1.1.6.

2. Design loads (from general analysis)

- 1) Dead Loads
- 2) Live Loads
- 3) OBE and SSE Loads
- 4) Tornado Missiles
- 5) Wind and Tornado Loads (Includes Depressurization)

3. Forces and moments at key sections

Calculation U-100.0.

4. Detailed design of rebar placement at key sections

Drawings: C-1503, C-1504, C-1505 A&B, C-0204.

5. General comments and preliminary audit findings

B. Interior Shear Walls

1. Design requirements

FSAR Paragraphs 3.8.4.3, 3.8.4.4 and 3.8.4.5; also see 3.8.4.4.6 and 3.8.4.1.1.6.

2. Design loads (from general analysis)

- 1) Dead Loads
- 2) Live Loads
- 3) OBE and SSE Loads
- 4) Wind and Tornado Loads (Includes Depressurization)

3. Forces and moments at key sections

See attached Table 3 and Calculation U-100.0.

4. Detailed design of rebar placement at key sections

Drawings: C-0204; C-1503.

5. General comments and preliminary audit findings

C. Main Floors and Roofs (Elevation)

No main floor exists, only roof slab of 2'-0". This satisfies minimum thickness for tornado missiles.

1. Design requirements

FSAR Paragraphs 3.8.4.3, 3.8.4.4, and 3.8.4.5. Also see 3.8.4.4.6 and 3.8.4.1.1.6.

2. Design loads (from general analysis)

- 1) Dead Load
- 2) Live Load
- 3) Crane Load (7.5 T)
- 4) SSE and OBE Loads
- 5) Wind and Tornado Loads (Includes Depressurization)
- 6) Tornado Missile Loads

3. Forces and moments at key sections

See Calculation No. U-125.0.

4. Detailed design of rebar placement at key sections

Drawings: C-1506B, C-1506C

5. General comments and preliminary audit findings

D. Steel Structural Bracing Systems (if any)

Not applicable (structural steel framing is discussed elsewhere).

1. Design requirements

-

2. Design loads

-

3. Forces and moments at key sections

-

4. General comments and preliminary audit findings

E. Foundation Mat

1. Design requirements

FSAR Paragraph 3.8.5.4.4.

2. Design loads (from general analysis)

- 1) Dead Load Including Equipment
- 2) Live Load
- 3) OBE and SSE Loads
- 4) Wind and Tornado Loads
- 5) Equipment Load

3. Forces and moments at key sections

Calculation No. U-110.0.

4. Detailed design of rebar placement at key sections

Drawings: C-1500, C-1501, C-0204

5. General comments and preliminary audit findings

F. Main Frame Concrete Column Design (Key Columns)

Not applicable.

1. Design requirements

-

2. Design loads (from general analysis)

-

3. Forces and moments at key sections

-

4. Detailed design of rebar placement at key sections

-

5. General comments and preliminary audit findings

-

G. Secondary Floors

1. Design requirements

FSAR Paragraphs 3.8.4.3, 3.8.4.4 and 3.8.4.5. Also see 3.8.4.4.6 and 3.8.4.1.1.6.

2. Design loads (from general analysis)

- 1) Dead Load
- 2) Live Load
- 3) OBE and SSE Loads

3. Forces and moments at key sections

Mezzanine slab at elevation 158'-0" is 6" thick concrete supported on structural steel beams at 6'-10" spacings. South side is supported by the interior/exterior walls. North side of mezzanine is hung from roof beams. Maximum $M=227'k$. $f_b = 21$ ksi. Maximum $V = 26$ k. Actual shear stress is much less than the allowable shear stress for E-W girders (non-composite design).

4. Detailed design of rebar placement at key sections

Drawing: C-1506A

5. General comments and preliminary audit findings

H. Detailing at Floor-Wall Joints

Not applicable.

1. Design requirements

-

2. Design loads (from general analysis)

-

3. Forces and moments at key sections

-

4. Detailed design of rebar placement at key sections

-

5. General comments and preliminary audit findings

-

I. Dynamic Effects Applied to Floors and Walls by Machinery

1. Design requirements

Vendor rigidity criteria. See Foundation Material Section for general analysis.

2. Design loads (from general analysis)

Vendor rigidity criteria. See Calculation No. U-110.0.

3. Forces and moments at key sections

Not applicable.

