Washington Public Power Supply System
P.O. Box 968 3000 George Washington Way Richland, Washington 99352 (509) 372-5000

Docket No. 50-397

August 15, 1983
G02-83-732

Mr. J. B. Martin
Regional Administrator
U.S. Nuclear Regulatory Commission
Region V
1450 Maria Lane, Suite 210
Walnut Creek, CA 94596

Dear Mr. Martin:

Subject : NUCLEAR PROJECT 2
CONSTRUCTION APPRAISAL TEAM ISSUES

References:
1) Construction Appraisal Inspection Report 50-397/83-29, NRC letter, DeYoung to Mazur, dated July 26, 1983

2) WPPSS letter to Region V, G02-83-622, dated July 15, 1983

The purpose of this letter is to provide information relating to issues and concerns reported by the NRC Construction Appraisal Team incident to their May-June, 1983, inspection of WNP-2.

Reference 1) transmitted to the Supply System the report of inspection of WNP-2 by the NRC Construction Appraisal Team (CAT). Reference 2) transmitted to Region V a preliminary report of activity by the Supply System to resolve CAT concerns. Reference 2) stated that seven programs

had been established to address the broad issues raised by the CAT. A review of Reference 1) has indicated that the programs established by the Supply System before receipt of the inspection report do in fact address the major issues. The attachments to this letter contain descriptions, schedules for completion, and status of each program as of this date.

- As-Builting
- Non-Destructive Examination
- Bolts, Fasteners and Torquing
- Welding
- Concrete
- Engineering Disposition of Deficiencies
- Review of Site Quality Programs Against CAT Issues

Our general approach to the resolution of these issues is:

- Grouping and assessment of related specific issues and consideration of generic implications (for each grouping);

- Formulation of investigative and corrective action programs;

- Formulation of detailed schedules for tracking progress on each program;

- Consultation with off-site experts on the concrete issue, and with Bechtel's engineering and materials & services organizations on as-builting, welding, bolts, fasteners and torquing, and NDE;

- Contracting with Stone and Webster to do an independent "third-party" assessment of the project as-builting program, and Westinghouse to do a general third-party review of project resolution of the CAT issues; and

- Tracking of each specific item in the CAT report to ensure closure. (This process will be discussed with the NRC resident representative as it is implemented.)

These programs are being given priority attention to ensure successful resolution of the Construction Appraisal Team issues within our licensing/fuel load schedules. We reaffirm our request for an early meeting between Supply System and NRC Region V representatives to discuss these programs and our findings to date. We suggest that this meeting take

place at WNP-2 so that those persons responsible for implementation of each program will be available to provide the details of their investigations and findings.

A copy of this letter and the enclosed package is being sent to Mr. R. F. Heishman for information.

C. S. Carlisle - 901A
Program Director, WNP-2

HAC/fl

Attachments: As Stated

cc: Mr. R. C. DeYoung, NRC I&E
Mr. R. F. Heishman, NRC QASIP IE
Mr. A. D. Toth, NRC Resident, WNP-2

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MANAGEMENT SUMMARY

Programs were initiated based on NRC CAT exit briefing and subsequently adjusted based on the Final CAT Report received July 29, 1983. The current programs are described in this submittal. These programs address Quality Class I work except where Seismic Category I, Quality Class II is specifically identified.

Programs are scoped to address all CAT-specific concerns as well as generic implications of CAT-identified deficiencies. These programs will address the root cause of programmatic deficiencies.

Program completions are scheduled with expectations that resolution and corrective actions will be implemented to prevent delays in system sequences necessary to support the WNP-2 fuel load and power ascension testing schedule. (WNP-2 CAT Program Summary Schedule is provided on the last page of this Management Summary Section.)

Third-party participation has been incorporated into these programs through a Westinghouse overview, the Stone and Webster assignment on as-builting, and independent Bechtel Engineering actions on elements such as the fastener acceptance criteria and assessment of structural concrete. Attachment 1 to this Summary provides a description of the Westinghouse/Stone and Webster work scopes.

The following summaries provide a brief description and status of WNP-2 CAT programs. These programs are described in greater detail following this summary.

Program I - As-Builting

1. Stone and Webster will perform a third-party review of the project as-built program including physical inspection of a significant sample of the hangers.

2. Project specifications have been revised to clarify as-builting requirements, including measurement tolerances, and to disposition variances from design requirements.

3. Bechtel will retrain personnel, re-review the as-built drawings against the new construction tolerances, and submit all out-of-tolerance discrepancies to Burns and Roe for evaluation. This process will be independently audited by Bechtel (SFHO) engineering personnel.

4. CAT concerns on the need to finalize as-built Quality Class II, Seismic Category I supports are not supported by evaluations performed to date. The previous status as-built program in conjunction with the design margins for these supports being maintained at the level of Quality Class I requirements provides substantial assurance that the installations will not fall during a postulated design basis earthquake. This was further demonstrated for each discrepancy identified by CAT on Quality Class II, Seismic Category I supports and the results will be included in the final response to the CAT report.

5. ASME/AISC code jurisdictional boundaries for QC I supports are consistent with code requirements and industry practice at several other nuclear projects. Implementation of this boundary does not degrade the support in performing the required design function.

6. Significant as-builting errors will be made subject to reinspection on a generic basis through use of one or more of the existing project walkdown inspection programs.

Program II - NDE

1. Welds questioned (by CAT review of RT film) meet all code and specification requirements. This was demonstrated by direct visual examination, macrographic examination and etching of laboratory weld sections or re-radiography. Laboratory work was performed by Bechtel in San Francisco with surveillance by NRC personnel.

2. The radiographs for all Bechtel weld repairs have been re-reviewed (317 welds). Thirteen additional instances were discovered where inadequate weld repairs were caused by failure to compare original radiograph with repair radiographs.

3. The ongoing Phase II film review activity from the WBG radiography reverification program has been completed. One hundred six welds with film quality deviations have been identified.

4. Seven welds with PT indications have been found in an expanded sample covering the work of the same technician questioned by CAT. Six of the seven have been evaluated and found to be nonrelevant/insignificant. The seventh is still under investigation.

Program III - Bolts, Fasteners, and Torquing

1. This program addresses four quality attributes on 18 fastener types:

   - Material.
   - Tightness/torque.
   - Locking device/washer.
   - Thread engagement.

2. An extensive program is being implemented as indicated by the matrix in the detailed section of this submittal.

3. Field inspections and torque tests are being performed on nine categories of fasteners.

4. Acceptance guidelines are being developed where torquing is not required and range of acceptability where torquing is required.

5. Field inspections are in progress in several major categories of fasteners including flange bolting, pipe support fasteners, valve bolting and equipment anchors on non-rotating equipment.

6. Conclusions to date:

   - Acceptable As Installed - structural steel bolting, cable tray splices, cable termination screws, blowout panel fasteners.

   - 100% Inspections Required - ECCS pump couplings, instrument mounting, warehouse storage segregation of fasteners, and rotating equipment anchor bolts.

Program IV - Welding

1. The types of weld surface (contour) irregularities identified by CAT at WNP-2 are within code and specification requirements and are enveloped by the code stress analysis.

2. One hundred percent of olet welds within the scope of contracts 215 and 220 are being inspected for sufficient weld reinforcement. All cases that do not meet design requirements will be reworked.

3. Availability of weld procedure requirements is currently adequately addressed by Bechtel procedures and instructions. Bechtel welders are trained to the Bechtel weld procedures and attest in writing to their understanding of the "Bechtel Welder's Guidelines" which identify the location of weld procedures. There is a large sign located in the welding engineers' area with the words, "Bechtel welding procedures located here. . .". Actual welding observed by CAT concluded that weld parameters were being properly implemented.

4. In response to CAT concerns on the visual acceptance criteria implemented during reverification inspections of structural steel welds, the degree of individual weld characteristics accepted which occur simulataneously on the same joint, will be identified and evaluated (for select critical structural connections). This will demonstrate acceptability on a more conservative basis than previously analyzed.

5. All containment penetration stiffener welds made by PDM under Contract 213 were reinspected. Eight of the eleven have welds slightly undersized or with unequal legs, usually of a 1/8" magnitude. The welds have been technically evaluated and are structurally adequate and acceptable for the application. Additional penetration stiffener welds performed by PDM under contracts 213A and 213B will be inspected.

Program V - Engineering Disposition of Deficiencies

1. CAT concerns for an adequately-documented, technical basis for NCR dispositions are being addressed by evaluating for trends the CAT-identified NCRs and NCR dispositions reviewed by the Quality Verification Program.

2. Generic CAT concerns for adequacy of engineering dispositions are being addressed by individually evaluating each identified item for adequacy, assessing any deficiencies against the required Burns and Roe design control procedures, and trending deficiencies for a common cause.

Program VI - Concrete

1. Additional excavations have been performed and variations identified.

2. Design margins exceed all identified construction variations.

3. Third-party reviews are being performed to confirm the adequacy of concrete/structures to perform design basis functions.

4. Excavations will be repaired and analysis of adequacy finalized and submitted in our final CAT report.

Program VII - Review of Site Quality Programs Against CAT Issues

1. CAT findings are being reviewed against previous Quality Verification Program (QVP) results to determine if CAT identified deficiencies which QVP should have identified on work completed prior to June 1980.

2. CAT findings on work performed under the Operational Quality Assurance Program are being individually reviewed for corrective action, including generic implications (if any), and the need for program changes to preclude recurrence. Inspections performed by Test and Startup engineers are described in approved Startup Program Manuals submitted to the NRC prior to initiation of Startup activities.

3. A comparison of CAT findings on work performed after June 1980 and findings of the ongoing Construction QA program in the same areas is being performed to assess any weaknesses in the current QA programs.

4. Engineering walkdowns are being performed in select areas of completed Quality Class I construction based upon an overview of the areas that QVP and other special programs have previously addressed. The purpose of this effort is to identify areas not previously addressed and to increase the level of confidence in the quality of construction in these select areas. Walkdowns described in the detailed sections of this report are complete and have identified no new generic issues. From this overview, it was evident that increased attention should be directed to primary containment work performed by the 213 contractor; this work is currently being addressed by QVP under the PPIA portion of that Program.

   From this overview, it is evident that with the multitude of programs being implemented on WNP-2, there are programs redundant to the original construction programs which verify most of the quality attributes that are measurable on completed work.

MANAGEMENT SUMMARY - ATTACHMENT 1

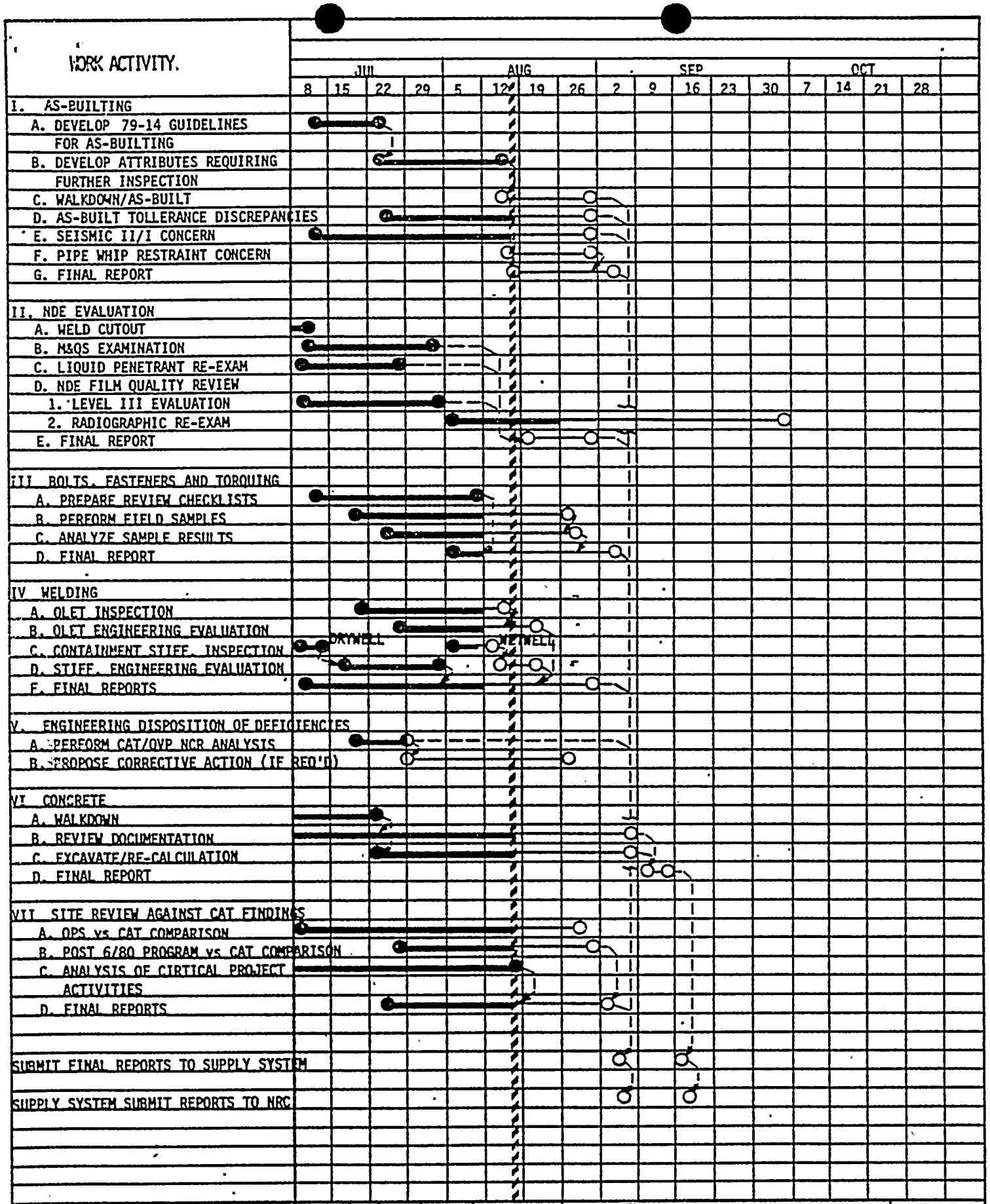
PROGRAM OVERVIEW BY WESTINGHOUSE

The Supply System contracted with Westinghouse Electric Corporation to provide a technical and licensing overview of the response program. This overview includes a detailed review of the CAT findings, monitoring of the Supply System response program, and evaluation of the results and conclusions of the program. Westinghouse has personnel on site experienced in design, construction and startup activities of nuclear power plants with specific expertise in each of the areas identified in the CAT findings. These personnel are monitoring the work performed under the response program and will ensure that the implementation of the program is adequate and technically sound to assure safe and reliable operation of the plant. At the conclusion of the response program, Westinghouse will submit a report documenting the findings of this overview.

