Ex. 6

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

Rec'd 5/22/84

MAY 21 1984

MEMORANDUM TO: Dennis Crutchfield, Special Waterford Team Leader

FROM: L. C. Shao, Deputy Director, DET/RES

SUBJECT: CONSULTANT'S EVALUATION OF CONSTRUCTION ADEQUACY OF WATERFORD BASEMAT

During the initial concrete pouring of the Waterford Basemat (especially Blocks 6, 1 and 2), there were violations of specification requirements. As a part of the assignments under the Special Waterford Civil/Structure and Piping/Mechanical team, I asked Robert E. Philleo, to be our consultant to independently review how these concrete construction violations will affect the structural integrity and safety of the mat. Mr. Philleo has outstanding credentials and has about 40 years of experience in concrete construction, research and design. He is Past President of the American Concrete Institute and was Chief of the Structures Branch, Directorate of Civil Works, Office of Chief of Engineers, U. S. Army Corps of Engineers, supervising structural design and concrete technology for the World's largest engineering organization. Enclosed is a copy of his evaluation (Enclosure 1) based on his observation of the records and physical inspection of the concrete mat itself. It is Mr. Philleo's opinion that in spite of the violations, the construction was adequate to ensure the safety of the structures. Detailed justifications were given to support his conclusion. The conclusion of his evaluation is extracted from the main report as follows:

"The construction of the basemat was adequate to insure the safety of the structure. While there were several violations of specification requirements or missing records, none were of a nature which would impair structural integrity. Most of the violations or omissions pertained to provisions intended to preserve the workability of the concrete such as air content, slump, temperature, age of concrete at time of discharge, and number of revolutions of the mixer drum. Because the mat was placed during the winter and early spring when workability problems are not critical and because a large part of the concrete was passed through pumps, which constitute a good inspection tool for assessing workability, the lack of documentation of some of the backup workability data is relatively unimportant. For the same reason the concrete was easy to consolidate, and departure from ideal placing procedures should not prove significant. Failure to document moist curing is not significant because of the massiveness of the structure; and the occasional failure to maintain the required curing termperature was probably an advantage in removing heat from the structure. Irregularities in Cadweld inspection were administrative rather than technical, and errors in handling reinforcing steel were inconsequential. Waterstop problems apparently were adequately dealt with; but in any event they do not affect safety.

#10

Strength of the concrete is well documented. It exceeds the design strength by a larger margin than required by American Concrete Institute standards. This fact and the fact that concrete was placed under favorable physical conditions and in favorable weather, neither of which were conducive to the development of cold joints or internal voids, testify to the safety of the structure insofar as it is affected by the construction process. Adequacy of design was not addressed in this investigation."

Also enclosed with the enclosure are copies of his resumes in the brief and extended versions. (Enclosures 2 and 3).

L. C. Shao, Deputy Director
Division of Engineering Technology
Office of Nuclear Regulatory Research

Enclosures:
1. Evaluation of Concrete Construction Adequacy in The Basemat Waterford Unit No. 3
2. Brief Resume
3. Extended Resume

cc: H. Denton
R. Minogue
V. Stello
R. DeYoung
E. Case
D. Ross
D. Eisenhut
J. Collins
J. Gagliardo
J. Scinto
S. Turk
G. Arlotto
R. Vollmer
J. Knight
G. Lear
R. Shewmaker
D. Jeng
J. Ma
C. Siess, ACRS
J. Tapia, Region IV

✓ 4 originals sent to Shoemaker on 9/10/89

REVISION 2
6/28/84

SSER

Task: Allegation A-107

Reference No.: 4-84-A-06-02

Characterization: It is alleged that false documents were generated to replace missing records related to Cadweld activities.

Assessment of Allegation: The NRC staff reviewed and assessed the technical aspects of many allegations related to Cadwelding. (See Allegations ~~A-106~~, ~~A-108~~, ~~A-133~~, A-156, and A-147) Each allegation was resolved to the NRC staff's satisfaction as described in these assessments. Site personnel stated that discrepancies in signatures and initials on the Daily Cadweld Inspection Reports were the result of reconstruction of original reports that were soiled in the field, or that inspectors had to be in a physically awkward position during the inspection and had a second inspector record and initial the data. Regarding tensile test reports, the NCR addressing this issue stated that the original test records were in fact lost and that replacement records were generated based on records maintained by the testing company.

