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February 7, 1986

United States Nuclear Regulatory Commission  
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File: X7BD102  
Log: GN-801

Reference: Vogtle Electric Generating Plant - Unit 1, 50-424,  
NRC Report No. 50-424/85-35

Attention: Mr. J. Nelson Grace

In response to your NRC Inspection Report 50-424/85-35 regarding Module 4, Mechanical Equipment and Piping. Attached is Georgia Power Company's response to the seventeen unresolved or inspector followup items listed in the above report.

In our review of the subject report as well as in discussions with members of your staff, a number of concerns have arisen regarding the scope of various modules and as to our ability to assess all aspects of a given work element when only certain aspects are assessed in the module under review. Accordingly, we wish to clarify the approach used in our pilot Readiness Review Program for scoping modules and appendices.

Additionally, we are identifying the scope of future modules and the commitments associated with the future modules to aid your reviewers in understanding our assignment of commitments to modules and appendices.

As you are aware, we divided the project work activities into logical and distinct elements to facilitate a phased, systematic and indepth, self-assessment and subsequent NRC review to ensure that these activities have been and will continue to be accomplished in accordance with regulatory requirements. Necessarily, the content of the individual modules and appendices were based on considerations such as work process logic and scheduled sequence of work. Existing verification and review programs, where deemed adequate by Readiness Review, were also considered in the scoping of modules and appendices. Additionally, a number of program enhancements have been identified and accepted by the NRC and subsequently implemented by Readiness Review which should benefit the overall program.

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We also found it necessary to divide certain work activities further than originally intended and/or found it necessary to assign certain work elements to related or subsequent modules. We acknowledge that these developments and our submittal schedule have affected the NRC's resource requirements and has also increased the need for additional interaction and program element definition on our part. We commit to continue to provide additional information which will be helpful in completion of your reviews.

In a specific sense, we are currently accelerating packaging of the commitment data base, subdivided by module/appendix, by generic function (i.e., operations, civil, mechanical, and electrical) to further facilitate your understanding of scope and program completeness.

Another area of concern has been expressed as to our handling of assignments relating to information from audits and inspections with specific concern being expressed as to our ability to adequately assess the broadness aspects of specific findings where this information is not specifically addressed in the module or appendix under review.

In response to the above, initially we assembled a data base of information from sources such as GPC QA audits, Bechtel QA audits, INPO evaluations, past reportable deficiencies, and NRC inspections as an aid in establishing the assessment program and in deciding which areas within a specific hardware scope should be reviewed. Each finding in the data base was then assigned to a module or appendix giving consideration to established scope boundaries. In many cases assignments were made to both an appendix and a module or to multiple modules with others being assigned to a single area as considered appropriate. This information was then utilized to focus the assessment in those areas of identified concern but not as the sole basis for the activities covered in the specific scope. Project specific problems and industry problems were also utilized by the experienced Readiness Review Team to define scope boundaries and assessment plans. Through the above process, we feel that the broadness aspect of specific findings were, in fact, adequately addressed.

Following assessment, identified deficiencies are required to be evaluated and corrected by the Project. As a part of this additional action, findings are reviewed for generic and broadness implications. The information from each of the above actions is factored into the final assessments by an experienced Readiness Review Team and is utilized in making conclusions as to the overall adequacy of the work element being reviewed. Use of experienced and dedicated reviewers further our ability to ensure broadness issues have in fact been addressed.

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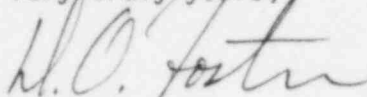
We are hopeful that the above discussion aids in resolution of the outstanding issues on Module 4.

Upon completion of the Vogtle Readiness Review Program, we look forward to discussing the lessons learned from our respective efforts to provide guidance for future Readiness Review Programs.

If the information provided above along with our attached responses to the subject inspection report fail to fully address your concerns, please advise.

This response contains no proprietary information and may be placed in the NRC Public Document Room.

Very truly yours,

A handwritten signature in cursive script, appearing to read "D. O. Foster".

D. O. Foster

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cc: See Attachment 1

Attachment 1

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Document Control  
Project File  
RR Reading File (Letter Only)

## Response:

Module 4, Mechanical Equipment and Piping, addresses the mechanical design and installation of ASME Section III piping systems and associated mechanical equipment.

More specifically this scope includes the mechanical system design of ASME Section III piping system (i.e., sizing of piping, pumps, heat exchangers) as performed by Bechtel Power Corporation. It also includes the installation program for the above piping systems which are installed by Pullman Power Products, the NA certificate holder, and the principal mechanical contractor. Certain related work activities such as pipe support design and installation, and pipe stress analyses are included in subsequent modules (i.e., Module 11).

As described above, the scope boundaries for Module 4 were developed with consideration of discrete work activities associated with one or more project organizations, such as Pullman Power Products. This process was followed for all modules, with scope assigned as deemed most appropriate by the Readiness Review Team. In the cases where activities of a discrete functional organization would apply to multiple modules, those activities were addressed in one module or in an appendix, whichever was deemed most appropriate by the Readiness Review Team. This information was recorded in a scope document which was distributed to the Readiness Review Team members as guidance in the module work.