AS-BUILT REVIEW BY STONE AND WEBSTER

Stone and Webster will perform a third-party review of the project as-built program. The Stone and Webster review consists of four activities:

1. A review of the existing as-built program and it's implementation.
2. A review of the CAT findings in relation to Project and Bechtel QA findings.
3. Physical inspection of a significant sample of the hanger population.
4. An assessment of the as-built program with respect to:
   a) Meeting the needs of the project.
   b) Meeting the requirements of NRC IE Bulletin 79-14.



TITLE: CAT PROGRAM SUMMARY SCHEDULE HUGH CRISP	JOB NO. 14631	REV. 0	PLAN RJS	SCHED	DATE 8/10/83	LEGEND: ENG. CONST. MILESTONE PROBLEM AREA ACTIVITY RESTRAINT STATUS DATUM	SCHEDULE NO. SHEET 1 OF 1

PROGRAM I

AS-BUILTING

DESCRIPTION OF CONCERNS AND QUESTIONS

The NRC CAT concerns with the project as-built program for large and small bore pipe supports and piping isometrics cover five general areas:

A. Errors in Field Engineering identification of hardware discrepancies and dimensions on the redline drawings.

B. Errors in Field Engineering dispositioning of hardware discrepancies and dimensions by interpretation of allowable construction tolerances in Burns and Roe (BRI) drawing H-501.

C. Exclusion of Quality Class II, Seismic Category I supports from the project as-built program.

D. The issues regarding ASME/AISC code jurisdictional boundaries (i.e., the NF boundary descriptions provided on BRI's H-501 drawing) for the design and construction of QCI pipe supports.

E. The pipe whip restraints may not be in the location assumed in the pipe whip analysis.

In addition to these five main concerns, two outstanding questions remain to be answered from the CAT inspection. They are: (1) Is the direction of snubber safety wiring important?; and (2) Is the orientation of lubrite plates important?

PROGRAM TO RESOLVE CONCERNS

- Develop as-builting guidelines based upon 79-14 requirements.
- Review as-builting errors identified by CAT, BQA and PQA expanded sample and rate them as to significance (i.e., effect of the error on the design).
- Based upon significance ratings, identify attributes for necessary additional inspection.
- BRI has added as-builting tolerances to the specification and clarified construction tolerances for the H-501 drawing.

- The project will adjust program, perform necessary inspections and re-review dispositions of past redline discrepancies.

- A third-party review of the total as-builting program has been initiated.

STATUS OF ACTIONS TAKEN

A. Concern A

1. Bechtel Engineering has developed a set of guidelines, based upon IE Bulletin 79-14 requirements, with necessary measurement tolerances and critical dimensions needed for as-builting large and small bore pipe supports and piping isometrics.

2. Bechtel Engineering and BRI have reviewed all of the errors identified to date by CAT, BQA, and PQA expanded sample and rated them as to their significance. The significance ratings, which are a function of the effect of the error on the design, were determined by using the guidelines from Step 1 above.

3. Bechtel Engineering, with BRI concurrence, will determine if there are any attributes which, based upon the significance ratings from Step 2 above, warrant additional inspection. If there are, they will be covered either by repeating the Bechtel as-built walkdown process for those particular attributes or by using one of the other existing project walkdown inspection programs for piping and pipe supports (e.g., hanger balancing) as appropriate for the particular attributes. It should be noted that several of the as-builting errors identified by CAT (e.g., snubber cold set, clearances, staking, etc.) are covered and would have been picked up by other project programs which were in place but not completed at the time of the CAT inspection.

B. Concern B

1. Bechtel and BRI have developed a set of as-builting measurement tolerances for large and small bore pipe and hangers.

2. BRI has prepared a 215 specification revision for as-builting which incorporates the following:

   (a) Consolidation of all as-builting requirements into a single specification section.

   (b) As-builting measurement tolerances from Step 1 above.

(c) A statement describing how the as-builting measurement tolerances relate to the H-501 construction tolerances and how each are to be applied by Bechtel in the preparation of as-built drawings, as well as both Bechtel and others (during the performance of a subsequent QA audit) checking for accuracy of the as-built drawings.

(d) A definitive requirement that Bechtel must submit actual large bore isometric as-built drawings with IRRs regardless of whether or not discrepancies are within H-501 construction tolerances.

(e) A definitive requirement that Bechtel shall evaluate all as-built discrepancies from the design drawings against the H-501 construction tolerances and submit, on RFIs, only those discrepancies which are outside the H-501 tolerances. The specification revision also states that small bore isometric and large bore hanger as-built drawings need not be submitted to BRI with IRRs/PRRs.

3. Bechtel has provided comments to BRI for clarification changes to the H-501 construction tolerances.

4. BRI has revised and reissued the H-501 drawing.

5. Bechtel will revise their as-builting procedure SWP/P-6 to conform to the 215 specification and H-501 drawing changes. Items that were required by procedure to be as-built but are covered by other more appropriate existing walkdown inspection programs will be deleted from the SWP/P-6 procedure.

6. Bechtel will review PMI 6-6 against the 215 specification and H-501 drawing changes and provide comments to Supply System Engineering.

7. Supply System Engineering will, if necessary, revise PMI 6-6 for reconciliation with the 215 specification and SWP/P-6 changes.

8. Bechtel will conduct a documented training session to cover the 215 specification and SWP/P-6 changes.

9. For those cases where the new 215 specification does not require Bechtel to submit as-built drawings to BRI with IRRs/PRRs, Bechtel will re-review the as-built drawings against the new H-501 construction tolerances and submit all out-of-tolerance discrepancies to BRI on RFIs.

10. Bechtel Engineering (SFHO) will audit Bechtel Field Engineering dispositioning of as-built discrepancies from Step 9 above.

C. Concern C

The CAT concern is essentially the same as NRC unresolved Item 83-05/05. Letter G02-83-622 to NRC Region V, dated July 15, 1983, transmitted a paper stating the Supply System's position with respect to as-builting Quality Class II, Seismic Category I hangers and the rationale supporting that position.

D. Concern D

The CAT concern is essentially the same as that described in the NRC Notice of Deviation 83-22 (Item 82-18/02). The response to this concern is contained in the Supply System's letter G02-83-701 to NRC Region V, dated August 5, 1983.

E. Concern E

BRI will measure the actual location of pipe whip restraints on the piping run and perform evaluations to determine the acceptability of the as-constructed location. The measurements and evaluations will be included as part of the pipe break/missile protection walkdown and study to be performed by BRI.

F. Questions (1) and (2)

Although not mentioned in the attachments to this letter, the question concerning the direction of snubber safety wiring is being addressed by Program III - "Bolts, Fasteners and Torquing".

Supports with lubrite plates, where orientation is critical, will be inspected to assure proper orientation.

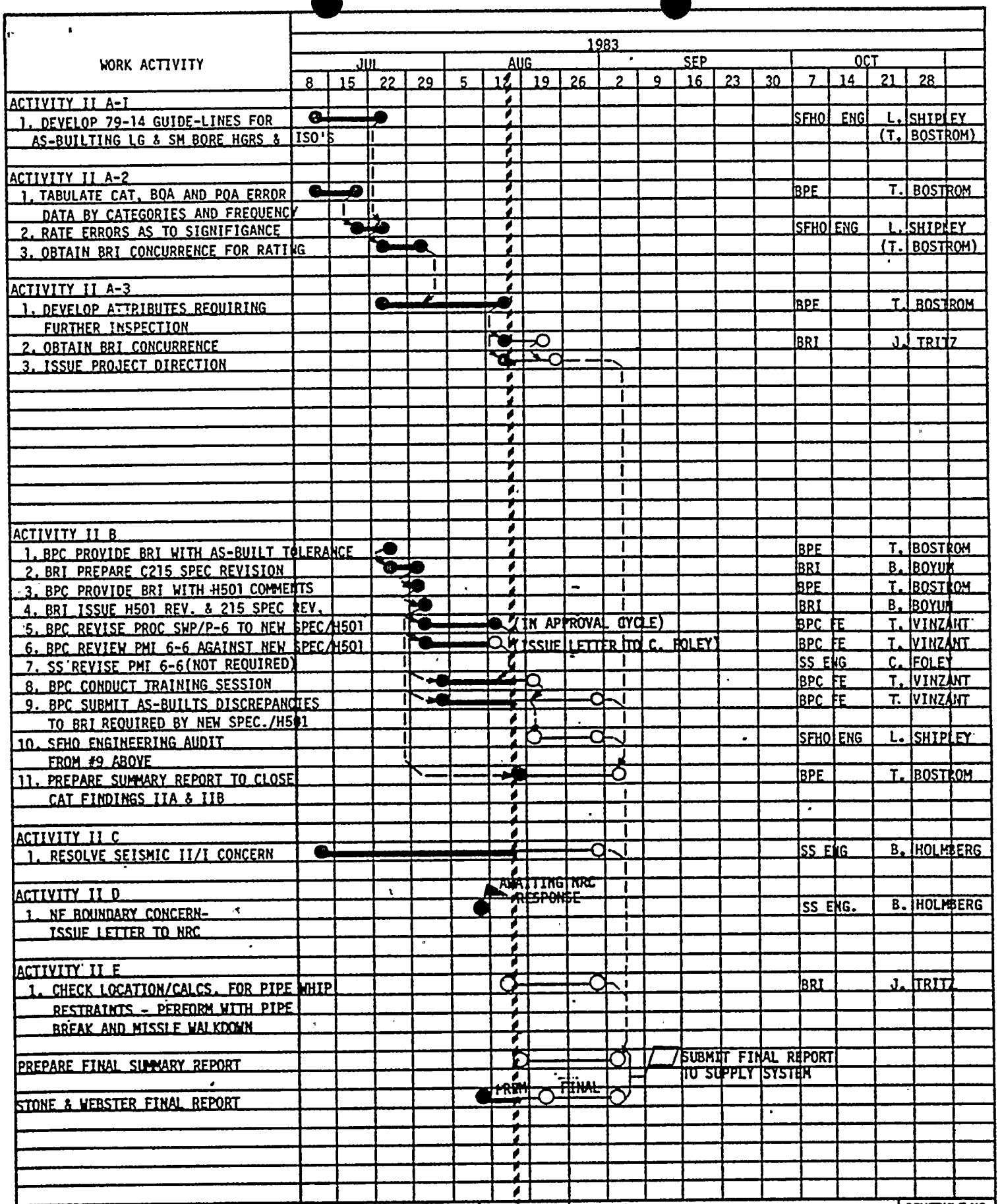
G. Third-Party Review

Stone and Webster, acting entirely independent of the above-described program, is performing a third-party review of the project as-built program. The Stone and Webster program consists of four activities:

- A review of the existing as-built program and its implementation.
- A review of the CAT findings in relation to previous PQA and BQA findings.
- Physical inspection of a significant sample of the hanger population.

- An assessment of the as-built program with respect to:

  - Meeting the needs of the project.
  - Meeting the requirements of NRC IE Bulletin 79-14.


WORK ACTIVITY
1983
JUL
AUG
SEP
OCT
8 15 22 29 5 12 19 26 2 9 16 23 30 7 14 21 28
ACTIVITY II A-1
1. DEVELOP 79-14 GUIDE-LINES FOR AS-BUILTING LG & SM BORE HGRS & ISO'S
SFHO ENG L. SHIPLEY (T. BOSTROM)
ACTIVITY II A-2
1. TABULATE CAT, BOA AND POA ERROR DATA BY CATEGORIES AND FREQUENCY
BPE T. BOSTROM
2. RATE ERRORS AS TO SIGNIFIGANCE
SFHO ENG L. SHIPLEY
3. OBTAIN BRI CONCURRENCE FOR RATING
(T. BOSTROM)
ACTIVITY II A-3
1. DEVELOP ATTRIBUTES REQUIRING FURTHER INSPECTION
BPE T. BOSTROM
2. OBTAIN BRI CONCURRENCE
BRI J. TRITZ
3. ISSUE PROJECT DIRECTION
ACTIVITY II B
1. BPC PROVIDE BRI WITH AS-BUILT TOLERANCE
BPE T. BOSTROM
2. BRI PREPARE C215 SPEC REVISION
BRI B. BOYUM
3. BPC PROVIDE BRI WITH H501 COMMENTS
BPE T. BOSTROM
4. BRI ISSUE H501 REV. & 215 SPEC REV.
BRI B. BOYUM
5. BPC REVISE PROC SWP/P-6 TO NEW SPEC/H501
(IN APPROVAL CYCLE)
BPC FE T. VINZANT
6. BPC REVIEW PMI 6-6 AGAINST NEW SPEC/H501
(ISSUE LETTER TO C. FOLEY)
BPC FE T. VINZANT
7. SS REVISE PMI 6-6 (NOT REQUIRED)
SS ENG C. FOLEY
8. BPC CONDUCT TRAINING SESSION
BPC FE T. VINZANT
9. BPC SUBMIT AS-BUILTS DISCREPANCIES TO BRI REQUIRED BY NEW SPEC./H501
BPC FE T. VINZANT
10. SFHO ENGINEERING AUDIT FROM #9 ABOVE
SFHO ENG L. SHIPLEY
11. PREPARE SUMMARY REPORT TO CLOSE CAT FINDINGS IIA & IIB
BPE T. BOSTROM
ACTIVITY II C
1. RESOLVE SEISMIC II/I CONCERN
SS ENG B. HOLMBERG
AWAITING NRC RESPONSE
ACTIVITY II D
1. NF BOUNDARY CONCERN- ISSUE LETTER TO NRC
SS ENG. B. HOLMBERG
ACTIVITY II E
1. CHECK LOCATION/CALCS. FOR PIPE WHIP RESTRAINTS - PERFORM WITH PIPE BREAK AND MISSLE WALKDOWN
BRI J. TRITZ
PREPARE FINAL SUMMARY REPORT
SUBMIT FINAL REPORT TO SUPPLY SYSTEM
PREL FINAL
STONE & WEBSTER FINAL REPORT
BECHTEL
TITLE: CAT PROGRAM AS-BUILT CONCERNS DON JOHNSON
JOB NO. 14631 WNP-2
REV. 2
PLAN RJS
SCHED
DATE 8/11/83
LEGEND: ENG. CONST. MILESTONE
PROBLEM AREA ACTIVITY RESTRAINT
STATUS DATUM
SCHEDULE NO. I
SHEET 1 OF 1

PROGRAM II

NDE

DESCRIPTION OF CONCERNS AND QUESTION

The NRC CAT concerns with the project nondestructive examination are identified below, referenced to CAT Report 50-397/83-29.