In addition to the review of the allegations described above, the NRC staff reviewed other records related to Cadwelds and looked for any obvious indications of falsified documents. Other technical areas were also reviewed. The NRC staff looked for documents which appeared to be extremely new, but which had old dates, errors in dates, duplicate originals, or other discrepancies. The NRC staff also reviewed other Allegations (A-110, A-115, A-130, A-146, A-155, and A-171) that were related to Cadwelds. The review revealed no obvious evidence of falsified records. Thus, the NRC staff has concluded that the concern related to falsified records of Cadweld activities is not an issue. This issue has neither safety significance nor generic implications.

[redacted]

Actions Required: None.

References

1. Assessments of Allegations A-106, A-108, A-110, A-115, A-130, A-133, A-146, A-147, A-148, A-155, A-156, and A-171.

Statement Prepared By: Jack B. Strosnider Jr. / J. Devers Strosnider — 9/10/89 Date

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Reviewed By: _____ Team Leader _____ Date

Reviewed By: _____ Site Team Leader(s) _____ Date

Approved By: _____ Task Management _____ Date

REVISION 1
06/26/84

SSER

Task: Allegation A-116

Reference No.: 4-84-A-06-11

Characterization: It is alleged that unauthorized changes and additions have been made to J. A. Jones concrete placement records by unknown personnel.

Assessment of Allegation: Actual concrete placement records to which the unauthorized changes and additions were allegedly made were not specifically identified to the NRC staff. Thus, the NRC technical staff addressed this allegation by looking for evidence of such alterations during the review of records related to other allegations concerning concrete placement records (including Allegations A-129, A-130, A-131, A-140, A-141, A-159, and A-335, which are related to inspector qualifications, unreviewed records, poor placement practices, and records signed off by inspectors on dates when they allegedly were not on site). These allegations have been addressed by the NRC staff as described in this assessment.

The NRC staff reviewed concrete placement records by looking for any evidence of unauthorized changes or additions, or falsification of documents. The staff looked for whiteouts on records, documents or portions of document packages that appeared new but that had old dates, errors in dates, duplicate originals, and other evidence indicating falsification or unauthorized alteration.

The review conducted by the NRC staff revealed no obvious evidence of unauthorized additions or modifications to J. A. Jones records, even though one apparent falsification was identified in assessing Allegation A-335, where concrete curing records were signed by inspectors on dates when they were apparently not on site. This issue was determined to have no safety significance as described in the assessment of Allegation A-335. However, the staff has referred the matter to the NRC Office of Investigations (OI).

Based on the NRC staff's review of this allegation, no case of alteration or falsification of documents related to J. A. Jones concrete placement records has been discovered, except as noted herein. This allegation has neither safety significance nor generic implications.

[redacted] Ex. 54 Pg 4

Actions Required: None.

References

1. Assessments of Allegation: A-129, A-130, A-131, A-140, A-141, A-159, and A-335.

Statement Prepared By: Jack Strosnider Jr. / J. Strosnider — 9/10/84 / Date

Reviewed By: _____ / Team Leader — _____ / Date

Reviewed By: _____ / Site Team Leader(s) — _____ / Date

Approved By: _____ / Task Management — _____ / Date

REVISION 2
08/30/84

SSER

Task: Allegation A-129

Reference No.: 4-84-A-06/24

Characterization: It has been alleged that the installation, inspection, and acceptance of waterstop splicing activities were performed by personnel of the J. A. Jones Construction Company who were not certified for these activities. It is further alleged that the review of the waterstop quality control documentation is incomplete and that those records that were inspected showed failure to implement requirements of specifications and procedures relative to testing frequency, recording of applicable information, and splice location.