Upon completion of the above scoping process, commitments within a master commitment matrix were assigned to the appropriate modules. This matrix, along with the above scope document provided the necessary guidance to the review team members regarding the scope of Module 4.

The following address the respective specific comments and activities identified as part of UNR 424/85-35-01.



- (1) Criteria for pressure relief devices for Vogtle are in accordance with Regulatory Guide 1.67 and its referent code Case 1569 (N-40), as stated in the FSAR (3.9.B.3.3.1). The commitment to this Regulatory Guide and Code case is assigned to Module 11, Pipe Stress and Supports, (as commitment 1687). The five design requirements identified in Table 1; Note 3, of NRC inspection report 424/85-35 are design details of the overall commitment 1687 and were not, in accordance with the Readiness Review definition of a commitment, included in the commitment matrix. Module 11 is presently in development and draft copies of the commitment matrix are available at the jobsite, with forecast submittal to the NRC of February 28, 1986.
- (2) The Independent Design Review portion of Readiness Review will address technical design aspects, including those for mechanical equipment and piping. The IDR scope consists of a vertical slice of the auxiliary feedwater system and other selected activities (such as reinforced concrete, pressurizer surge line stress analysis, and post tensioned containment) which were mutually agreed to with the NRC, and which, when fully implemented, will assess the technical adequacy of the design of Vogtle. A copy of the IDR scope, verification plan (which has been previously discussed with the NRC) and a draft copy of IDR observations and responses are available at the jobsite. The IDR report is forecast to be submitted to the NRC in March 1986. The Independent Design Review as scoped and implemented, adequately addressed the technical adequacy of the Vogtle project design and this unresolved item.
- (3) Piping stress analysis is addressed in Module 11, Pipe Stress and Supports. The boundaries of this module were based on the fact that project engineering organizations responsible for this activity are separate from those for piping systems design. Module 11 is presently under preparation; a draft

copy is available at the jobsite, with a forecast submittal to the NRC of February 28, 1986.

- (4) Module 4 includes only an assessment of specific contractor activities for mechanical equipment and pipe welding. These activities and documentation were found acceptable.

However, the overall project programs for qualification of welding procedures and welder qualification are discussed in Module 8, section 4.3.5, pp 4.3-8 through 4.3-10. The Readiness Review assessment of these programs is presented in Module 8, section 6.2.5, pp 6.2-51 through 6.2.57. The common welding program activities were covered in Module 8 so that overall project compliance to licensing commitment could be described and assessed. Module 8 was transmitted to Region II NRC office on November 12, 1985.

- (5) Module 16, Nuclear Steam Supply System, addresses project interface activities with Westinghouse (NSSS supplier) in sections 4.1 and 6.1. The above scope was an acknowledgement of the significance of this detailed interface. Module 16 was issued to the NRC on December 3, 1985.

- (6) The qualification of QC personnel responsible for inspection of mechanical equipment and piping is discussed in both Module 4 and in Appendix F. This division allowed Readiness Review to assess the adequacy of the overall project compliance to licensing commitments related to the Inspector Qualification Program in Appendix F, while Module 4 addresses whether inspectors performing inspections within the scope of Module 4 were certified at the time that they performed inspection.

A draft copy of Appendix F is available at the jobsite and is forecast for submittal to the NRC in February 1986.



- (7) Module 4, section 4.1.4, addresses design control programs related to mechanical equipment and piping. The design verification program for mechanical equipment and piping, as described in section 6.1 of Module 4 included a review for compliance with the design control programs.

Appendix B, Design Control, was originally intended to describe, for background information, the design control program. Module 4 contains an adequate description and evaluation of the design controls appropriate for the scope of the module. Other modules likewise contain adequate description and evaluation of the design controls appropriate for each specific module scope. Therefore, under separate cover GPC will be submitting clarifications to the program and module scopes, including closure of Appendix B.

- (8) Appendix D addresses Document Control, and the review, approval, and issuance process for revisions to specifications and engineering procedures. Appendix D was submitted to the NRC on September 25, 1985. We have reviewed Appendix D and believe it adequately addresses the cited areas of concern.

Control of the contractor's procedures is described in Module 4, sections 4.4.1.2 and 4.4.1.3, pp 4.4-5 through 4.4-10 and is graphically represented in Figures 4.4-1 through 4.4-3.

- (9) Mechanical equipment qualification is addressed technically in the Independent Design Review and programmatically in Appendix J. The independent Design Review of equipment qualification has been completed and associated checklists are available at the jobsite. The Appendix J verification plan and commitment matrix have been prepared and are available at the jobsite. Appendix J is forecast for submittal to the NRC on March 22, 1986.

(10) Valve operators are included in Module 20, Instruments and Control, since the operators are a part of the I&C system and are the functional responsibility of the Instrument and Controls organization of Bechtel. The scope document, commitment matrix, and verification plan are available at the jobsite. Module 20 is forecast for submittal to the NRC in late March 1986.