A. Radiographic Film Review - (Ref. CAT IV-B-4)

1. Weld Quality

The following welds were identified as having weld quality defects:

(a) RHR 882-1.4, FW-6R1 - Root Linear Indication
(b) RHR 854-12.16, FW-14R1 - Root Linear Indication
(c) LPCS 756-1.4, FW-6 - Linear Indication
(d) RHR 851-18.19, FW-12AR1 - Wrong Repair Area Film
(e) LPCS 756-5.7, FW-17R2 - Linear Indication
(f) RFW 438-3, FW-1R1 - Linear Indication

2. Film Quality

From the review of WBG Phase II radiographic film for film quality, rejectable densities were identified on the radiographs for RRC-1819-2, FW4; RRC-1819-2, FW7; and RRC-3083-1, FW1.

3. Film Artifacts

Radiographs for two welds were identified as having film artifacts:

(a) CAC 088-1, FW6
(b) CIA 4131-1, FW10

B. NDE Personnel Interviews and Methods Evaluation (IVB5)

1. Bestco NDE procedures were considered to provide inadequate direction for evaluation of weld surface conditions prior to performance of nondestructive examination.

2. NRC CAT identified two welds that were re-examined by liquid penetrant and found to have rejectable indications.

3. Bestco radiographic procedures were considered to provide insufficient direction in the following areas:

   (a) Selection of radiographic techniques by NDE operators.

   (b) Application and use of film markers on repair areas.

   (c) Lack of specific instruction regarding film orientation and technique.

   (d) The use of more than two film per cassette.

PROGRAM TO RESOLVE CONCERNS

- Examine welds thought to have rejectable indications by destructive or nondestructive examination to resolve interpretation differences.
- Review radiographs of all repair welds made by Bechtel; resolve additional questions.
- Review remaining Phase II radiographs for film quality.
- Re-radiograph films considered by CAT to have film artifacts.
- Review liquid penetrant procedures.
- Review Bestco procedures for radiography and other NDE.

STATUS OF ACTIONS TAKEN

A. Radiographic Film Review

1. Weld Quality

Welds previously identified as items (a), (b), (e) and (f) have been evaluated by Bechtel's Materials and Quality Services Department. The evaluation included direct visual examination, laboratory weld sectioning, macrographic examination, etching, and photographic preservation. A detailed description of this activity is being prepared and will include supportive laboratory reports and photographs. Item (c) was investigated while the CAT was on site and found to be satisfactory. See Program IV, point 4 under STATUS OF ACTIONS TAKEN, for a complete discussion of item (c).

The evaluation activities are complete for items (a), (b), (c), (e) and (f). The results of this evaluation indicate weld items (a), (b), (c), (e) and (f) meet all specification and code requirements.

Item (d) involved a weld repair error caused by failure to

review the original weld radiographs in conjunction with the repair weld radiographs. A commitment to review all radiographs of Bechtel repaired welds has been completed. A total of 317 weld repairs were reviewed. Fourteen repair welds were identified for further evaluation.

Nonconformance reports have been prepared for the 14 weld repairs. Two welds were found with the wrong area repaired. The remaining 12 welds had inadequate film coverage (1), defect identification discrepancies (10), and incorrect interpretation (1). With the exception of the one incorrect interpretation, all errors are directly related to not comparing the original radiograph with the repair radiograph when performing the repair evaluation.

Additional actions taken are:

1. Written instructions are being prepared to assure that original radiographs are compared with repair radiographs to provide corrective action to prevent recurrence.

2. The item has been identified as a potentially reportable 10CFR50.55(e). The undiscovered defects in each of the 14 welds have been analyzed by fracture mechanic's techniques described in Section XI of the Code. The results indicate that the stress intensity factors for the defects are lower than the critical values for the materials involved.

3. Because of the one incorrect interpretation, an additional sample review of 61 production radiographs, originally interpreted by the same NDE technician, was performed. This resulted in finding one additional radiograph with a marginal porosity condition. This condition is still under evaluation by Level III NDE personnel.

2. <u>Film Quality</u>

The remaining WBG Phase II radiographs have been reviewed and 106 welds identified with minor film quality deviations. The Quality Class I welds are identified by nonconformance reports for resolution of the discrepancy.

3. <u>Film Artifacts</u>

Three radiographic views covering two welds have artifacts from film processing. Despite the film artifacts, the film is interpretable when the two films for each view are compared one against the other. This is a code-permitted and industry-accepted practice and is the primary reason for using

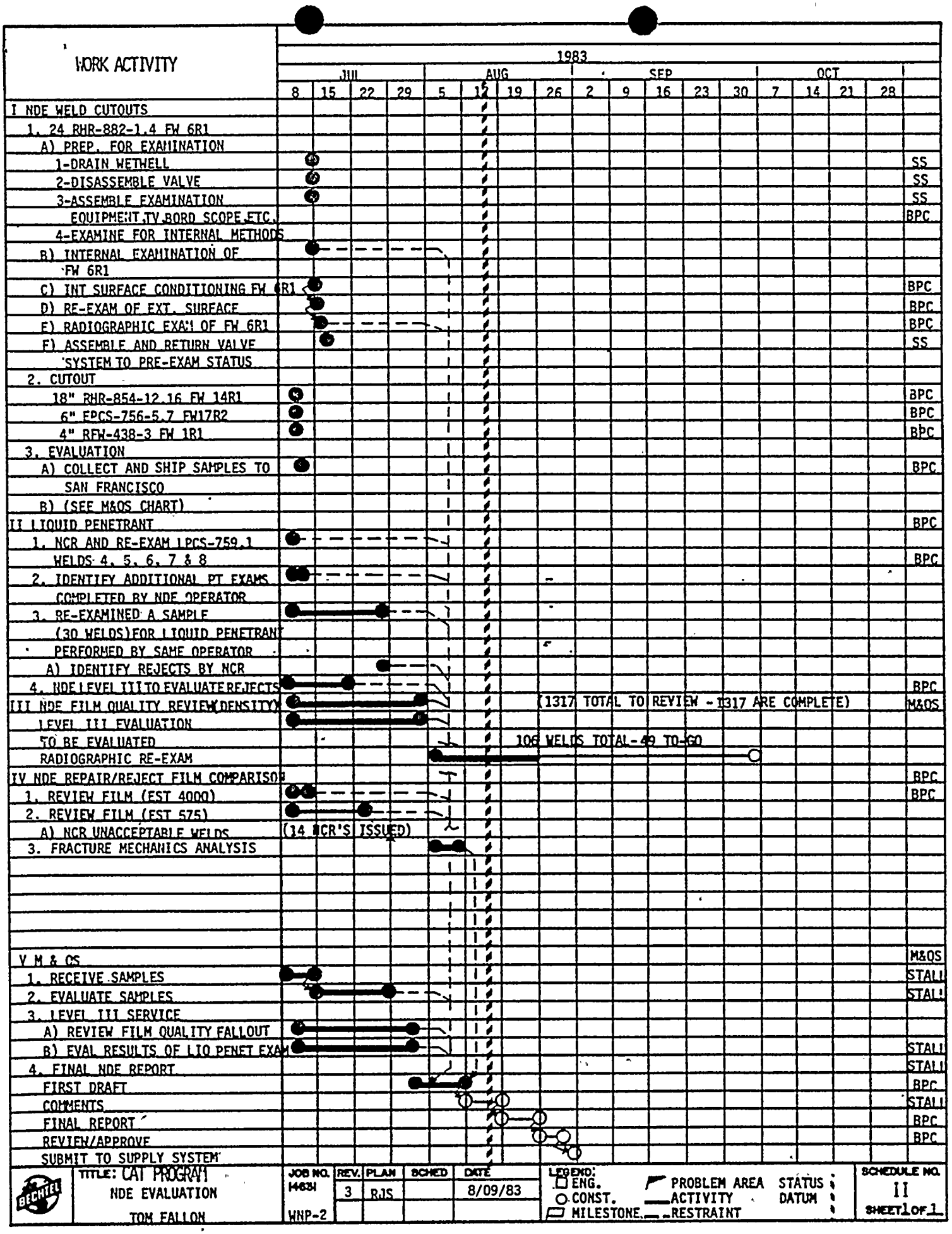
two films in each cassette for industrial radiography. Nevertheless, to dispel any lingering doubt it was agreed to reshoot the three views for welds CAC-088-1, FW6, and CIA-4131-1, FW10. However, CAC-088-1 was cut out prior to the CAT inspection. CIA-4131-1 was re-radiographed and the film accepted. No further corrective action is necessary as there was no code nor specification violation.

B. NDE Personnel Interviews and Methods Evaluation

1. The Bestco procedural practices (Items B1 and B3) are within specification and code requirements. Level III personnel are reviewing current NDE procedures and practices to identify any areas that may need strengthening, and/or to verify procedure and practice acceptability. References to Bestco RT procedure, RT194A, Rev. 4, in the CAT Report, appear to be in error. This procedure has not been implemented on this site.

2. The two-weld PT sample described by CAT was increased to five welds to cover all PT examinations made by the same technician on the same day on the same isometric. PT indications similar to those found by CAT were discovered on all five welds. The sample was then increased again to 39 welds (34 additional), all originally examined by the same technician but over an extended time period on different isometrics. Seven welds with PT indications were found; the five original ones plus two more from the additional 34-weld sample. Six of the seven welds with PT indications were blended by filing to remove the indications and determine their cause. All six indications were found to be nonrelevant or insignificant. No weld repairs were necessary.

   Access problems have delayed removal and investigation of the PT indications on the one remaining weld. This weld will be investigated in a manner similar to the other six as soon as possible.


WORK ACTIVITY
1983
JUL
AUG
SEP
OCT
8 15 22 29 5 12 19 26 2 9 16 23 30 7 14 21 28
I NDE WELD CUTOUTS
1. 24 RHR-882-1.4 FW 6R1
A) PREP. FOR EXAMINATION
1-DRAIN WETWELL
2-DISASSEMBLE VALVE
3-ASSEMBLE EXAMINATION EQUIPMENT,TV,BORD SCOPE,ETC.
4-EXAMINE FOR INTERNAL METHODS
B) INTERNAL EXAMINATION OF FW 6R1
C) INT SURFACE CONDITIONING FW 6R1
D) RE-EXAM OF EXT. SURFACE
E) RADIOGRAPHIC EXAM OF FW 6R1
F) ASSEMBLE AND RETURN VALVE SYSTEM TO PRE-EXAM STATUS
2. CUTOUT
18" RHR-854-12.16 FW 14R1
6" EPCS-756-5.7 FW17R2
4" RFW-438-3 FW 1R1
3. EVALUATION
A) COLLECT AND SHIP SAMPLES TO SAN FRANCISCO
B) (SEE M&OS CHART)
II LIQUID PENETRANT
1. NCR AND RE-EXAM LPCS-759.1 WELDS 4, 5, 6, 7 & 8
2. IDENTIFY ADDITIONAL PT EXAMS COMPLETED BY NDE OPERATOR
3. RE-EXAMINED A SAMPLE (30 WELDS)FOR LIQUID PENETRANT PERFORMED BY SAME OPERATOR
A) IDENTIFY REJECTS BY NCR
4. NDE LEVEL III TO EVALUATE REJECTS
III NDE FILM QUALITY REVIEW(DENSITY)
LEVEL III EVALUATION
TO BE EVALUATED
RADIOGRAPHIC RE-EXAM
(1317 TOTAL TO REVIEW - 1317 ARE COMPLETE)
106 WELDS TOTAL-49 TO-GO
IV NDE REPAIR/REJECT FILM COMPARISON
1. REVIEW FILM (EST 4000)
2. REVIEW FILM (EST 575)
A) NCR UNACCEPTABLE WELDS
(14 NCR'S ISSUED)
3. FRACTURE MECHANICS ANALYSIS
V M & OS
1. RECEIVE SAMPLES
2. EVALUATE SAMPLES
3. LEVEL III SERVICE
A) REVIEW FILM QUALITY FALLOUT
B) EVAL RESULTS OF LIQ PENET EXAM
4. FINAL NDE REPORT
FIRST DRAFT
COMMENTS
FINAL REPORT
REVIEW/APPROVE
SUBMIT TO SUPPLY SYSTEM
BPC
SS
M&OS
STALL
TITLE: CAT PROGRAM
NDE EVALUATION
TOM FALLON
JOB NO. 14631
WNP-2
REV. 3
PLAN RJS
SCHED
DATE 8/09/83
LEGEND:
ENG.
CONST.
MILESTONE
PROBLEM AREA
ACTIVITY
RESTRAINT
STATUS
DATUM
SCHEDULE NO. II
SHEET 1 OF 1

PROGRAM III

BOLTS, FASTENERS AND TORQUING

DESCRIPTION OF CONCERNS AND QUESTIONS

The NRC CAT found discrepancies in bolting material on equipment and piping systems. In addition, they raised questions as to the adequacy of specified torquing requirements and the results apparent in the installation of several types of fasteners.

PROGRAM TO RESOLVE CONCERNS

Purpose

Provide assurance that Quality Class I and Quality Class II, Seismic Category I fasteners installed on WNP-2 are:

- The proper material
- Adequately tightened/torqued for their intended function
- Installed with an adequate locking provision or flat washer as required
- Installed with the proper thread engagement

Scope

- Implement a deficiency trending program to review types of fasteners provided by suppliers, installed by contractors on site, and disassembled/reassembled by Test & Startup to assure that verification exists that the final fastener installation is adequate. If no verification exists, sample inspection programs will be established to provide this verification.

- Re-evaluate and document the technical basis for existing specification requirements on tightening/torquing and material of fasteners.