Assessment of Allegation: In assessing this allegation, the NRC staff reviewed the Waterford Final Safety Analysis Report (FSAR) which states that to protect against floods all seismic Category I structures, safety-related systems, and components necessary for safe shutdown are to be located within the nuclear plant island structure (NPIS). The NPIS is a reinforced concrete structure designed to minimize water intrusion and the waterstops are one of the design features included for this purpose. The NPIS also has a floor drainage system capable of disposing of water that may be accumulated through leaking cracks in exterior structures, leaking waterstops and surface collection. In addition to the FSAR statements the NRC staff noted in the review that since the early stages of the Waterford project, there has been a listing of items related to the facility which undergo interdisciplinary review for safety classification. This list was first issued in January 1973 and has been under periodic review, resulting in 20 revisions up through March 1984. Waterstops have been noted on the list as non-safety class material. Therefore, although it is desirable to have a high level of quality assurance for the waterstops, a mitigative system for drainage of potential inleakage exists. Accordingly, waterstops are designated as non-safety class material, which EBASCO has confirmed.

The FSAR does not assign a specific safety category to the waterstop. As stated above, the Waterford QA staff considered neither waterstop material nor the installation nuclear safety-related or seismic Class I. The justification for this categorization is that there is no structural function for the waterstop since it is provided only to reduce ground water inleakage to the building through construction joints so as not to add to the water volume to be handled by the radwaste system or present housekeeping problems. Waterstops were, however, shown on a drawing which was designated as Seismic Category I, which apparently has led some to believe all items shown on the drawing are Seismic Category I. This

was an error on the drawing. The waterstop material should have been highlighted by a special note on the drawing as not being safety-class material then the confusion would not have arisen during the QA review of documents.

The NRC staff reviewed waterstop records to determine if the installation, testing, and surveillance were performed in accordance with the existing specifications and procedures. In order to perform this review, LP&L was asked to provide waterstop records for the NPIS (which contains all Category I structures where waterstops were used): reactor containment building (RCB); fuel handling building (FHB); and the reactor auxiliary building (RAB). The only records they could produce were for the RAB and the portion of the common foundation mat under the RAB. LP&L could not locate the waterstop splicing records for the RCB, FHB, and other portions of the foundation mat.

The NRC staff review of the records indicated some specific problems of the installation and testing procedures. Some of these specific problems are listed below.

- Some splicers made over ten splices without making a test splice, per requirements.
- In some cases a few of the test splices were not marked off as acceptable. However, cross checking with the waterstop splice tensile test reports showed that these test splices did in fact meet the specifications for strength.
- One inspector who signed off five test splices (this inspector signed off no other test splices or production splices in the records reviewed) was not certified on the date the test splices were signed.
- One of the splices made by a splicer for his certification test did not meet the required tensile properties and the records do not indicate that he was retested.

Review of the certifications of the splicers and inspectors showed no deficiencies other than those noted above.

A large majority of the records the NRC requested could not be provided by LP&L and only the projects own internal procedures required the records since the material is not safety related. The records which were produced showed a small number of minor deficiencies with respect to LP&L's requirements. The deficiencies noted in the records reviewed are not considered significant with regard to plant safety.

A review of 20 basemat preplacement concrete packages, conducted as part of the NRC staff's asssessment of allegations 104, 111, and 190 confirmed that the waterstops were included in the placements.

[redacted] Ex. 5i 7a

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Actions Required: None.

References: The following documentation was reviewed as part of the evaluation of this allegation:

1. Letter from B. Grant (EBASCO) to A. Cutrona (EBASCO) dated December 13, 1983, subject: NUCLEAR SAFETY CLASSIFICATION OF WATERSTOPS (Attachment 1).

2. LP&L Waterford SES Unit 3 Interdisciplinary Review List (Attachment 2).

3. WSES-FSAR-Unit 3, Section 3.4.1, Flood Protection and Figures 3.4.1 and 3.4-2 (Attachment 3).

4. EBASCO Specification for polyvinylchloride waterstops (Attachment 4).

5. J. A. Jones Construction Company site inspection and test procedure for waterstop inspection (Attachment 5).

6. J. A. Jones Construction Company construction work procedures for handling, installation, and field repair of waterstops (Attachment 6).