4. Detailed design

Drawing: C-1502A

5. General comments and preliminary audit findings

J. Crane and Supports

1. Design of bents (columns and roof trusses)

Not applicable.

a. Design requirements

-

b. Design loads (from general analysis)

-

c. Forces and moments at key sections

-

d. Detailed design

-

e. General comments and preliminary audit findings

-

2. Design of girders supporting crane rails

7.5 T capacity crane. See roof floor section for general analyses.

a. Design requirements

-

b. Design loads (from general analysis)

-

c. Forces and moments at key sections

-

d. Detailed design

-

e. General comments and preliminary audit findings

K. Design of spent fuel bridge

Not applicable.

1. Design requirements.

-

2. Design loads (from general analysis)

-

3. Forces and moments at key sections

-

4. Detailed design

-

5. General comments and preliminary audit findings

L. Fuel Pool Liner Design

Not applicable.

1. Stresses and strain controls

-

2. Conformance to code requirements

-

3. Analysis procedure and results

-

4. Consideration of accidental drop of crane loads

-

5. Corrosion effects (e.g., pitting) on liner integrity

-

6. Preliminary findings of audit results

STRUCTURAL AUDIT CHECKLIST

Plant GRAND GULF

Structure ENCLOSURE BLDG.

Applicant MISSISSIPPI POWER & LIGHT

Architect/Engineer BECHTEL POWER CORP.

Auditor R. E. LIPINSKI

The purpose of the audit is to review and assess the techniques and methodology employed by the applicant to demonstrate compliance of all Category I structures with the applicable SRP's, Reg. Guides, Codes and Standards.

The general procedure of the audit will be to review some structures in considerable detail and others will be spot checked. Emphasis will be placed upon verifying the validity of the methods used and compliance with the applicable codes and standards; however, actual mathematical computations may also be checked and should be available at the audit.

The following audit sheets are intended to be used for the following purposes:

1. A checklist to be used by the auditor in reviewing the procedures and computations of the A-E.
2. A guideline to help the A-E prepare for the audit.

STRUCTURAL AUDIT OF GRAND GULF

SEISMIC CATEGORY I STRUCTURES

OTHER THAN CONTAINMENT

Structure Audited ENCLOSURE BLDG.

Part I General Analysis

1. BASIC DESIGN CRITERIA

- A. Dead Load (Items included, method of determining)

See FSAR Sections 3.8.4.3, 3.8.6.1

- B. Live Load (Values for operating floors, base slab, etc., also method for determination)

See FSAR Section 3.8.6.1

- C. Thermal Loads

See FSAR Section 3.8.6.1

- D. Pressure (Internal and external)

See FSAR Section 3.8.6.1

- E. Wind Loads See FSAR Section 3.8.6.1 & Bechtel Topical Report BC-TOP-3A

1. Design basis wind

See FSAR Section 3.8.6.1.2

2. Tornado loads

See FSAR Section 3.8.6.1.3

F. Seismic Criteria FSAR Section 3.8.6, 3.8.6.1.2, 3.8.6.1.3

1. "g" value free field See FSAR Section 3.7.1., 3.7.1.1
2. Spectra See Section 3.7.1.1.1, 3.1.1.2
3. Damping See FSAR Table 3.7.3
4. Artificial time history and corresponding spectra
See FSAR Section 3.7.1.2
5. Motion duration
See FSAR Section 3.7.1.2
6. Components of motion
See FSAR Section 3.7.2.6
- G. Hydrostatic and Hydrodynamic Loads Not applicable to the Enclosure Building
- H. Earth Pressure Not applicable to the Enclosure Building
- I. Abnormal Plant Loads
See FSAR Section 3.8.6, 3.8.6.1.4
 1. Missiles (Impact)
See FSAR Sections 3.8.4.4.7 and 3.8.6.1
 2. Pressure
See FSAR Section 3.8.6.1
 3. Local Reactions
See FSAR Section 3.8.6.1
 4. Other special loads
See FSAR Section 3.8.6.1

J. Misc. Loads (Example: crane loads) Not applicable to the Enclosure Building

K. Load Combinations Conformance with ACI 349 and/or 318

Not applicable to the Enclosure Building

II. Analysis Method

A. Seismic Analysis See FSAR Section 3.7.2.1

1. Mathematical model - general description with sketch

See FSAR Section 3.7.2.1.1.3

a. Parameters used

(i) Concrete modulus

Not Applicable

(ii) Rebar modulus and yield strength

Not Applicable

(iii) Poisson's ratio

0.3 for structural steel

(iv) Damping

See FSAR Table 3.7.3

(v) Structural steel modulus and yield strength

$E = 29 \times 10^6$ psi; $F_y = 36$ ksi, minimum

(vi) Properties of foundation materials (Shear modulus, subgrade reactions, bearing capabilities, etc.)