Program Description

A. The Bolts, Fasteners and Torquing Deficiency Trending Program is described in the attached matrix (Attachment 1). This matrix identifies 18 fastener types which represent the major Quality Class I and Quality Class II, Seismic Category I fasteners used on WNP-2. For each fastener type, four critical attributes are considered: material, tightness/torque, locking device/washer, and thread engagement. The matrix also identifies the major installers

of each type of fastener including suppliers, site contractors, and Test & Startup. (Note the matrix indicates information developed to date.)

For each major installer of a particular fastener type, a checklist is prepared. This checklist covers the installer's scope of work, specification requirements, installer's procedures, previous inspections of this work conducted in addition to normal installation, and the CAT findings. This checklist forms the basis for deciding if additional inspections are required. Previous inspection programs, NRC audit findings, and additional inspection programs needed are summarized in the matrix.

The results of the identified sample programs plus the CAT findings will be analyzed for trends to see if further inspections are required.

B. The A/E, Burns and Roe, will re-evaluate the technical basis for existing specification requirements for fasteners, including an assessment of a small percentage of randomly scattered variations in tightness and materials, justification for the use of flat washers on slotted holes, and an assessment of bolt relaxation with use. Included in this evaluation will be guidelines for evaluating torque data on bolting for acceptability, considering both passive boundary and structural loading performance.

C. An independent organization, Bechtel, will provide an assessment of the effect of randomly scattered variations in tightness and materials for flange bolting, use of flat washers on slotted holes, and an assessment of bolt relaxation.

D. The sample inspection of final in-place hardware will be the verification of material adequacy. In the case of Bechtel and the Supply System, additional documented audits of warehousing will be performed to assure adequate material control.

STATUS OF ACTIONS TAKEN

A. Overall program schedule is shown on Attachment II.

As indicated in the matrix (Attachment I), the major fastener types have been identified along with the major fastener installers. In addition, checklists have been completed to identify the areas where additional sampling is needed.

Sample programs have been established in the areas indicated. These programs include a procedure for performing the inspections, training of personnel involved in making the inspections, and initiation of field inspections.

Of the 18 major fastener types, conclusions have been reached on

six types as indicated below:

#1 Structural steel bolting - Acceptable

#7 Instrument mounting - Test & Startup to add 100 percent bolt inspection to System Lineup Test-I-4

#9 Rotating equipment coupling installation

A. Test & Startup to reinspect all ECCS pumps with a follow-on maintenance surveillance program.

B. Test & Startup to check torque and material on 12 additional pump groups.

#12 Cable tray splices - Acceptable

#14 Electrical cable termination screws - Acceptable

#16 Blow-out panel fasteners - Acceptable
Tornado siding fasteners - Acceptable

B. The Architect/Engineer, Burns and Roe, has prepared a technical memo which addresses the technical issues on bolts, fasteners, and torquing. In addition, they have established guidelines for reviewing field sample data.

C. Bechtel provided an assessment of the technical issues concerning fasteners. This assessment supports the basic A/E positions.

D. Bechtel warehousing reinspected their fastener storage facilities in total and this effort has been audited by Bechtel QA.

BOLTS, FASTENERS AND TORQUING DEFICIENCY TRENDING MATRIX

QUALITY CLASS I AND II SEISMIC I

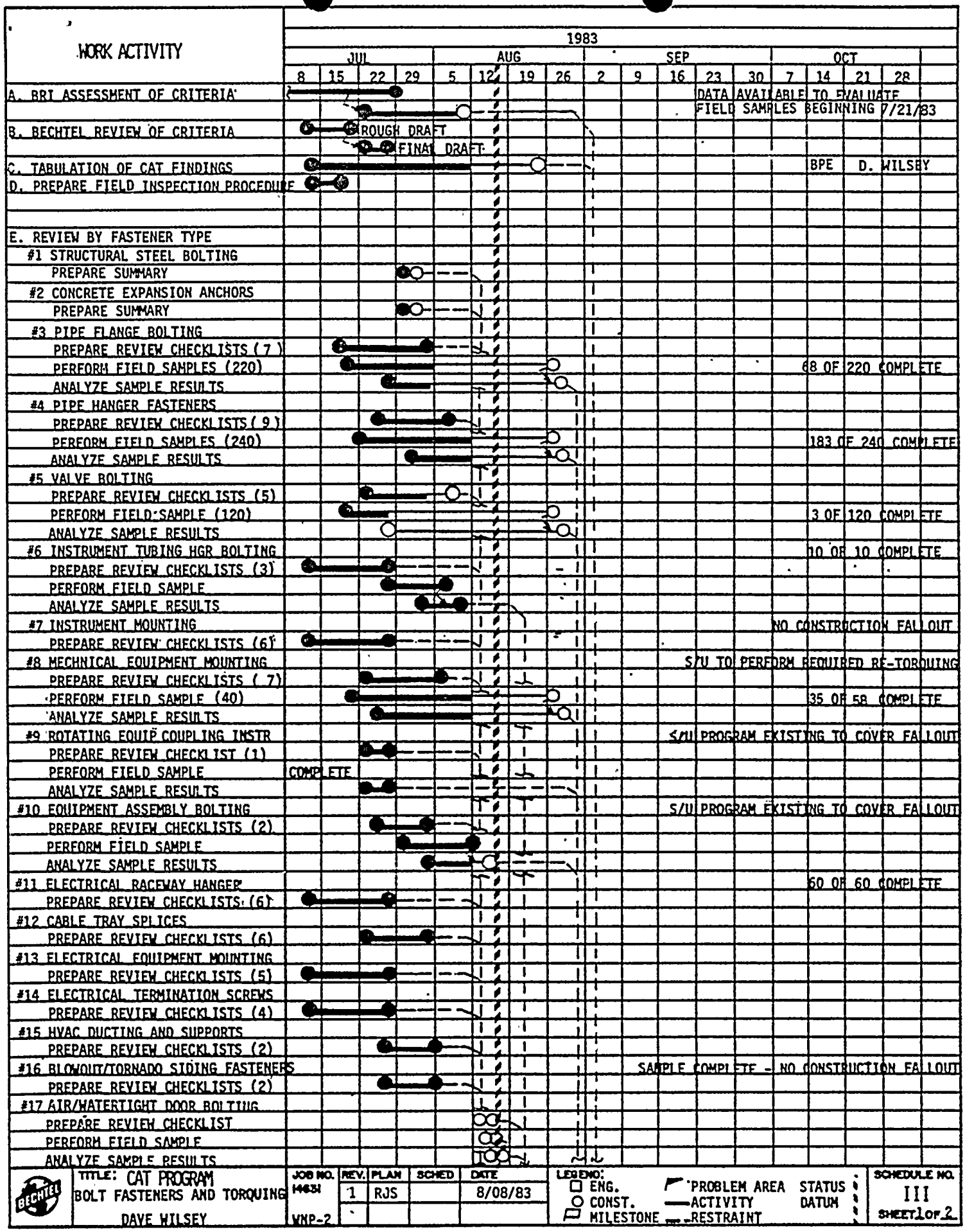
MAJOR FASTENER TYPES	CRITICAL ATTRIBUTES TO BE REVIEWED AS APPLICABLE	FASTENER INSTALLERS	PREVIOUS INSPECTION PROGRAMS IN ADDITION TO NORMAL INSTALLATION/QC	NRC AUDIT FINDINGS	ADDITIONAL INSPECTION PROGRAMS [illegible]	RESULTS OF INSPECTION PROGRAMS OR ADDITIONAL PROGRAMS ADDED
1. STRUCTURAL STEEL BOLTING	MATERIAL - TORQUE - LOCKING DEVICE/WASHER - THREAD ENGAGEMENT -	SUPPLIERS	NOT APPLICABLE	CONFIRMED BECHTELS REINSPECTION/REWORK PROGRAM IS ADEQUATE	NONE	NOT APPLICABLE
		SITE CONTRACTORS	BECHTEL REINSPECTION PROGRAM ADDRESSED QUALITY CLASS I AND QC-2 SEISMIC I STRUCTURAL BOLTS.			
		START-UP	NOT APPLICABLE			
2. CONCRETE EXPANSION ANCHORS	MATERIAL - TORQUE - LOCKING DEVICE/WASHER - THREAD ENGAGEMENT -	SUPPLIERS	NOT APPLICABLE	CONFIRMED REINSPECTION/REWORK PROGRAM IS ADEQUATE FOR Q/C I PIPE HANGERS. ISOLATED DEFICIENCY NOTED FOR CONCRETE ANCHORS		
		SITE CONTRACTORS	PROGRAM TO COMPLY WITH 79-02 CRITERIA ESTABLISHED COVERING ALL CONTRACTORS			
		START-UP	NOT APPLICABLE			
3. PIPE FLANGE BOLTING	MATERIAL - TORQUE - LOCKING DEVICE/WASHER - THREAD ENGAGEMENT -	SUPPLIERS	NONE EXCEPT FOR START-UP REWORK OF A LIMITED NUMBER	NONE	YES - 10 FLANGES	
		SITE CONTRACTORS 213A,233,220,215,250	QVP REVIEWED CERTAIN CONTRACTORS FOR SOME [illegible]	MATERIAL/TORQUE DEFICIENCIES FOUND	YES - 150 FLANGES	
		START-UP	NONE	MATERIAL/TORQUE DEFICIENCIES FOUND	YES - 60 FLANGES	
4. PIPE HANGER FASTENERS -U-BOLTS -BOLTED CONNECTIONS -THREADED ROD	MATERIAL - TORQUE - LOCKING DEVICE/WASHER - THREAD ENGAGEMENT -	SUPPLIERS	NONE	NONE	YES - 10 HANGERS	
		SITE CONTRACTORS 213A,233,216,217,220,215,250	QVP REVIEWED A PERCENTAGE OF CERTAIN CONTRACTORS	LOCKING DEVICE DEFICIENCIES	YES - 170 HANGERS	
		START-UP	NONE	LOCKING DEVICE DEFICIENCIES	YES - 60 HANGERS	
5. VALVE BOLTING	MATERIAL - TORQUE - LOCKING DEVICE/WASHER - THREAD ENGAGEMENT -	SUPPLIERS	NONE	MATERIAL/TORQUE DEFICIENCIES FOUND	YES - 60 VALVES	
		SITE CONTRACTORS	NOT APPLICABLE	—	—	—
		START-UP	NONE	MATERIAL/TORQUE DEFICIENCIES FOUND	YES - 60 VALVES	
6. INSTRUMENT TUBING HANGER BOLTING	MATERIAL - TORQUE - LOCKING DEVICE/WASHER - THREAD ENGAGEMENT -	SUPPLIERS	NOT APPLICABLE	—	NONE	—
		SITE CONTRACTORS 220,250,216	QVP REVIEWED A PERCENTAGE OF CERTAIN CONTRACTORS	NONE IDENTIFIED	YES - 10 HANGERS ON 220	
		START-UP	NOT APPLICABLE	—	—	—
7. INSTRUMENT MOUNTING	MATERIAL - TORQUE - LOCKING DEVICE/WASHER - THREAD ENGAGEMENT -	SUPPLIERS	NONE	—	NONE	—
		SITE CONTRACTORS 220,235,215,250,216	QVP REVIEWED A PERCENTAGE OF CERTAIN CONTRACTORS	MATERIAL AND SPRING NUT INSTALLATION DEFICIENCIES FOUND	NO - ADDITIONAL PROGRAM BY STARTUP	START-UP TO ADD 100% BOLT INSPECTION TO SLT-I-4
		START-UP	NOT APPLICABLE	—	—	—
8. MECHANICAL EQUIPMENT MOUNTING INCLUDING ROTATING AND NON-ROTATING EQUIPMENT.	MATERIAL - TORQUE - LOCKING DEVICE/WASHER - THREAD ENGAGEMENT -	SUPPLIERS	NONE	NONE IDENTIFIED	NONE	
		SITE CONTRACTORS 207,215,220,216,250	NON-ROTATING EQUIPMENT RE-TORQUING PROGRAM	MATERIAL, LOCKING DEVICE, FLAT WASHER, TORQUE DEFICIENCIES	YES - 58 PIECES OF EQUIPMENT	ROTATING EQUIP.- 100% INSPECTION RETORQUING TO BE PERFORMED BY START-UP NON-ROTATING EQUIPMENT -
		START-UP	NONE			
9. ROTATING EQUIPMENT COUPLING INSTALLATION	MATERIAL - TORQUE - LOCKING DEVICE/WASHER - THREAD ENGAGEMENT -	SUPPLIERS	ANY WORK PERFORMED IS 100% REWORKED BY START-UP	—	—	—
		SITE CONTRACTORS	ANY WORK PERFORMED IS 100% REWORKED BY START-UP	—	—	—
		START-UP	NONE	MATERIAL, TORQUING, LOCKING DEVICE DEFICIENCIES	NO-ADDITIONAL PROGRAM BY STARTUP	100% INSPECTION RETORQUE ON CRITICAL EQUIP. BY START-UP
10. EQUIPMENT ASSEMBLY BOLTING	MATERIAL - TORQUE - LOCKING DEVICE/WASHER - THREAD ENGAGEMENT -	SUPPLIERS	NONE	QUESTIONING IF MATERIAL TORQUING DEFICIENCIES EXIST.		
		SITE CONTRACTOR 213	NONE	NONE	YES - SAMPLE DRYWELL HEAD HOLD DOWN STUDS & NUTS, PLUS AIRLOCK CLOSURE BOLTING	
		START-UP	SELECTED PIECES OF EQUIP. DESASSEMBLED FOR INSPECTION	MATERIAL, TORQUE DEFICIENCIES	NO - ADDITIONAL PROGRAM BY STARTUP	
11. ELECTRICAL RACEWAY HANGERS	MATERIAL - TORQUE - LOCKING DEVICE/WASHER - THREAD ENGAGEMENT -	SUPPLIERS	NOT APPLICABLE	—	—	—
		SITE CONTRACTORS 218,217,250	QVP REVIEWED A PERCENTAGE OF CERTAIN CONTRACTORS	CABLE TRAY TO HANGER BOLTING DEFICIENCIES.	YES - 60 CABLE TRAY HANGERS ON 218 CONTRACT	
		START-UP	NOT APPLICABLE	—	—	—
12. CABLE TRAY SPLICES	MATERIAL - TORQUE - LOCKING DEVICE/WASHER - THREAD ENGAGEMENT -	SUPPLIERS	NOT APPLICABLE	—	—	—
		SITE CONTRACTOR 218	QVP REVIEWED PERCENTAGE OF CONTRACTORS WORK.	NONE IDENTIFIED	NONE	—
		START-UP	NOT APPLICABLE	—	—	—
13. ELECTRICAL EQUIPMENT MOUNTING	MATERIAL - TORQUE - LOCKING DEVICE/WASHER - THREAD ENGAGEMENT -	SUPPLIERS	EOG PLANT REVIEW, START-UP-ELECTRICAL TEST GUIDE(ETG-6)	NONE	NONE	—
		SITE CONTRACTORS 218,217,250	EOG PLANT REVIEW, START-UP ETG, QVP REINSPECTION OF CERTAIN CONTR.	WASHER, TORQUE PROBLEMS		
		START-UP	NOT APPLICABLE	—	—	—
14. ELECTRICAL CABLE TERMINATION SCREWS	MATERIAL - TORQUE - LOCKING DEVICE/WASHER - THREAD ENGAGEMENT -	SUPPLIERS	START-UP-ETG PROCEDURE VERIFIES PROPER INSTALLATION	INSPECTED 900 TERMINATIONS WITH NO MAJOR PROBLEMS	NONE	—
		SITE CONTRACTORS 250,218,235	START-UP-ETG PROCEDURE VERIFIES PROPER INSTALLATION.		NONE	—
		START-UP	NONE		NONE	—