7. Waterstop splicing logs.

8. Waterstop splicers training records and certifications.

9. Waterstop tensile test records.

Statement Prepared By: Jack P. Strosnider Jr. 9/16/84
Jack Strosnider — Date

Reviewed By: _____ _____
Team Leader — Date

Reviewed By: _____ _____
Site Team Leader(s) — Date

Approved By: _____ _____
Task Management — Date

REVISION 4
08/30/84

SSER

Task: Allegation A-132

Reference No.: 4-84-A-06/27

Characterization: It is alleged that the J. A. Jones Construction Company used a form of communication called "speed letters" to report information that should have been reported in deficiency notices (DNs) and possibly in nonconformance reports (NCRs).

Assessment of Allegation: The implied significance of this allegation is that "speed letters" are not quality assurance (QA) documents and do not receive an EBASCO QA review.

In order to determine the validity and significance of the allegation, the NRC staff reviewed J. A. Jones speed letters numbered 0001 through 1122 covering the period of November 1977 to October 1980. These speed letters had been transmitted to EBASCO engineering personnel and concerned J. A. Jones concrete work performed in the reactor containment building (RCB), reactor auxiliary building (RAB), fuel handling building (FHB), and concrete basemat. The NRC staff also interviewed EBASCO QA and engineering personnel regarding the use of speed letters.

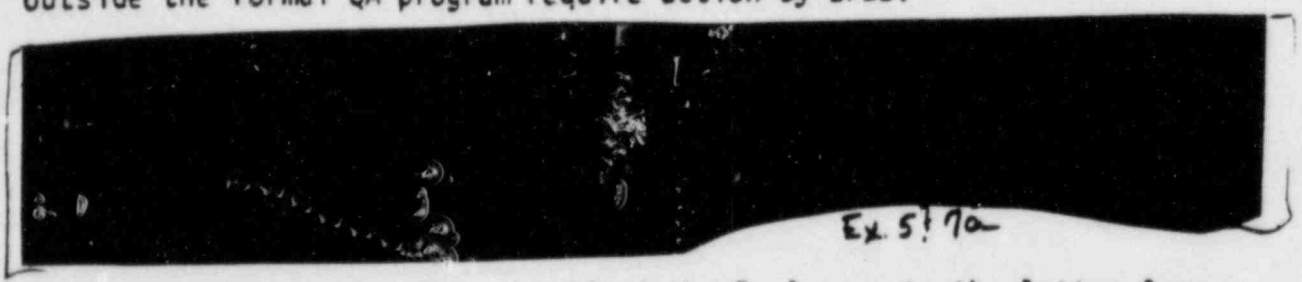
The majority of the J. A. Jones speed letters reviewed by the NRC staff were related to the logistics of work schedules and performance; however, the staff discovered some speed letters involving deviations from, or changes to, the original design specifications. Examples of deviations and field design changes included; a pilaster 5" too high and requiring modification, slight shifting of reinforcing steel locations, and the use of Cadwelding kits on reinforcing steel sizes other than those sizes for which the kit was made. (See the NRC staff's assessment of Allegation A-171).

The NRC staff's interviews with EBASCO QA personnel revealed that the QA personnel were aware of potential problems regarding the misuse of speed letters, and that QA personnel also believed that the Engineering Information Request (EIR) document was possibly being misused. EBASCO QA personnel informed the NRC staff that they were in the process of conducting a review to identify potential problems regarding the use of speed letters and the misuse of EIRs. In a memorandum dated February 20, 1984, the EBASCO QA Site Supervisor requested that the EBASCO Site Support Engineering (ESSE) Supervising Engineer review the J. A. Jones speed letters and EIRs. The results of an ESSE cursory review were themselves presented in a speed letter of January 27, 1984. Another EBASCO speed letter of February 18, 1984, substantiated that design changes had been the subject of some of the J. A. Jones speed letters and EIRs reviewed. Although EBASCO itself had used speed letters instead of the required QA

documentation to relay this information, they accurately pointed out that a review of Field Change Requests (FCRs) and Design Change Notifications (DCNs) would have to be performed to determine if the issues presented in the J. A. Jones speed letters were also correctly addressed in the required QA documentation.