Not Applicable

(vii) Other parameters

See FSAR Section 3.8.6

b. Stiffness calculations

(i) Exterior walls

Not Applicable

(ii) Interior walls

Not Applicable

(iii) Floors

Not Applicable

(iv) Columns

See FSAR Section 3.8.6. See Calculation L001.0

2. Method of Analysis

a. Method of analysis used (Time history, response spectrum methods, etc.) and consideration of torsional and translational response

(i) General description

See FSAR Section 3.7.2.1

(ii) Findings and comments

b. Selection of number of masses and degrees of freedom

See FSAR Section 3.7.2.1

(i) General description

See FSAR Section 3.7.2.1.1.3.1 and Figure 3.7-18

(ii) Findings and comments

c. Number of modes considered

(i) General description

See FSAR Section 3.7.1.2

(ii) Findings and comments

d. Combining modal responses

(i) Actual procedures used

See FSAR Sections 3.7.2.1.1.4, 3.7.2.1.2.3

(ii) General findings

e. Consideration of three components of motion

(i) Actual procedures used

See FSAR Section 3.7.2.6

(ii) General findings

f. Consideration of soil-structure interaction and
interaction among adjacent buildings

Not Applicable

(i) General description

(ii) Findings and comments

g. Decoupling criteria for subsystems

Not Applicable

(i) General procedure

(ii) Key examples

(iii) General findings and comments

h. Modeling of hydrodynamic effects in spent fuel pool

Not Applicable

i. Modeling of spent fuel pool wells and interior floor slabs and equipment thereof

Not Applicable

3. Development of in-structure response spectra

a. General procedures

See FSAR Section 3.7.2.5

(i) Smoothing (describe specific smoothing method used)

See FSAR Section 3.7.2.5

(ii) Peak widening

See FSAR Section 3.7.2.5

b. Typical results (attach figures)

(i) Basemat spectra

Not Applicable

(ii) Interior floors spectra (Key floors with floor elevations identified)

See FSAR Section 3.7.2.5

4. Vertical Dynamic Analysis

See Part II A.1

a. Mathematical Model - general description with sketch

See Part II A.1

- b. Development of stiffnesses, including floor stiffness, as applicable.

See Part II A.1

- c. Method of Analysis (Description of method used as well as each item considered in the analysis)

See Part II A.1

B. Stress Analysis

1. Shear Walls and Floors

The Enclosure Building is a steel frame structure. There are no shear walls and floors.

- a. Mathematical model (General description w/sketch)

See Calculation L001.0

- b. Method of analysis (Incorporation of torsion)

See Calculation L001.0

- c. Load combinations

See Calculation L001.0

- d. Key results

See Calculation L001.0

2. Foundation mat

Not Applicable

- a. Mathematical model (Description of boundary conditions)

- b. Method of analysis

- c. Load combinations

- d. Key results (Figures, etc.)

3. Material to protect against structure-to-structure interaction

See FSAR Section 3.8.4.1.1.7 and Figures 3.8-112 through 3.8-114

a. Mechanical properties

Not Applicable

b. Additional pressure on walls

Not Applicable

c. Findings and comments

4. Computer programs used in analysis

See FSAR Appendix 3B and Calculation L001.0

a. Assumptions and limitations

See FSAR Appendix 3B

b. Applicability

See FSAR Appendix 3B

c. Verification (Sensitivity study in case of numerical solutions; e.g., finite element analysis)

Not Applicable

d. Load input (Include all cases)

See FSAR Section 3.8.6 and Calculation L001.0

e. Output (Include all cases)

See Calculation L001.0

f. Other discussions

5. Overall stability

a. Forces and moments from seismic analysis

See Calculation L001.0

D. Various cases considered

See FSAR Section 3.8.6 and Calculation L001.0

- c. Bearing pressure versus bearing capacity and safety factor against bearing failure

Not Applicable

- d. Factors of safety

See FSAR Section 3.8.6

- (i) Sliding

Not Applicable

- (ii) Overturning (Vertical displacement)

Not Applicable

6. Interaction of non-category I structures with the structure considered

Not Applicable

- a. Identification of pertinent Non-Category I structures

- b. Consideration given to potential failure of Non-Category I systems on Category I systems