ATTACHMENT I

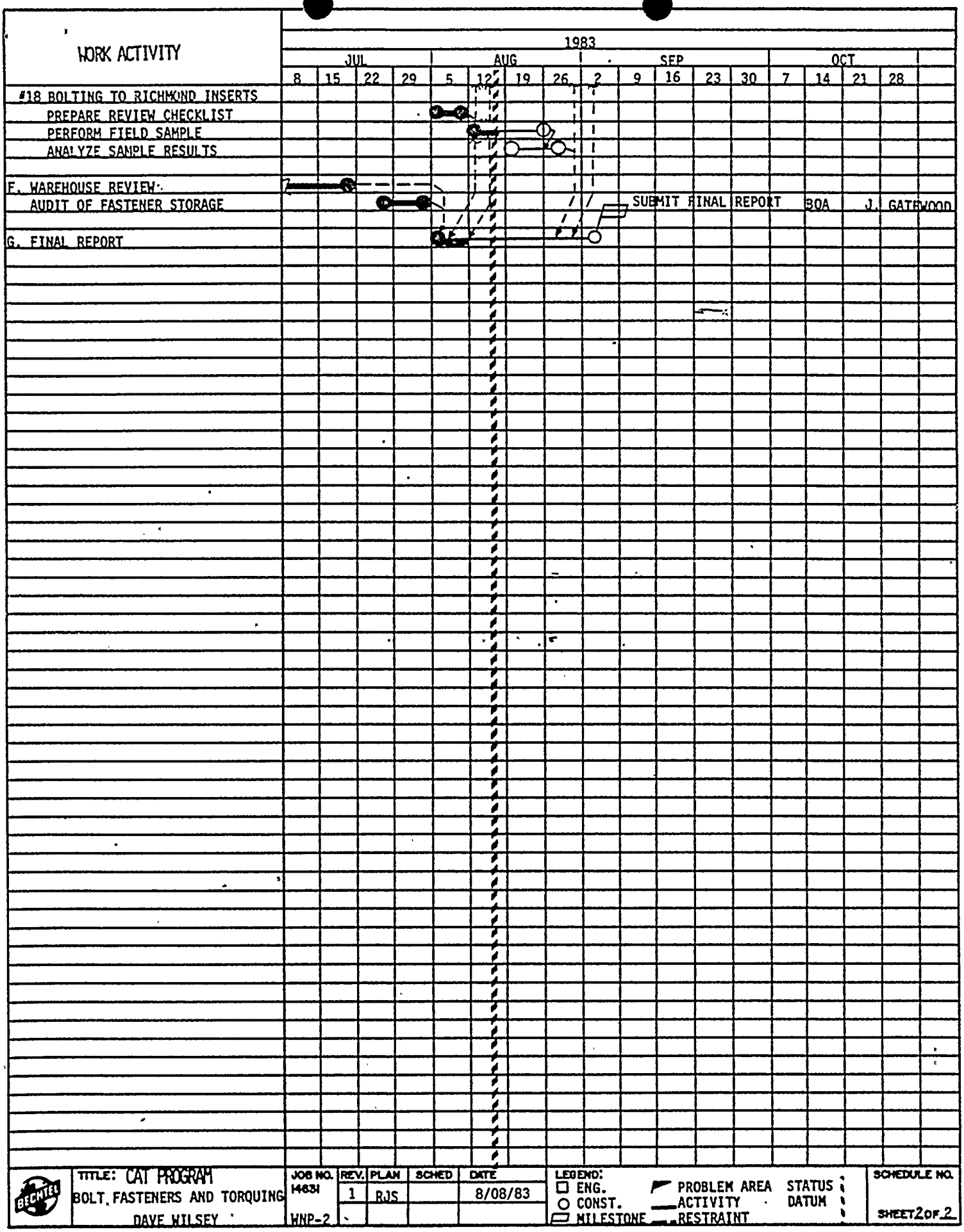
WNP-2
BOLTS, FASTENERS AND TOROUING DEFICIENCY TRENDING MATRIX
QUALITY CLASS I AND II SEISMIC I

MAJOR FASTENER TYPES	CRITICAL ATTRIBUTES TO BE REVIEWED AS APPLICABLE	FASTENE[illegible]ALLERS	PREVIOUS INSPECTION PROGRAMS - IN ADDITION TO NORMAL INSTALLATION/QC	NRC AUDIT FINDINGS	ADDITIONAL INSPECTION PROGRAMS NEEDED	RESULTS OF INSPECTION PROGRAMS OR ADDITIONAL PROGRAMS ADDED
15. HVAC DUCTING & SUPPORTS	MATERIAL - TORQUE - LOCKING DEVICE/WASHER - THREAD ENGAGEMENT -	SUPPLIERS	NOT APPLICABLE	—	—	—
		SITE CONTRACTORS 216,250	QVF REINSPECTED DUCT INSTALLATION ON 216 CONTRACT	ONE CONNECTION BETWEEN DUCT AND SUPPORT DEFICIENT		
		START-UP	NOT APPLICABLE	—	—	—
16. BLOW OUT PANEL FASTENERS TORNADO SIDING FASTENERS	MATERIAL - TORQUE - LOCKING DEVICE/WASHER - THREAD ENGAGEMENT -	SUPPLIERS	NOT APPLICABLE	—	—	—
		SITE CONTRACTORS 207,250	NONE	NONE	YES - SAMPLE TWO TYPES OF FASTENERS	BOTH TYPES OF FASTENERS FOUND ACCEPTABLE
		START-UP	NOT APPLICABLE	—	—	—
17. AIR & WATER TIGHT DOOR BOLTING	MATERIAL - TORQUE - LOCKING DEVICE/WASHER - THREAD ENGAGEMENT -	SUPPLIERS	N/A	—	—	—
		SITE CONTRACTORS	NONE	NONE	YES	
		START UP	N/A	—	—	—
18. BOLTING TO RICHMOND INSERTS	MATERIAL - TORQUE - LOCKING DEVICE/WASHER - THREAD ENGAGEMENT -	SUPPLIERS	N/A	—	—	—
		CONTRACTORS			YES - 60 FASTENERS	
		START-UP	N/A	—	—	—

ATTACHMENT I



ATTACHMENT II



ATTACHMENT II

PROGRAM IV

WELDING

DESCRIPTION OF CONCERNS AND QUESTIONS

The NRC CAT concerns with the project welding program cover five general topics:

A. Improper weld surface appearance/contour.

B. Insufficient weld reinforcement on weldolets.

C. Lack of knowledge of welding parameters by some welders; availability of welding procedures to the welders.

D. The general use of QVI-09 for reverification inspection of structural steel welds.

E. Undersized fillet welds on containment penetration stiffener plates.

There are no outstanding questions to be answered other than those pertaining to the above concerns.

PROGRAM TO RESOLVE CONCERNS

A. Improper weld surface appearance/contour

1. A detailed study has been made of the actual welds examined by the NRC CAT to determine their acceptability under the requirements of the ASME Code and project specificiations..

2. The acceptability of the "toe-to-toe" fillet welds on LPCS-7591, FW4 and FW5 has been determined.

3. Inspection requirements and training for accepting weld contours (surface appearance) has been reviewed.

B. Insufficient weld reinforcement on weldolets

1. All Supply System Quality Class I weldolets and other olet fittings within the scope of Contracts 215 and 220 have been identified by review of applicable drawings.

2. An inspection program, including inspection criteria and inspector training has been developed to inspect olet welds.

3. One hundred percent of olet welds within the scope of Contracts 215 and 220 are being inspected for weld reinforcement.

4. All nonconformances identified during step 3 are being documented on appropriate nonconformance reports.

C. Lack of Knowledge of welding parameters and availaibility of welding procedures.

1. The existing site program has been reviewed.

2. The results of this review are presented in the Status of Action Taken in this report.

D. The general use of QVI-09 for reverification inspection of structural steel welds:

1. The BRI technical basis for the criteria contained in QVI-09 has been provided to the NRC.

2. Determine the degree to which welded structural connections contain multiple attributes not meeting AWS D.1.1 but meeting QVI-09.

3. Several critical structural connections will be selected and evaluated against QVI-09 to determine if mulitple attribute deficiencies are acceptable.

E. Undersized fillet welds on containment penetration stiffener plates:

1. All containment penetrations with stiffener plate fillet welds made by PDM under Contract 213 have been identified.

2. All the above welds have been inspected and nonconformances have been documented.

3. All nonconformances have been dispositioned by Burns and Roe as "accept as is" based on an engineering evaluation.

4. Identify all other containment penetrations with stiffener plate fillet welds made by PDM under subsequent contracts with augmented QA programs.

5. Inspect all the above welds and document any nonconformances.

STATUS OF ACTIONS TAKEN

A. Improper weld surface appearance/contour

The NRC CAT report states that their concerns for weld contour are based upon:

1. Two welds (actually 3 welds) exhibited improper fillet weld contour.

2. Numerous other welds examined by the NRC CAT inspectors exhibited marginally acceptable contour and surface appearance.

3. Two welds failed PT examination; possibly due to surface conditions.

4. For one weld, it was necessary to grind the weld surface to obtain an acceptable radiograph.

Based upon the above four points, the NRC CAT questioned the adequacy of training for weld engineering and inspection personnel, and concluded that a review of the procedures and training (re-training) program of BPC field engineers and QC inspectors is warranted.

A detailed study of each of the above four points reveals the following:

Point 1:

The three welds referred to in 1) above are:

a) MS-522-3.4 pipe-stanchion-to-pipe fillet weld for support MSRV-4C-8

b) LPCS-759-1, FW4 (fillet weld)

c) LPCS-759-1, FW5 (fillet weld)

Weld a) did not require nondestructive examination other than visual inspection. Therefore, the Code requirements of NB4424 were met in that the weld was sufficiently free from coarse ripples, grooves, overlaps, abrupt ridges and valleys to make it suitable for interpretation by visual examination.

Other than the requirement that weld surfaces be suitable for NDE interpretation, fillet weld bead contour is not addressed in the code or specifications because it is not a technical concern. The WNP-2 design assumes that welded joints are in the as-welded condition unless specifically designated to be otherwise. The code-specified stress indices, or stress intensification factors, for as-welded surfaces were used in the design. These stress indices take into account the "ropey" appearance which is inherent in stringer bead fillet welds, similar to weld a). Although weld a) was not aesthetically appealing, the weld contour surface appearance was nevertheless completely acceptable from design, code specification and structural integrity points of view. The weld was, nevertheless, reported on a NCR and reworked to help expedite resolution of the NRC CAT's concern. Further discussions with the NRC CAT reached agreement that all other specific welds identified by the NRC CAT as questionable met all code and specification requirements.

The welds b) and c) did require PT examination. Both welds were so examined during construction and again during the CAT inspection. The surface condition of the welds was such that there was no difficulty in interpreting the results of the PT examination. Therefore, the requirements of NB4424 were met.

A second "weld contour" question concerning welds b) and c) was raised by NRC CAT. This question had to do with the included angle at the intersecting toes of the two adjacent fillet welds, see attached photograph.

Welds b) and c) are both socket welds between 3/4" schedule 160 SA-106B pipe and 3/4" 6000 # SA181 GR II socket weld fittings. The welds are such that the toe of weld b) and the toe of weld c) touch. As we understand it, the Inspector's concern is the existence of an unaccounted for structural discontinuity. The existence of this type of condition is not precluded by any project procedure or specification, and is not in violation of any code requirements. The existing condition is within construction tolerances. The WNP-2 A/E (Burns and Roe) has reviewed this specific application and determined that the close proximity of the welds is acceptable. Further, the A/E has determined that the condition is very limited, possibly one of a kind, and that any other similar conditions are likewise acceptable.

Point 2:

All of these welds were judged acceptable by the CAT. See above discussion of weld a) for additional information.

Point 3:

The two welds which failed PT are the same two identified as welds a) and b) under Point 1 above. The PT failures are discussed in a separate report covering the resolution of CAT concerns with NDE. As pointed out in the discussion above, and as shown in the attached photograph, the surface appearance of these two welds is totally acceptable.

Point 4:

At the time of construction completion, it was not necessary to grind the surface of this weld (LPCS7561.4, Weld 6) to obtain a satisfactory radiograph. Reader sheets are available at the site to show that the film was reviewed and accepted by Bechtel under the WBG radiography reverification program on April 7, 1982. During the CAT inspection, the NRC consultant for NDE interpreted the radiograph as showing evidence of incomplete fusion. The code rules of NB4424 state:

> "In those cases where there is a question regarding the surface condition on the interpretation of radiographic film, the film shall be compared to the actual weld surface for interpretation and determination of acceptability."