(11) Module 4 addressed the specific material control programs related to mechanical equipment and piping. The project material control program, including piping materials and equipment maintenance, is described in section 4.3 on pp 4.3-1 through 4.3-9 and is graphically illustrated in Figures 4.3-1 and 4.3-2. The narrative and figures also present the interfaces between GPC (Appendix E) and the contractor's activities. The description of the Construction Program Verification activities and results, as described in NRC Report No. 50-424/85-35 (page 29), assessed the project implementation of the program described in section 4.3.

Appendix E provides a general overview of the Vogtle material control program. It addresses the GPC work activities associated with the control of material and equipment including material receipt, release, storage, maintenance, handling. Appendix E was transmitted to NRC Region II on November 7, 1985.

(12) Module 4 addresses preparation of technical (material) specifications (section 4.1.3.5) and the quality documentation and surveillance programs related to mechanical equipment and piping (section 4.2). The technical preparation of specifications is addressed on each design/construction module as appropriate to ensure those materials within the hardware scope of the module were properly specified in the procurement specification.

Project generic procurement activities (that is, these activities performed by the procurement organization such as preparation of the qualified vendors list) are addressed in Appendix C. The procurement verification activities are addressed in section C7.1 of Appendix C. Various aspects of procurement activities for piping and mechanical equipment are addressed as part of that verification. A draft of Appendix C is available at the jobsite, with forecast submittal to the NRC in February 1986.

## Response:

It was decided by the Readiness Review Task Force, and concurred with by project management and the Readiness Review Board, that the scope of Module 16 would be limited to project specific activities such as interface and information exchange with Bechtel and Vogtle specific piping stress analysis. This decision was based in part on the acknowledgement that Westinghouse offsite activities were performed utilizing its generic quality assurance program for internal design control, fabrication, and control of vendors which had been verified adequate by NRC inspections, other utility audits, and GPC audits and evaluations. Additionally, the Westinghouse NSSS design is a licensed design previously accepted by the NRC. Those areas for review undertaken by Readiness Review included design interface addressed in Module 16 and piping stress analysis addressed technically in the Independent Design Review.

## Response:

In a letter from D. O. Foster (GPC) to H. Denton (NRC) dated April 26, 1984 (Log GN-352), which described the Vogtle program for eliminating arbitrary intermediate breaks, it was stated that the break locations to be eliminated did not have any welded attachments within five pipe diameters of the potential break location.

Through the course of the NRC review of the program, interactions between the NRC and GPC resulted in finalization of specific criteria. When the NRC approved the elimination of arbitrary intermediate breaks (Letter from T. M. Novak (NRC) to D. O. Foster (GPC) dated June 28, 1984), the NRC established the criteria that the piping design appropriately consider the effects of local welded attachments per ASME III NC/ND-3645.

No change was required to the project design criteria to meet this requirement since NC/ND-3645 had always been applicable.

UNR 424/85-35-04

Design Control of Moderate Energy Class 1  
Piping

Response:

The Vogtle Electric Generating Plant design contains no moderate energy Class 1 piping. For completeness and consistency, Table 1 in DC-1018 has been revised to include the criteria for moderate energy Class 1 pipe cracks as defined in the FSAR. However, omission of this criteria from the design manual had no impact on the design since there were not lines in this category.



UNR 424/85-35-05      Implementation of ANSI N45.2.11

Response:

Readiness Review recognized ANSI N45.2.11, Quality Assurance Requirements for the Design of Nuclear Power Plants as a commitment for Vogtle. The Readiness Review design control review described in section 6.1 of Module 4 was based on the requirements of ANSI N45.2.11. The statements in the FSAR were not specifically listed in the commitment matrix because they are general and apply to other modules addressing design as well as Module 4. Instead of referencing a generic document for implementation, compliance with ANSI N42.11 was verified by review of the design process within the scope of Module 4 against the requirements of ANSI. This position regarding general commitments has been addressed to the NRC, and the following clarification is being added to later modules as committed to in letter GN-711 from GPC to the US/NRC dated October 3, 1985:

Additionally, the Project has a commitment to comply with 10 CFR 50, Appendix B, Quality Assurance Criteria, and other commitments such as ANSI N45.2 and N45.2.11. Although they were not identified as specific commitments in this module, Readiness Review considered the applicable requirements of these types of commitments in preparing and assessing the scope of work represented by this module.

## Response:

The Vogtle Design Manual (DM) contains criteria and references to support design activities necessary to fulfill the various system function requirements. The DM is kept current by issuing a Design Manual Change Notice (DMCN) when a design change is identified and determined to require a change to the design criteria. The procedural requirements for design criteria control are given in the DM Preface Section 3, Paragraph 3.6 which states, "... no design deviating from existing design criteria may be issued without advance, or simultaneous issue of a DMCN". Three Design Criteria (DC-1018, DC-1204, DC-2702) were identified as having discrepancies.