- c. General findings and comments

7. Design Consideration for Tornado Missiles

See FSAR Section 3.6.4.1.1.7

- a. Design requirements

See FSAR Sections 3.8.4.1.1.7 and 3.8.6

b. Models for

(i) Local damage

See FSAR Section 3.8.4.1.1.7

(ii) Overall response

See FSAR Section 3.8.4.1.1.7

c. Load combinations

See FSAR Section 3.8.6.2

d. Forces

See Calculation L001.0

e. General comments and preliminary audit findings

III. CONFORMANCE TO ACCEPTABLE CRITERIA

See Calculation L001.0

A. Identification of deviations, if any

Not Applicable

B. Justification of deviations and disposition of the deviations

Not Applicable

C. General comments

Part II - AUDIT OF KEY DESIGNS

For each key design area audited, the design calculations should be reviewed together with applicable drawings, sketches, etc. Also, key details and/or sections, as appropriate, in this audit report should be included.

1. SPECIFIC CHECK OF KEY LOCATIONS

A. Exterior Shear Walls

Not Applicable. There are no shear-carrying walls in the Enclosure Building.

1. Design requirements
2. Design loads (from general analysis)
3. Forces and moments at key sections
4. Detailed design of rebar placement at key sections
5. General comments and preliminary audit findings

B. Interior Shear Walls

Not Applicable. There are no shear-carrying walls in the Enclosure Building.

1. Design requirements
 2. Design loads (from general analysis)
 3. Forces and moments at key sections
 4. Detailed design of rebar placement at key sections
 5. General comments and preliminary audit findings
-

1. Design requirements

See FSAR Section 3.8.6 and Calculation L001.0

2. Design loads (from general analysis)

See FSAR Section 3.8.6, Project Design Criteria, and Calculation L001.0

3. Forces and moments at key sections

See Calculation L001.0

4. Detailed design of rebar placement at key sections

Not Applicable. There are no concrete structural members in the Enclosure Building.

5. General comments and preliminary audit findings

D. Steel Structural Bracing Systems (if any)

1. Design requirements

See FSAR Section 3.8.6 and Calculation L001.0

2. Design loads

See Calculation L001.0

3. Forces and moments at key sections

See Calculation L001.0

4. General comments and preliminary audit findings

E. Foundation Mat

Not Applicable. The Enclosure Building does not have a foundation mat.

1. Design requirements

2. Design loads (from general analysis)

3. Forces and moments at key sections

4. Detailed design of rebar placement at key sections

5. General comments and preliminary audit findings

F. Main Frame Concrete Column Design (Key Columns)

Not Applicable. There are no concrete columns in the Enclosure Building

1. Design requirements

2. Design loads (from general analysis)

3. Forces and moments at key sections

4. Detailed design of rebar placement at key sections

5. General comments and preliminary audit findings

G. Secondary Floors

Not Applicable. There are no floors in the Enclosure Building.

1. Design requirements

2. Design loads (from general analysis)

3. Forces and moments at key sections

4. Detailed design of rebar placement at key sections

5. General comments and preliminary audit findings

H. Detailing at Floor-Wall Joints

Not Applicable. There are no structural floors or walls in the Enclosure Building.

1. Design requirements

2. Design loads (from general analysis)

3. Forces and moments at key sections

4. Detailed design of rebar placement at key sections

5. General comments and preliminary audit findings

I. Dynamic Effects Applied to Floors and Walls by Machinery

Not Applicable. There are no structural floors and walls located in the Enclosure Building.

1. Design requirements

2. Design loads (from general analysis)

3. Forces and moments at key sections

4. Detailed design

5. General comments and preliminary audit findings

J. Crane and Supports

Not Applicable. There are no cranes in the Enclosure Building.

1. Design of bents (columns and roof trusses)

- a. Design requirements
- b. Design loads (from general analysis)
- c. Forces and moments at key sections
- d. Detailed design
- e. General comments and preliminary audit findings

2. Design of girders supporting crane rails

Not Applicable. There are no crane rails in the Enclosure Building.

- a. Design requirements
- b. Design loads (from general analysis)
- c. Forces and moments at key sections
- d. Detailed design
- e. General comments and preliminary audit findings

K. Design of spent fuel bridge

Not Applicable. There is no fuel handling equipment in the Enclosure Building.

1. Design requirements
2. Design loads (from general analysis)
3. Forces and moments at key sections
4. Detailed design
5. General comments and preliminary audit findings

L. Fuel Pool Liner Design

Not Applicable. There is no fuel pool in the Enclosure Building.

1. Stresses and strain controls
2. Conformance to code requirements
3. Analysis procedure and results
4. Consideration of accidental drop of crane loads
5. Corrosion effects (e.g., pitting) on liner integrity
6. preliminary findings of audit results