The film and weld comparisons were made and project personnel were satisfied with the comparisons. However, agreement could not be reached with the NRC CAT and accordingly the weld was ground and re-radiographed. The grinding and reshooting were done to prove clarity and that the original film interpretation made under the WBG radiograph reverification program was done correctly. This re-radiograph clearly confirms that the weld was acceptable and that the previous radiograph was acceptable and interpreted correctly.

In summary, weld surface appearance is acceptable provided that proper nondestructive examinations are achievable. Bechtel's welding engineers and QC inspectors are trained specifically to inspect weld surface characteristics and it is a specific inspection step in the Project Quality Control Instructions. The types of weld surface irregularities identified at WNP-2 are within code and specification requirements,

and enveloped by the code stress analysis. A detailed study of the four points made by CAT regarding weld contour shows that weld surface appearance is not an issue of concern at WNP-2.

B. Insufficient weld reinforcement on weldolets

The NRC CAT identified cases of insufficient weldout on the branch fitting to run pipe weld on olet-type (weldolet, sockolet, elbolet, etc.) weld-on branch connection fittings. With the exception of one case, all such welds identified were on stainless steel piping systems where the run pipe was relatively thin-walled and the olet-type branch connection fitting was standard or heavy (extra or double extra strong) wall. These types of applications can result in excessive distortion in the run pipe in the weld zone. This potential problem was identified by a previous contractor and the A/E was requested in 1979 to allow for lesser weldout in these instances (reference: RFI 4563W). The A/E's response to this request was that generic approval could not be given, and the contractor was required to identify any applications receiving limited welding on a case-by-case basis to the A/E.

Weld-on olet-type branch connection fittings are widely used in the nuclear industry and at WNP-2. The fittings have been available in a wide variety of sizes and schedules (thicknesses). Although fittings for thin-walled (schedule 5S and 10S) stainless were not commercially available until recently, fittings for virtually all other applications were available. At WNP-2, the A/E designed many branch connections utilizing olet-type fittings with a greater wall thickness than required for pressure integrity. This practice resulted from the fact that schedule 5S and 10S fittings were not available, the requirement for a specific inside diameter on the branch to accommodate a specific thermowell or sample probe, and for reasons of design conservatism.

Although numerous cases were identified to the A/E, documentation does not exist to substantiate many of the known cases that have less than full weldout.

A corrective action program, as described below, was implemented to correct this deficiency. The existing welds are such that the design drawings do not specify a weld size, but the specification requires that the fittings be installed to the manufactuer's instructions. Although the manufacturer's instructions are clear that the welds should be made fully to the weld line, this point is often difficult to locate on a fitting with a completed weld and in the case of some

applications, impossible to achieve due to excessive weld distortion and/or geometrical limitation. With due consideration of these facts, it is believed that the existence of conditions precedent to this problem do not exist. With due consideration of these facts, it is believed that the existence of undersized welds on olet type fittings is no indication of weld or weld documentation problems on other types of welds where the unique conditions precedent to this problem do not exist.

The corrective action program for weldolet concerns consists of an isometric/drawing review, inspector training, in situ walkdown, A/E evaluation of deficiencies, and rework if necessary.

The isometric drawing review consisted of a 100 percent review of all Supply System Quality Class I large bore and all small bore piping within the scope of contract 215 and all Supply System Quality Class I piping within the scope of contract 220. Approximately 970 olet-type branch connection fittings were identified. This review identified the location, type and size of the olet-type fitting.

The inspector training program consisted of instruction by Bechtel construction field welding engineers to the quality control inspectors in identification of fitting type and manufacturer, manufacturer's welding requirements (using both pictorial references and actual as-welded hardware samples), and evaluation techniques. Subsequent weld inspection is being performed and documented in accordance with Quality Control Instruction QCI 14631/P1.11. All deficiencies indentified by the quality control inspectors are being documented on a proper nonconformance document and forwarded to the appropriate design organization. All cases found to not meet the requirements of the design and/or manufacturer will be identified to construction to be reworked to an acceptable condition.

C. <u>Weld procedure availability/knowledge</u>

During their site visit, the NRC CAT witnessed in situ welding. During specific in-process weld inspection, the CAT members questioned welders as to the requirements for that specific weld (weld procedure, weld size, travel speed, amperage, etc.). Although, in each case the weld was made to the correct procedure (size, speed, amperage, etc.), the actual welder did not, when questioned, state knowledge of the

weld procedure number, did not have a copy of the weld procedure, and did not profess knowledge of procedure availability.

The WNP-2 project program for welding procedure availability is that all required procedures for performance of the actual work are made available to the welders. The weld procedure is not required to be present at the work station. Welding procedures are made available to welders at the welding material issuance stations.

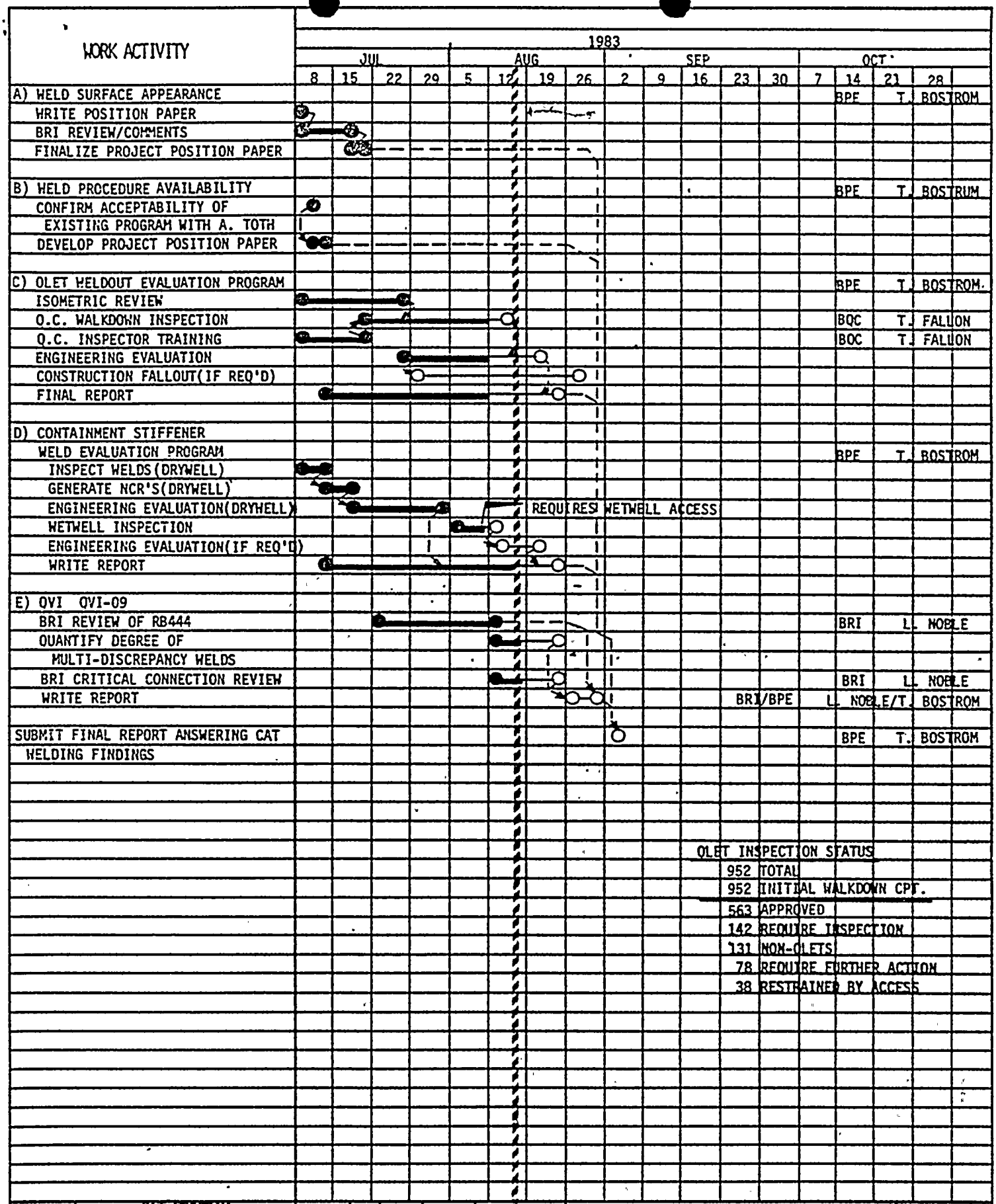
Each welder at WNP-2 is instructed in and given a copy of the document, "Bechtel Welder's Guidelines". This document, among other things, instructs the welder that welding procedures are available from the welding engineer. There is a large sign located in the welding engineers' area with the words "Bechtel Welding Procedures Located Here...". All welders at WNP-2 have signed a statement attesting to the fact that they have read and understand the Bechtel Welding Guidelines. The signed statements are retained on file with the Bechtel Lead Welding Engineer.

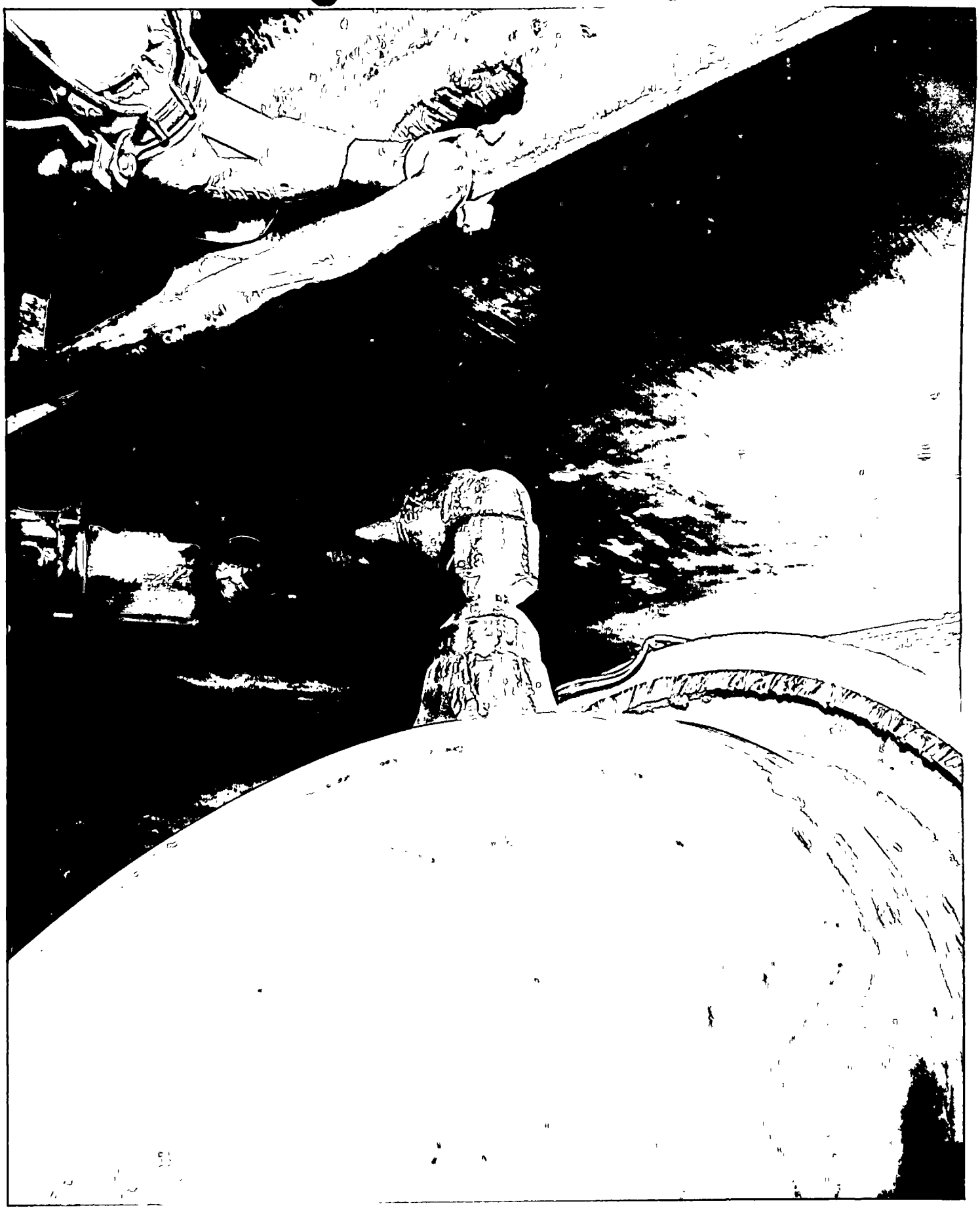
Specifically, with regard to the NRC CAT concern regarding fillet weld size requirements for socket welds, all welders have been instructed to weld the fittings fully to the edge of the hub, even though the project specifications require that the weld leg be a minimum of 1.09 x t of the connecting piping (which is equal to or less than the full hub thickness). The actual welding witnessed by the NRC CAT confirms this welder instruction.

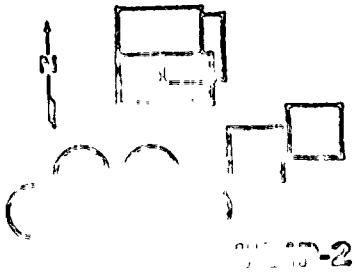
The fact that all welding witnessed by the CAT members was to the requirements of the applicable procedures shows that the welders are knowledgeable of the requirements. Craft personnel, when questioned by non-manual personnel, are apt to make a wide variety of statements, depending upon the manner and wording of the questioning and the attitude of the particular craftsman. We believe that the training of welders is best reflected in both the results of their performance qualification tests and the actual quality of workmanship in the completed welds. We continue to train each welder to the Bechtel Welding Procedures and Guidelines and while doing so impress upon each craftsman the necessity for understanding and following the procedures. Each welder is firmly instructed that deviations from the procedures and guidelines will result in disciplinary action.

D. The general use of QVI-09 for the reverification of structural steel

The NRC CAT identified that some structural steel beams do not meet the visual acceptance criteria of AWS D1.1. This led to a general concern regarding the use of QVI-09. Specifically, CAT appears to be concerned that the use of QVI-09 may not be adequately justified in that conclusions reached in the structural steel reverification program should reflect the consideration of all allowed weld deviations, and a detailed review of the more critical connections. The program for resolving this concern is still in the data gathering stage.