DC-1018

As discussed in response to Unresolved Item 424/85-35-03, the design criteria did not require additional changes based on the NRC acceptance provisions. Following receipt of the NRC acceptance of the criteria, a design manual change notice (DMCN) was prepared to revise DC-1018 accordingly. At some point in the review process, the DMCN was misplaced and was not incorporated in the design manual, as was noted by Readiness Review Finding 4-75. DC-1018 has since been revised to include the revised criteria. Corrective actions to prevent similar recurrences are described in the response to Finding 4-75. As discussed in response to Unresolved Item 424/85-35-04, the criteria for postulating cracks in moderate energy Class 1 lines had not been included in DC-1018 because there are no lines in that category. Although the criteria has since been added to DC-1018 for completeness, it is not applicable to any piping in the VEGP design.

DC-1204

The concern identified is "a failure to revise DC-1204 to reduce the requirement

for containment isolation valves in the lines from the RHR sumps from two to one". The section in question is DC-1204-6.0.2. This section is titled "PSAR Comparison " and provides a narrative description of the differences between existing design and the PSAR. At the time of the design change for two isolation valves to one isolation valve and one check valve, DC-1204 paragraph 4.0.0.1 and DC-2415 (Containment Isolation System) 3.1.S.3 were revised per procedural requirements to correctly describe the revised design. DC-1204 6.0.2 was not revised due to an oversight. DC-1204-6.0.2 was revised in DMCN 1204-3 dated December 5, 1985 to correct this oversight.

#### DC-2702

"A failure to revise DC-2702 (non-safety related) to reflect changed criteria for the location of RHR and CS system containment sump post-accident sampling system lines". The original design was to have dedicated, submersible sampling pumps in the containment sump. It was later decided to take the sample from downstream of the RHR pumps to eliminate the need for separate sampling pumps. At the time this design change was made, DC-2702 4.0.F was not updated due to an oversight. DC-2702 was corrected to incorporate the existing design in DMCN-2702 was corrected to incorporate the existing design in DMCN-2702-1 dated November 4, 1985. No hardware or safety related concerns were affected by this change.

The discrepancies identified above are minor in nature and do not affect the design, safety or licensing of the plant. Engineering procedures are in place to control the design change process to assure the Design Criteria are updated. However, minor discrepancies occur due to oversight, typographical error, etc. Previous audits (e. g., LAPD Engineering Self Evaluation Concern B2) have also determined that the design criteria were not consistently maintained to current status. The response

to Concern 82 committed to a change in project procedures for better control of the Design Criteria. This change is reflected in the present requirements.

The requirements established by engineering procedures are supplemented by routine design criteria updates during design reviews by the responsible system engineers. As the plant design nears completion, the design criteria will come closer and closer to being 100 percent correct as a result of these routine updates.

We consider the discrepancies identified to be minor documentation inconsistencies only, and the associated broadness reviews have not shown any safety or hardware impact, therefore it has been concluded that the existing design criteria program is acceptable and meets the intent of providing the necessary criteria for both environmental and safety-related aspects of the plant.

## Response:

The three calculations cited in Table 4 of NRC Inspection Report 424/85-35 as having discrepancies are X6CXA-5, a jet impingement calculation, and 1K3-1202-111-02 and -110-02, both small pipe stress analyses.

Calculation X6CXA-5 indicated a quality classification of 212 whereas the piping addressed in the calculation was project Class 111. In response to the Readiness Review finding on quality classification of hazards calculations (4-71), the project had identified other discrepancies similar to this one, and had revised calculation X6CXA-5 on May 2, 1985 to indicate "Q" quality class, instead of project classification, to eliminate the discrepancy.

Calculation 1K3-1202-111-02 and 1K3-1202-110-02 are small bore pipe stress analyses. Readiness Review has reviewed stress analyses in Module 11, Pipe Stress and Supports. In the discrepancies cited in calculation 1K3-1202-111-02, the higher design pressure of 200 psig was addressed in a supplementary calculation dated 3-15-85. The deletion of node 50 was the result of deletion of the supported pipe in M-FCRB-1251F. The FCR disposition should have more clearly identified this. In calculation 1K3-1202-110-02, the calculation has not yet been revised to address the higher design pressure of 200 psig. Presently it is intended that the calculation will be revised for design pressure when the calculation is reviewed as part of the pipe stress analysis as-built reconciliation. Additional description of the pipe stress and supports as-built design reconciliation is provided in Module 11. This module is in preparation; a draft copy is available at the jobsite.

The cited calculation discrepancies were minor deviations and examples of work in process. None of the Module 4 findings nor the cited discrepancies has any safety significance, and additional reviews of calculations in the area of Module 4 were not considered necessary.

## Response:

The cited design pressure discrepancy between line designation list and isometric was not noted by Readiness Review because the review of that particular isometric was for a selective subject. The subject isometric, 153-1205-019-02, was reviewed only to verify proper project classification of Seismic Category and Safety Class, as noted in Tables 6.1-2 and 6.1-5 of Module 4. No other programmatic aspects were reviewed for that isometric.

The discrepancy on the drawing has no impact on system design. The controlling document is the Line Designation List, which is used for stress analysis and is defined in the applicable system ASME Design Specification as the source of system design conditions. The incorrect pressure on the isometric was an inadvertent error and was corrected on revision 8 of the isometric, issued January 15, 1986.