WORK ACTIVITY
1983
JUL
AUG
SEP
OCT
8 15 22 29 5 12 19 26 2 9 16 23 30 7 14 21 28
A) WELD SURFACE APPEARANCE
WRITE POSITION PAPER
BRI REVIEW/COMMENTS
FINALIZE PROJECT POSITION PAPER
BPE T. BOSTROM
B) WELD PROCEDURE AVAILABILITY
CONFIRM ACCEPTABILITY OF
EXISTING PROGRAM WITH A. TOTH
DEVELOP PROJECT POSITION PAPER
BPE T. BOSTRUM
C) OLET WELDOUT EVALUATION PROGRAM
ISOMETRIC REVIEW
Q.C. WALKDOWN INSPECTION
Q.C. INSPECTOR TRAINING
ENGINEERING EVALUATION
CONSTRUCTION FALLOUT(IF REQ'D)
FINAL REPORT
BPE T. BOSTROM
BQC T. FALLON
BOC T. FALLON
D) CONTAINMENT STIFFENER
WELD EVALUATION PROGRAM
INSPECT WELDS(DRYWELL)
GENERATE NCR'S(DRYWELL)
ENGINEERING EVALUATION(DRYWELL)
REQUIRES WETWELL ACCESS
WETWELL INSPECTION
ENGINEERING EVALUATION(IF REQ'D)
WRITE REPORT
BPE T. BOSTROM
E) QVI QVI-09
BRI REVIEW OF RB444
QUANTIFY DEGREE OF
MULTI-DISCREPANCY WELDS
BRI CRITICAL CONNECTION REVIEW
WRITE REPORT
BRI L. NOBLE
BRI/BPE L. NOBLE/T. BOSTROM
SUBMIT FINAL REPORT ANSWERING CAT
WELDING FINDINGS
BPE T. BOSTROM
OLET INSPECTION STATUS
952 TOTAL
952 INITIAL WALKDOWN CPT.
563 APPROVED
142 REQUIRE INSPECTION
131 NON-OLETS
78 REQUIRE FURTHER ACTION
38 RESTRAINED BY ACCESS
TITLE: CAT PROGRAM
CAT WELDING ISSUES
TOM BOSTROM
JOB NO. 14631
WNP-2.
REV. 2
PLAN RJS
SCHED
DATE 8/08/83/
LEGEND:
ENG.
CONST.
MILESTONE
PROBLEM AREA
ACTIVITY
RESTRAINT
STATUS
DATUM
SCHEDULE NO. IV
SHEET 1 OF 1





83-920-11

PROGRAM V

ENGINEERING DISPOSITION OF DEFICIENCIES

DESCRIPTION OF CONCERN AND QUESTION

The CAT Report questioned NCR dispositions and the adequacy of the design drawings to properly reflect design calculation requirements with respect to concrete structures.

PROGRAM TO RESOLVE CONCERNS

1. Analyze NCRs questioned by CAT during inspection; compare QVP Report on NCR dispositions with CAT NCR sample; draw conclusions; and, if analysis indicates action to be taken, strengthen procedure/program.

2. Analyze CAT Report and develop a matrix of the items related to concrete and reinforcing steel identified by the CAT or by the project during the study of the CAT concrete issue.

3. Prepare a response to each item from the matrix.

   (a) Identify item
   (b) Provide an assessment of adequacy
   (c) Establish a position
   (d) Propose actions to be taken, if warranted

4. Evaluate items and responses related to the concrete issues for possible trends.

   (a) Draw conclusions as to adequacy of engineering position
   (b) For items found deficient, categorize as to type
   (c) Assess deficiencies for trends

5: Prepare a paper defining Burns and Roe's process for approving contractor submittals. Evaluate deficient items from 4 above against design approval process (i.e., followed or not followed)

6. Propose action necessary from the analyses of 4 and 5 above.

STATUS OF ACTIONS TAKEN

Action Item 1 - 75% complete. All NCRs have been analyzed.

	One NCR requires disposition. Results to date contained in attachment.
Action Item 2-6	Work is underway. Matrix is being developed.

ATTACHMENT

PROGRAM V
ENGINEERING DISPOSITION OF DEFICIENCIES

NCR DISPOSITIONS

Twenty-seven NCRs were identified in the CAT synopsis. Twenty-six NCRs have been evaluated and one NCR has not been dispositioned as of this date. The results of this evaluation are as follows:

1. Statistical Information:

   (a) Disposition

   Use as is - 17
   Rework - 3
   Repair - 3
   Void - 3

   (b) Disciplines Making Disposition

   Mechanical - 1
   Electrical - 2
   Civil -17
   Hangers - 2
   - 5 (3 voids; 2 IRs, no A/E involvement)

   (c) NCR Initiation Dates

   1976 - 1
   1978 - 1
   1980 - 1
   1982 - 7
   1983 - 17

2. Evaluation:

   This evaluation concurred fully with 24 of 26 dispositions provided.

   Two NCR dispositions were not considered totally adequate and are discussed below:

   NCR 218-8034

   Subject: ASTM A-307 bolts not marked with manufacturers' identification.

Disposition: Use as is.

Justification: Concurred with proposed technical justification provided by the contractor which stated the bolts were certified to ASTM A-307, IFI standards do not require any marking, and all commercially available bolts are ASTM A-307.

Analysis: The proposed disposition provided by the contractor should have been rejected and a revised disposition provided by the A/E.

1. The statement made in the NCR, "All commercially available bolts are A-307 steel" is not accurate and does not represent the statement made by Mr. H. Houten of Fasteners, Inc. (telecom attached to NCR).

2. The IFI Standard identified as being attached to the NCR was not attached. The IFI Standard intended to be referenced (checked with contractor to identify the IFI Standard) only identifies that no grade marking is required. It should be noted that ASTM A-307 also does not require grade marking.

Conclusion: The use-as-is disposition of NCR 218-8034 is acceptable based upon the fact that the contractor had, from the supplier, certification that the bolts were ASTM A-307 bolts (even though they had no manufacturers' identification), that ASTM A-307 bolts are the lowest strength level (60,000 ultimate tensile) carbon steel commercially produced, and that ASTM A-307 does not require mechanical testing on a lot basis. Testing is accomplished based upon mass production from stock which provides the assurance of quality, material, and manufacturing practice.

Even though the unmarked bolts are structurally adequate, the NCR disposition should have required the contractor

to purge his stock of unmarked bolts to prevent the administration problems associated with continuing usage. It should be noted that per the contractor, Mr. Hollenbach, the stock was purged even though not specifically required by the NCR disposition.

Subsequent to the CAT identification of this NCR, a sample of unmarked bolts were removed from field installations and mechanically tested. All met the requirements of ASTM A-307.

NCR 500-021376

Subject: Weld defect (Lack of Fusion).

Disposition: Use as is.

Justification: Existing weld adequate for the load.

Analysis: The existing weld is structurally acceptable although the disposition to accept the lack of fusion in the weld is in violation of AWS.D1.1 and should have been repaired (weld defect ground out).

Conclusion: The use-as-is disposition of NCR 500-021376 is acceptable. Further evaluation has indicated that the entire weld could be eliminated without affecting the structure and that the weld is in compression and would not be expected to propagate into the base material.

The results of this evaluation confirm the findings of the QVP review of A/E NCR dispositions. The QVP review concluded that: "It can therefore be stated with a 95% confidence that in excess of 99% of all documents dispositioned by BRI are technically adequate."

WORK ACTIVITY	1983																
	JUL				AUG				SEP					OCT			
	8	15	22	29	5	12	19	26	2	9	16	23	30	7	14	21	28
A) ANALYZE NCR's IDENTIFIED BY CAT																	
B) ANALYZE OVP RESULTS AND REPORT ON NCR REVIEW								1 NCR REQUIRES COMPLETION OF ANALYSIS									
C) COMPARE ACTIVITIES A AND B - DRAW CONCLUSIONS																	
D) PROPOSE CORRECTIVE ACTION IF ANALYSIS INDICATES IT IS REQUIRED																	

TITLE: CAT PROGRAM ENGINEERING DISPOSITION OF DEFICIENCIES RON SABOL	JOB NO. 14631	REV. 0	PLAN RJS	SCHED	DATE 7/21/83	LEGEND: ☐ ENG. ○ CONST. ▱ MILESTONE	PROBLEM AREA ACTIVITY RESTRAINT	STAUS DATUM	SCHEDULE NO. V SHEET 1 OF 1

PROGRAM VI

CONCRETE

DESCRIPTION OF CONCERNS AND QUESTIONS

From the CAT Report:

"(1) Rebar placement deficiencies with respect to ACI 318-71 Code and design specification requirements have been identified in 10 of 12 examined locations. These will have varying degrees of adverse impact on the strength of concrete structural elements, ranging from significant to insignificant. (The issue of grout patch integrity had been identified previously and is being pursued by Region V personnel (see Inspection Report = 50-397/83-14)).

(2) The ability of the initial WNP-2 QC inspection records, RFIs and NCR dispositions to establish overall conformance with the design specifications is questionable.

(3) The accuracy with which the design drawings reflect conformance with the design calculation requirements is questionable.

(4) The visual inspections and documentation reviews proposed by the applicant are of insufficient depth and scope to address the issue of rebar placement adequacy. In addi tion, the destructive examinations discussed above are insufficient to completely characterize the extent of the rebar placement deviations at these locations and to provide a sufficient data base to infer the extent of deviations throughout the facility.

Therefore, there is not reasonable assurance that the reinforced concrete members and structures at WNP-2 were constructed to provide sufficient strength to adequately conform to the FSAR design requirements."

PROGRAMS TO RESOLVE CONCERNS

- Perform additional excavations and increase the scope of existing excavations sufficiently to define the spectrum of possible reinforcing bar placement problems.

- Record the "as-constructed" condition at each excavation, paying particular attention to bond between concrete and steel; the existence of voids in the concrete; and the location of reinforcing steel.

- Review all existing pour records for engineering direction given relative to the excavated structures.

- Analyze the structure as-constructed at each excavation and compare this analysis with the original design objectives to determine the significance of the deviations observed.

- Review the process for control of engineering approval on contractor submittal of steel details and compare NCRs, RFIs and steel details with sample excavations. This will be done in conjunction with CAT Program V - Engineering Disposition of Deficiencies.

- Draw conclusions with respect to the adequacy of the structure to meet its intended function based on the sampling done.

- Assessment of off-site experts with respect to condition of bond between steel and concrete at each excavation and the existence of voids.

- Review concrete documentation for all contracts. Identify trends for further investigation. This will be done in con junction with the Quality Verification Program review of concrete.

- Third-party review of conclusions.

STATUS OF ACTIONS TAKEN

- Six additional excavations have been made at various locations in the plant. Included was an excavation to expose all tension steel in Beam 2B5.

- All excavations have been photographed and as-builts prepared of the location and size of the reinforcing bar exposed. Photographs and as-builts were transmitted to Region V with letter G02-83-622, dated July 15, 1983.

- The new excavations have been viewed by NRC representatives Messrs. Herring and Albert. The NRC representatives raised the following questions relative to two of the new excavations. These items will be addressed in the final report.

  SK-12:

  As-built condition sketch called out a #11 bar when a #10 was actually exposed.

  One layer of bars was not exposed at the surface; a bar may be missing.

Design drawing does not appear to have been translated correctly to the placement drawing.

SK-17:

Excavation is not sufficient to confirm that splices are staggered.

An RFI exists permitting the use of additional bars but not clearly specifying when they are to be used.

The following general comments were made by the NRC during the exit discussion and will also be addressed in the final report:

Beam 4B30 and 6B9 appear to contain a mix substitution without RFI approval. (See also Table V-2 of the CAT report.)

Beams 2B11 and 2B25: Excavate to sound concrete before patching.

Beam 2B5: Noted that one location appeared to have been patched and questioned whether patch had been checked for soundness.

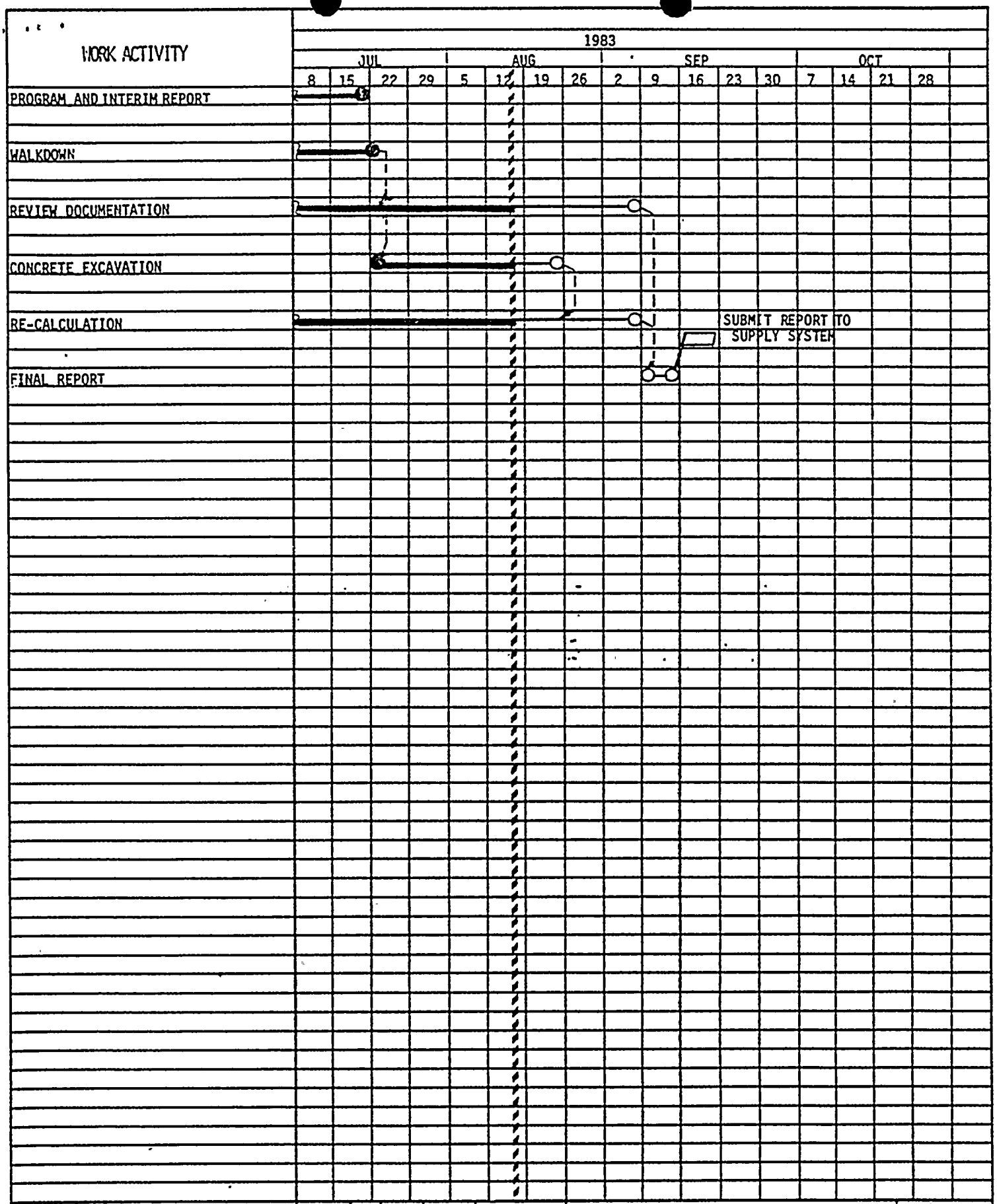
Base Mat at Pump Pit: Still believe placement contains an extra #11 bar not called for in design.