UNR 424/85-35-09  
35-11  
35-12

General

Response:

In order to address the issues of review of drawings, specifications, and vendor prints as well as other questions regarding the design verification checklists, the concept of Module 4 verification and lessons learned must be understood. Module 4 was the first mechanical module as well as the first module addressing a wide variation of design areas (piping, design, system design, hazards). In developing the Module 4 checklists, the goal was to develop generic checklists to be used in future modules as well as Module 4. Therefore checklists were developed jointly by the three design teams (Mechanical, Electrical, and Civil). The resulting checklists were appropriate for general use in the three design areas. However, by being generic, the checklists inherently included items which were not applicable in all cases. .

The entire Module 4 RRTF review team participated in the development of the checklists, and, by the development process, were trained in the application of the checklists. It was noted after completion of the design review that the completed checklists did not always clearly describe the reasoning or logic behind the checks or acceptances on the checklists. It was determined that while the RRTF reviewers had a thorough understanding of the technical application of the checklists, they were not totally proficient in documenting their comments necessary to clarify the checklists. However, we have reviewed the checklists used in Module 4, and have concluded that the checklists provided the necessary guidance for the experienced RRTF reviewers, and were sufficiently documented to provide assurance that the Module 4 reviews were adequate and the Module 4 conclusions were accurate. The checklists were not intended to provide an absolute measure of the quality of the certification. More important in assessing adequacy was the utilization of experienced qualified reviewers.

As a result of the lesson learned on Module 4 checklist documentation, additional training was given to the RRTF review teams for later modules, such as Module 16, which was the subsequent mechanical module, to provide more supporting notes to the checklists.

## Response:

As noted previously, the documentation on some checklists did not provide description for outside reviewers to understand the extent of the review. The following summarizes the RRTF review of the two cited drawings by checklist item number.

- (1) Has the DRN been submitted for coordination with other disciplines and departments?

It was found early in the RRTF review that the Document Review Notice was not frequently used in the revision process for the drawings in the scope of Module 4. Most P&IDs were initially issued prior to the DRN program implementation. Fabrication isometrics, being take offs from piping area drawings did not necessitate a DRN. The design change program in effect required that all changes to P&IDs and isometrics be made by Drawing Change Notice (DCN) which receives an independent interdiscipline review, which is verifiable by signatures on the DCN itself. Revisions to drawings were only to incorporate approved DCNs, therefore, the DRN program was not applicable since all drawing changes had been previously approved.

The only other means to verify that interdiscipline review occurred was to review coordination prints which were issued to other disciplines for review. These coordination prints are not required to be saved; therefore, they were not available in most cases. However, in the cases where coordination prints were available, there was sufficient evidence to conclude that the interdiscipline review was being implemented.

- (2) Has drawing received all required signatures?

The subject of whether the signature on the drawings are authorized signatures has been addressed periodically by past project audits with no past problems.

Therefore, this review was a spot check of the signatures on the drawings. The determination as to the authority of the signatures was based on the knowledge of the RRTF reviewers with the personnel on the project.

- (3) Are drafting supervisors and designers qualified to check conformance to calculations and licensing requirements?

For the drawings in the scope of Module 4, this was not an appropriate checklist item. For P&IDs, the calculations and licensing requirements are input by the system engineer who performs the calculations and commits to the licensing requirements. The drafting of the P&ID by a designer is then checked by the system engineer. Likewise, the isometrics are only a extension of layout drawings which only implement the configuration shown on the P&ID. Therefore, this item was not applicable to Module 4 drawings.

- (4) Have design criteria been maintained or incorporated?

For P&IDs, this item was generally verified by selection of a sample of requirements from the design criteria for verification into the P&ID. These criteria would typically be in sections 3 and 4 of the design criteria document (System Design Criteria and Constraints Imposed on Design). Of the eleven P&IDs reviewed by RRTF, only one (1X4DB122) indicated that it was not reviewed for criteria. The RRTF reviewer decided not to check design criteria for the drawings because the system was a Westinghouse Proof of Design system for which design criteria was within Westinghouse control, and the P&ID was based on Westinghouse flow diagrams.

As noted in response to UNR 424/85-35-06, the discrepancy in DC-1204 regarding the SI valves was due to an oversight in which the comparison with the PSAR (section 6.0) was inadvertently left unchanged when

section 4.0 of DC-1204 was revised. The P&ID is consistent with section 4.0.

For isometrics, it would not be appropriate to review the isometric for specific design criteria requirements in most cases. Instead, the isometric would be reviewed for consistency with the P&ID which was the document which incorporated the system design requirements. The checklist for isometric 1K3-1205-003-01 indicated that the isometric was consistent with the P&ID which was appropriate. As noted in response to UNR 424/85-35-06, the discrepancy noted with DC-2702 was a result of a non-safety related design criteria not being up to date. Since this design criteria was non-safety related, it would not have been reviewed in Module 4.

- (5) Has coordination print review been accomplished in accordance with 4.7.5 of PRM and Table C4-2?

As noted in item 1 of the checklist, the coordination prints were not required to be retained. Therefore, this item was not applicable for most drawings. However, the coordination prints were reviewed for three P&IDs and interdisciplinary interface was determined to be acceptable.

- (6) Was hazards analysis, equipment qualification reviewed as required by PRM?