Actions are underway to recheck the as-built drawing of each excavation, rephotograph selected excavations, resolve where possible by additional excavation questions regarding reinforcing bar placement.

- Final response to Region V on inspection report 50-397/83-14 has been submitted; letter G02-83-678, dated July 29, 1983.

- Analyses are underway to determine the significance of the deviations observed in each excavation.

- Nonresident experts have been consulted. They have offered conclusions that the honeycombing in beams 2B11 and 2B25 can be repaired so that the adequacy of these structures is not impaired. Further, one consultant has viewed the excavations made, in addition to the honeycombed beams, and concluded "All concrete made visible since my visit May 9 is perfectly sound and without imperfection. It is well--consolidated and therefore well-bonded around the reinforcing bars.".


WORK ACTIVITY
1983
JUL
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8
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30
7
14
21
28
PROGRAM AND INTERIM REPORT
WALKDOWN
REVIEW DOCUMENTATION
CONCRETE EXCAVATION
RE-CALCULATION
SUBMIT REPORT TO SUPPLY SYSTEM
FINAL REPORT
TITLE: CAT PROGRAM
CONCRETE CONCERNS
R.K. SANAN
JOB NO. 14631
WNP-2
REV. 1
PLAN RJS
SCHED
DATE 8/09/83
LEGEND:
ENG.
CONST.
MILESTONE
PROBLEM AREA
ACTIVITY
RESTRAINT
STATUS
DATUM
SCHEDULE NO. VI
SHEET 1 OF 1

PROGRAM VII

REVIEW OF SITE QUALITY PROGRAMS AGAINST CAT ISSUES

DESCRIPTION OF CONCERNS AND QUESTIONS

This program will compare the issues identified by the CAT with site quality programs to assure that the site quality programs have been effective in identifying and correcting quality issues. The program will include the following tasks.

- o Determine, by analyzing CAT findings, the extent to which quality programs identified similar concerns.
- o Analyze the effectiveness of corrective action programs resulting from such previous identification.
- o Determine if there are areas other than those identified by CAT which should be reviewed.
- o Identify remedial actions to be taken.

PROGRAMS TO RESOLVE CONCERNS

A. Comparison of CAT findings and QVP program (Pre-June 1980 construction)

Perform a comparison of the CAT findings against the pre-June 1980 work scope of QVP. Determine if QVP and CAT inspected the same hardware to similar or identical attributes. The analysis will include an assessment of each specific item and an assessment of the trend where similar deficiencies permit trending. The analysis will draw a conclusion as to whether CAT has identified deficiencies which should have been identified by QVP. After completion of the overall analysis of the specifics, the data accumulated will be reviewed to determine if the CAT inspection has identified weaknesses in the QVP. Appropriate corrective actions will be established for any weakness thus identified.

B. Comparison of CAT findings and operational quality assurance program

A comparison of CAT findings as related to the Test and Startup program will be performed to substantiate or mitigate the findings. The CAT report will be reviewed to identify each specific CAT item related to the operational quality assurance program. Each item will be reviewed to establish specific corrective actions, generic implications (if any) and a conclusion will be developed as to whether remedial program actions will be taken or not.

A report will be developed containing the results of the comparison of the specific review, the quality program actions,and corrective action recommendations. The general CAT issues are:

- o Weaknesses in the Quality Control Program in use during Test and Startup.
- o Concerns related to the adequacy of the bolt torquing.
- o Concerns related to the control of materials; specifically, bolts, nuts and washers.
- o Concern related to Test and Startup closeout of Contract 218 Inspection Reports.

C. Comparison of CAT findings and construction quality program (Post-June 1980)

A comparison of CAT findings against the post-June 1980 work scope will be performed to identify similarities or differences between the CAT issues and the findings of the ongoing construction QA program. The method employed will be identical to the analysis described in Item A.

D. Plant quality attributes not addressed by site quality programs

This program was initiated to identify and review project construction activities to determine if site quality programs have adequately verified critical attributes.

Inspection modules, not specific to WNP-2, were reviewed to establish critical attributes. Included were the NRC I&E inspection modules, the attributes for which there were CAT findings at Texas Utilities, and the inspection plans implemented by Bechtel at Palo Verde.

Based on review of these sources for critical attributes, the following areas have been identified for further evaluation of physical installations:

- o Equipment/raceway grounding.
- o Raceway installations (assembly attributes).
- o Use of flex conduit connections to equipment and panels.

Areas for further evaluation of physical installations: (continued)

- o Heat tracing (Class I).
- o Instrument setpoints (set within ranges and accuracies).
- o Functional interfaces, functional orientation, and special clearances of equipment because of their uniqueness and the potential lack of familiarization by construction of some particular component installation requirements and interactions.

STATUS OF ACTIONS TAKEN

Activity A and C

The specific CAT items have been identified on a computer listing and actions initiated to address each. This analysis is scheduled for completion September 2, 1983. A schedule for each activity is attached..

Activity B

An assessment of the inspection activities performed by Test and Startup personnel has been performed. This assessment has resulted in identifying needed changes to the Startup Deficiency Report (SDR) system. Additionally, operational QA is performing a sample re-inspection of SDR's.

Test and Startup personnel are re-reviewing all inspection reports issued by Fischbach/Lord to determine that each has been dispositioned adequately; each will be signed off by the cognizant engineer and contractor reports will be closed accordingly.

Other activities listed under Activity B are ongoing with scheduled Completion of September 2, 1983.

Activity D

- o Grounding, Flex Connections, Raceway Assembly, Heat Tracing.

  An engineering walkdown of field installations is being performed by a Burns and Roe/Bechtel engineering team.

- o Instrument Setpoints

  Walkdowns are being performed to assure setpoints are properly implemented by Startup within the prescribed instrument accuracies, instrument ranges and with correct elevation compensation.

Activity D (Continued)

- Equipment Orientation/Interfaces

  Walkdowns are being performed on select equipment by Engineering personnel to assess the adequacy of implementation of vendor requirements for orientation and AE/NSSS design requirements for functional interface and spatial clearances.

- Equipment Orientation/Interface Walkdown Summary

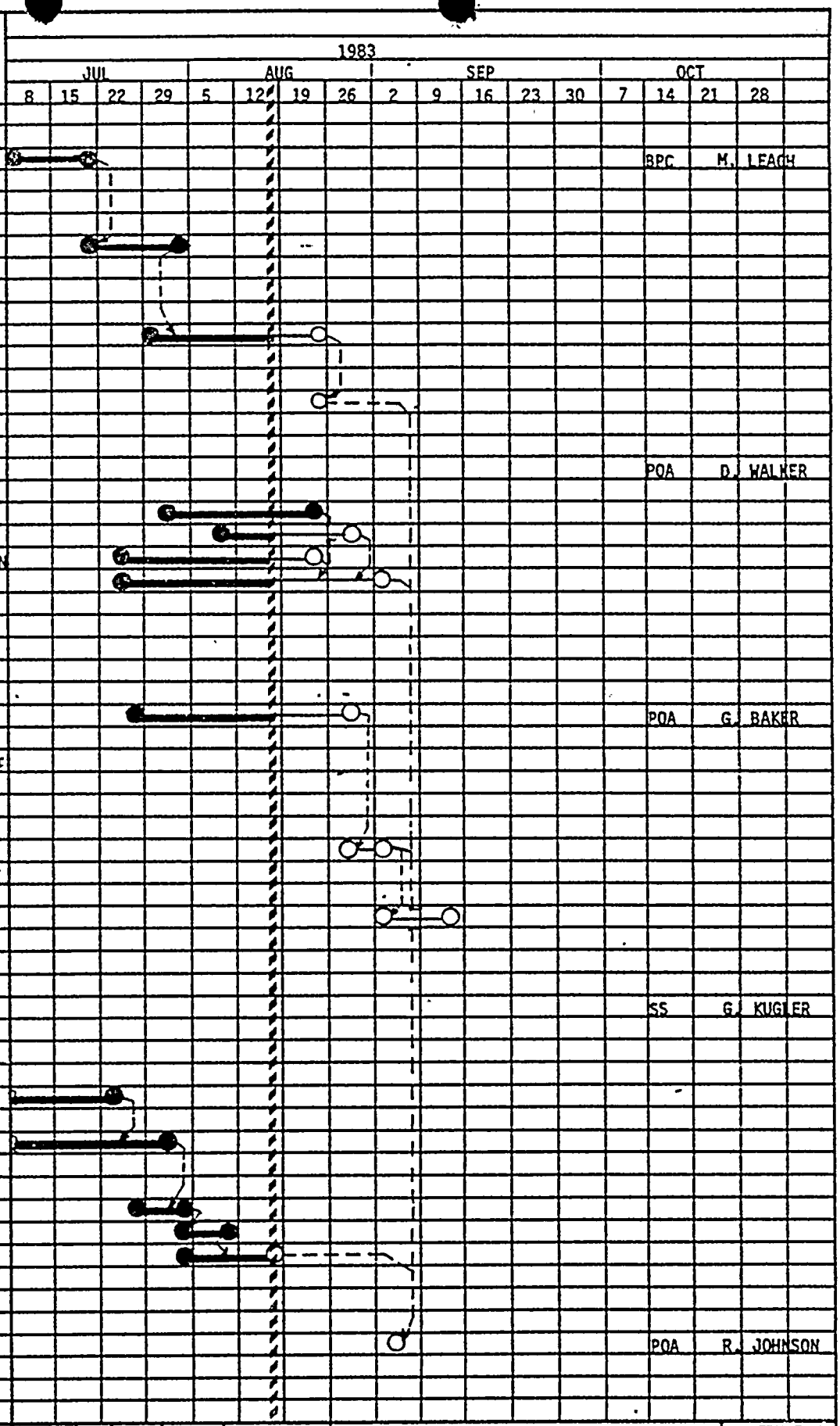
  To date this task has selected nine areas to survey with each area having generally unique attributes. The areas include the following: RCIC turbine skid, hydrogen recombiner skid, vacuum breaker valves, excess flow check valves, SW equipment and pump house, expansion joints, rupture discs, concrete block walls and batteries. Attributes such as equipment orientation, interferences, and special vendor requirements were observed in each of the areas to ascertain the adequacy of construction for these unique attributes.

  For the sample data collected to date, it appears that only minor discrepancies exist between the installation attributes and the physical conditions which presently exist in the plant.

  One additional walkdown will be performed in the area of flexible connections to Seismic 1 electrical equipment such as switchgear and control panels.

  Results from the completed walkdowns as well as the additional area of review are being evaluated and compiled.

WORK ACTIVITY		
ACTIVITY 1		
COMPARE OVP vs CAT		
A) ANALYZE ALL CAT ISSUES TO IDENTIFY PRE 6/80 AND POST 6/80 WORK	BPC	M. LEACH
B) COMPARE PRE 6/80 CAT FINDINGS TO OVP FINDINGS TO IDENTIFY SIMLARITIES AND DIFFERENCES		
C) DEVELOP RATIONAL FOR DIFFERENCES AND PREPARE REPORT		
D) INCLUDE REPORT IN OVP OVERVIEW REPORT		
ACTIVITY 2	POA	D. WALKER
COMPARE OPS PROGRAM vs CAT		
A) ASSESS TEST&STARTUP QC		
B) RESOLVE IR CONCERN		
C) MATERIALS CONTROL VERIFICATION		
D) ISSUE FINAL REPORT		
ACTIVITY 3		
COMPARE POST 6/80 PROGRAM vs CAT		
A) USE FINDING ANALYSIS DONE UNDER ACTIVITY 1(A) COMPARE POST 6/80 CAT FINDINGS TO POST 6/80 Q.A. PROGRAM-IDENTIFY SIMILARITIES AND DIFFERENCES	POA	G. BAKER
B) DEVELOP RATIONAL FOR DIFFERENCES AND PREPARE REPORT		
C) DETERMINE CORRECTIVE ACTIONS NEEDED		
ACTIVITY 4	SS	G. KUGLER
ANALYSIS OF CRITICAL PROJECT ACTIVITIES TO DETERMINE IF VERIFICATION PROGRAMS HAVE ADDRESSED		
A) ESTABLISH CRITICAL ACTIVITIES AND IDENTIFY ATTRIBUTES		
B) DEVELOP MATRIX IDENTIFYING VERIFICATION ACTIVITY APPLIED FOR EACH ATTRIBUTE		
C) PREPARE WALKDOWN CHECKLIST		
D) WALKDOWN/INSPECTION		
E) PREPARE FINAL REPORT		
FINAL SUMMARY REPORT ANSWERING CAT FINDINGS	POA	R. JOHNSON



TITLE:	JOB NO.	REV.	PLAN	SCHED	DATE	LEGEND:			SCHEDULE NO.
SITE QUALITY REVIEW AGAINST CAT FINDINGS ROGER JOHNSON	14631 WNP-2	2	RJS		8/09/83	☐ ENG. ○ CONST. MILESTONE	PROBLEM AREA ACTIVITY RESTRAINT	STATUS DATUM	VII SHEET 1 OF 1