The hazards and equipment qualification review would not have been applicable to the P&ID which does not show equipment location. A hazards review would have been applicable to safety-related isometrics. The review would have been primarily applicable to drawing changes because isometrics are base documents in the hazard analyses. A hazard review of changes was not applicable in the review of 1K3-1205-003-01 because changes were being made by DCN, which received the necessary reviews prior to drawing revisions. Therefore, the RRTF reviewer verified that the necessary hazards

evaluation was being performed when he reviewed DCN 8 to 1K3-1205-003-01.

- (7) Did drawings and associated DRN indicate if supporting calculations were affected?

This item was primarily addressing drawing revision. However, since drawing changes are made through the use of DCNs, this was not applicable for the drawing review because the DCNs address this issue separately.

Additionally, P&ID 1X4DB122 is a Westinghouse proof of design system. Therefore, the calculations supporting the P&IDs are in Westinghouse scope. This subject was reviewed in Module 16, and it was determined that the interface of drawings and drawing revisions between Bechtel and Westinghouse was acceptable. This is discussed in section 6.1 of Module 16.

For the isometric 1K3-1205-003-01, the same Westinghouse interface exists for proof of design calculations. However, it was noted by the RRTF reviewer that the pipe stress engineer had signed the drawing which would indicate that the stress analysis was reviewed for that issue of the drawing.

- (8) If a piping orthographic or isometric drawing deviates from the P&ID, a DCN must be written against the P&ID and issued prior to or concurrently with the piping drawing. Did this occur?

The intent of this item was to verify that the P&ID was maintained consistent with the piping drawings, and vice versa. The RRTF reviewer's notation of "N/A" was not an accurate description of his review to this item. He could have referred to his review of DCN-11 to isometric 1K3-1205-003-01, during which he went to extensive effort to located DCNs to the P&ID which reflected the change in DCN-11 to the isometric. This review resulted in confirming that the respective P&ID DCN had been issued.



Response:

This inspector followup item includes multiple observations or concerns identified by the NRC Inspectors. The response below addresses those items for which a response appears to have been requested and also presents information which may be useful for definition of scope boundaries.

- a. The NRC report correctly describes the "first level" working document (PPP procedure) as reference source for implementation and assessment by the RR construction team.

The associated construction specifications were reviewed and were, in part, the basis of developing the program description section 4 of Module 4. Evidence of the review activity can be noted on RRF 4-56 and on RIR 4-6.

- b. The receipt, storage, and maintenance of mechanical equipment at VEGP are shared and overlapping activities performed by GPC and PPP. The description of the receipt, inspection, and storage activities of both GPC and PPP are discussed in section 4.3, page 4.3-1 through 4.3-7. Equipment maintenance is discussed in section 4.3.6, pages 4.3-8 and 4.3-9.

Figures 4.3-1 and 4.3-2 graphically illustrate the interfaces and overlapping activities of GPC and PPP. Except for the equipment maintenance program administered and controlled by GPC from the receipt of equipment at VEGP until turnover to Nuclear Operations, the GPC procedures are outside the scope of Module 4 and are addressed in Appendix E. Appendix E was transmitted to NRC Region II on November 7, 1985.

- c. The inspectors stated that the PPP NDE procedures did not require review, but the comments below are being presented for information and clarification.

1. PPP procedures X-20A and X-20B are listed in section 4.4.1.1 because the Readiness Review Team classified those procedures as methods of measurement (similar to a caliper measurement) rather than a nondestructive examination such as UT, PT, VT or RT. The listing was considered important because of the need to establish material thicknesses of installed piping after removal of surface defects and this activity was assessed.

Although a detailed review of NDE procedure was not performed, a review of NDE activities such as radiographic film and PT reports was performed to code and procedure requirements by a Level III inspector who would have identified inadequacies in the procedure if any existed.

2. The assessment activities of NDE documentation included use of current approved procedures and PPP response to procedural requirements.

GPC procedures were reviewed and considered even though not listed as implementing documents. Examples of this are evident in RRF 4-84 and RRF 4-13.

## Response:

The following items address the six points raised in paragraph 7.b.(3).(g) in regard to the review of specification X4AH04:

- (1) Item 2 of the procurement specification checklist (Figure 6.1-7 in Module 4) asked if interdisciplinary review was accomplished and the DRN signed. In this case the only means to verify interdisciplinary review was to verify that the appropriate discipline had approved the specification, indicating review and acceptance. Therefore the RRTF review for this item was accomplished when item 1 of the checklist was verified. The RRTF reviewer should have documented this explanation on the checklist.
- (2) Initially the RRTF review team applied ANSI N45.2.11 to procurement specifications for ASME Section III components specifications. As stated in ANSI N45.2.11, section 1.2, the standard does not apply to those activities covered by ASME Section III. This item was corrected on the checklist for subsequent modules.

The appropriate requirement in the specification is ANSI N45.2, Quality Assurance Program Requirements for Nuclear Power Plants (1971 edition for Vogtle), which provides general requirements for a complete quality assurance program. Section 4.2 of Module 4 discusses the review, approval and auditing of suppliers to their quality program, which ensured compliance with the project commitments. Appendix C, Procurement, provides further details of the Quality Program review process.

- (3) Specification X4AH04 was reviewed by RRTF primarily for the RHR encapsulation vessels. These vessels are sized to envelope isolation valves, not for system fluid requirements. Sizing would have been done graphically. Therefore, no Bechtel calculations exist for sizing

of these vessels, and items 7 and 8 on the checklist were not applicable. The only calculations applicable to this vessel would be vendor calculations which were not included in the review of this specification.

- (4) For item 11 on the checklist, we have confirmed that SDDR 0402 was the only SDDR issued to be incorporated in specification X4AH04. Therefore, the checklist, as completed, verified incorporation of all SDDRs. For item 12 on the checklist Material Specification Change Notices (MSCNs) were not applicable for this specification. The checklist did not indicate this as not applicable; however, the RRTF reviewer was aware that MSCNs were not applicable to this specification.
- (5) The checklist did not indicate specific design criteria items checked. However, the design criteria and FSAR were reviewed again for implementation in the specification. The following requirements were verified:
  - a. Vessel designed for maximum containment pressure and temperature:  
  
Addressed in drawing SK-4-3036 of the specification.
  - b. Vessel to be constructed to Seismic Category I:  
  
Addressed in paragraph 3.3.3 of the specification.
  - c. Vessel to be constructed to ASME Section III, subsection MC requirements:  
  
Addressed in paragraphs 2.0 and 3.0.3 and drawing SK-4-3036 of the specification.

The commitment to Regulatory Guide 1.44 was not referenced in the specification. However, the materials specified in the specification are solution heat treated to produce a non-sensitized condition in the

material. The materials used for the vessels are plate and pipe which are subjected to sensitizing temperatures only during welding processes. The specification requires that welding procedures be submitted to Bechtel for approval, which provides a means to control the welding practices to ensure compliance with Regulatory Guide 1.44.

The units of radiation levels for the surge tanks and encapsulation vessels were RADs. The units were identified in Revision 1 of the specification, but were inadvertently omitted from Revision 2 of the specification. The specification will be revised by March 14, 1986 to correct this discrepancy. In addition to paragraph 3.3.4 of the specification, Appendix EA, Qualification Requirements for Safety Related Equipment, Devices and Instrumentation, specifies the design levels for equipment qualification. The units in Appendix EA were correctly identified as RADs.

- (6) The specification revision process is similar to the process for initial issue of the specification. The revised specification is distributed on a DRN for interdisciplinary review and approval. Therefore, the checklist items 1 and 2 address the review of the specification revision process.

UNR 424/85-35-12      Inadequate Review of Vendor Drawings

Response:                The following items address the respective points raised in Unresolved Item 424/88-35-12.

- (1)    The poor quality of some portions of drawing X4AH04-23, revision 13 had been noted. This document was marked "Micro-Print-Best Available Original" which meant that the drawing was accepted with portions illegible because no better original was available. Part of the basis for this acceptance was that the portion of the drawing which was revised was legible, and those portions of the drawing which were illegible in revision 13 were legible in the previous revision of the drawing which is also maintained on file.

Suppliers are required to submit drawings of good microfilm quality. Each vendor document is reviewed for microfilm quality, and those judged to be unacceptable are returned to the supplier, who is required to resubmit drawings of better quality.

Revision 11 of this particular drawing, X4AH04-23, had been returned to the supplier due to poor microfilm quality. The suppliers' resubmittal, revision 12, was accepted. Revision 13 was a Bechtel revision to the drawing to add a note regarding machining of a flange face. This revision was generated on a copy of revision 12, which became a new original of the drawing. This new original was not of acceptable microfilm quality. However, it was the only available copy. Therefore, it was accepted on the basis that the revised section was of acceptable quality, and the previous revision of the drawing was legible.

- (2)    The following items discuss the respective checklist items from the checklist used for Vendor Document review of drawing 1X4AH04-23-13 which were addressed in the NRC Inspection Report.



- o Item 1 - Has this document been properly dispositioned?

This item was intended to verify correct dispositioning and processing of vendor drawings per procedures. The drawing reviewed was a Bechtel revision to the vendor drawing. This revision received applicable status and approval, in accordance with procedures.

- o Item 4a - Are selected data and materials on the vendor document in compliance with the procurement specification?

The RRTF reviewer could have included this item, but elected not to, in order to focus his attention in other areas. Of the six vendor documents reviewed, this was the only case in which this item was not checked. This vendor drawing was reviewed again for selected data and was found to be consistent with the specification. Examples of data verified are:

ASME Section III Class MC  
Design Pressure and Temperature  
Hydrotest Pressure  
Shell and Head Materials

- o Item 4b - Are selected materials on the vendor document in compliance with the code, if code item?

The RRTF reviewer could have addressed this item, but did not. Of the six vendor documents reviewed, this item was verified on four and not applicable on one. The cited drawing was the only case where it was omitted without explanation. The vendor drawing was reviewed again and was verified to specify ASME Code materials in accordance with the specification.

- o Item 5bc - Does the supplier's design conform to the licensing commitments/design criteria?

The RRTF reviewer could have addressed this subject, but elected not to. Of the six vendor documents reviewed, this was the only case in which this item was not checked. The vendor drawing was reviewed again and verified to be consistent with design criteria and FSAR commitments. The requirements reviewed were that the vessel shall be designed to withstand maximum containment pressure and temperature (60 psig and 308F) and that the vessel shall be constructed to ASME III Class MC requirements.

## Response:

- (1) Readiness Review accepted the resolution of finding 4-75 because the design criteria was updated to include the specific requirements from the FSAR regarding elimination of arbitrary break locations. The primary intent of finding 11-75 was that the design criteria document was not maintained current with FSAR. The RRTF reviewer verified that the design criteria reflected the commitments in the FSAR. As stated in response to Unresolved Item 424/85-35-03, the design criteria does not require any additional change since existing criteria satisfy the requirement for minimizing stresses due to welded attachments.
- (2) The following further information is provided for respective points addressed regarding closure of finding 4-85:
  - a. Field Change Request M-FCRB-6398 was written against vendor drawing 1X4AH04-13. The FCR originator selected the highest project classification applicable to the vendor drawing. The FCR was assigned project class 212 since drawing 1X4AH04-13 included sections of project class 212 piping. Therefore the FCR project classification was correct.
  - b. In response to finding 4-71, the project revised all hazards calculations to consistently identify Quality class as "Q" to eliminate discrepancies. As discussed in response to Inspector Followup Item 424/85-35-07, calculation X6CXA-5 was included in this group of calculations and was revised on May 2, 1985. Readiness Review accepted this action because these project classification discrepancies were identified only in the hazards calculations.

- c. In response to finding 4-85, specification X4AH04 was revised on April 26, 1985 to show the correct project classification applicable to the specification. This included the specification cover sheet, the Technical Provisions cover sheet and the Proposal cover sheet. As noted in the response to finding 4-85, it was determined that this was the only specification with this discrepancy, and it has been corrected.

Response:

- (1) This piece of hardware is not a part of the Readiness Review construction sample and the conditions described will be addressed in accordance with normal project procedures, not as a part of Module 4.
- (2) These welds were made and inspected by a vendor in his shop and are not normally reinspected by the project as a part of a receiving inspection operation. However, when deficiencies are noted, a DR is prepared to address the condition (see DR MD-2264 on this same vessel.)
- (3) The project is addressing this condition by initiation of deviation reports MD-8721 and MD-8723 which will be evaluated and dispositioned in accordance with project procedures.

## Response:

The piping and valve supports questioned by the inspectors are temporary supports for shipping purposes. They are shown on Bechtel approved vendor drawing number B-81-22 revision 0 (vendor document log number AX4A404-90-1). The drawing includes instructions to remove the supports.

The RHR system has been turned over to Nuclear Operation for pre-operational testing and the work completion checklist identifies the vessel as requiring additional work as documented by work item BC0626 and work order 18513301. The control of work activities during the pre-operational test phase is described in Module 3A which was submitted to the NRC on May 1, 1985 with a revision submitted on July 29, 1985.

IFI 424/85-35-16

Inconsistency in the Use of Low Carbon  
Stainless Steel

Response:

Stainless steel piping for the RHR system was specified as ASME SA-312, type 304 or 304L seamless pipe in the piping specification. The RHR isolation valve was purchased by Westinghouse as SA-182, Type F316. The components are as specified by engineering and are acceptable.



Item 424/85-35-17    Inadequate resolution of Readiness Review Findings

Response

The Readiness Review Team (RRT) agrees that removal of defective weld wire from the site would not satisfy NRC concerns regarding acceptability of weld utilizing ER 309L weld wire heat number 05766 as described in NRC Inspection Reports 50-424/84-18, 84-30, and the closing action in 85-14. The RRT identified CDR 83-42 as a significant past problem and reviewed project files to allow evaluation of project actions. As described in Module 4, section 5.3.3, the RRT concluded that the project had satisfactorily demonstrated that installation welds made with this wire were acceptable quality (in response to NRC concerns) and that appropriate corrective action had been completed.

Because of the conservative intent of the Readiness Review Program, the RRT issued Readiness Review Finding 4-83 because the corrective actions taken by the Project, even though fully acceptable and more conservative, did not conform to the corrective action described in the evaluation report attached to the December 19, 1983 letter (file: X7BGO3-M42; log: GN-297) to the NRC.

The Project response to RRF 4-83, as presented in Module 4, section 6.2.4, was summarized by the RRT based on a project response dated April 24, 1985, Mr. Gregory's memorandum of April 22, 1985 to Mr. Hayes (correspondence number M-5678), and a verbal date commitment by GPC QA. A formal response to RRF 4-83 dated May 31, 1985 was received by the RRT and rejected as unacceptable because it did not address the difference in the corrective actions described on RRF 4-83.

The Project and the RRT continued their investigations and on June 24, 1985 it was determined that the finding should be reduced to a Level IV status (a non-finding based on additional information furnished by the Project). This action was reported by Mr. Sommerfeld during the presentation to NRC Region II personnel on June 25, 1985.

Further information and documentation of these actions are available in Readiness Review files.