The NRC staff review determined that some of the J. A. Jones speed letters and EIRs addressed areas where DNs, NCRs, or FCRs should have been required by the existing QA program, and that EBASCO QA personnel were aware of these discrepancies in the QA practices.

This allegation has no safety significance based on the staff's preliminary findings; however, the generic implications involving the use of documents outside the formal QA program require action by LP&L.



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Actions Required: See Item No. 14 of the Enclosure to the letter from D. Eisenhut to J. M. Cain (LP&L), June 13, 1984.

References:

1. EBASCO Services Incorporated Procedure for Inspection and Test Status, WQC-150, Revision 3, November 9, 1983, with Amendments 1 and 2.

2. EBASCO Services Incorporated Procedure for Processing of Nonconformances, ASP-III-2, Issue J, December 9, 1983, with Amendment 1.

3. EBASCO Services Incorporated Procedure for Design Change Notice and Field Change Request E-69, February 20, 1983.

4. EBASCO Services Incorporated Procedure for Design Control ASP-I-4, Issue K, June 7, 1983.

5. J. A. Jones/EBASCO "Speed Letters" numbered 0001 through 1122 and written during the period from November 18, 1977, to October 15, 1980 (examples included).

6. Letter from Mr. Sam Horton, EBASCO QA Site Supervisor, to Mr. Brian Grant, Civil EBASCO Site Services Engineering Supervising Engineer, February 20, 1984. Subject: Design Review of J. A. Jones Construction Company's Engineering Information Requests and Three Part Memos.

7. Speed Letters from Mr. Brian Grant to Mr. Sam Horton dated February 18, 1984, and February 27, 1984. Subject: Review of J. A. Jones Speed Letters and Review of J. A. Jones IRs, respectively.

8. EBASCO Services Incorporated Procedure for Control of Information Requests Between EBASCO and Site Contractors.

Statement Prepared By: Jack D. Strosnider Jr. 9/10/84
J. Strosnider Date

Reviewed By: _____ _____
Team Leader Date

Reviewed By: _____ _____
Site Team Leader(s) - Date

Approved By: _____ _____
Task Management Date

REVISION 0
05/23/84

SSER

Task: Allegation A-134

Reference No.: 4-84-A-06-29

Characterization: It has been alleged that there exists a file of letters known as "Nasty Grams" which were prepared by an individual when it was not possible or acceptable to initiate a nonconformance report.

Assessment of Allegation: To assess this issue, the NRC staff reviewed the QC supervisors file. The file contained letters written between the Senior Ebasco QC Supervisor and the QA Manager for J. A. Jones from July 29, 1976 to March 30, 1977. (Most letters were initiated by Ebasco.) Some letters deal with administrative aspects of the QA Program, however, many letters identify problems in the QA Program.

NRC staff evaluated those that deal almost exclusively with problems in the J. A. Jones concrete placement packages. Specific issues included are missing curing records, missing compression test results, missing Cadweld and embedment maps, and missing reinforcing bar test records. There are also a few documents related to deficiencies in QA records for Cadwelds and soils, such as missing splice numbers for Cadweld tests (these are necessary for traceability) and missing dates on backfill location logs.

The existence of the file demonstrates that the QA Program was being audited by Ebasco and that efforts were being made to ensure that documentation of construction was being performed in accordance with the program and procedures in effect. The important issue to be resolved is whether or not the problems identified were corrected, both for the specific items identified, and more generally, in the long term.

The issues of most concern are related to concrete placements performed by J. A. Jones Construction Company. The adequacy of concrete placement QA records is being addressed under Allegation A-109. ~~Assessment of Allegation A-109 involves not only consideration of the specific issues discussed above, but also more generic considerations regarding the concrete placement records.~~ 4/26/84
The issues raised regarding Cadweld splicing and backfilling records that may be significant with respect to safety, and the areas of Cadweld splicing and soils are being more thoroughly assessed under other allegations.

The staff has concluded, based on its review, that this file does not include any new issues not already being addressed under other allegations. Therefore, information obtained from the file will be included in the review of ~~Allegation A-109 and~~ other appropriate allegations (A-112 regarding Cadwelds, and A-145 regarding soils) and resolution of those allegations will resolve the issue of this file and any related safety issues. 4/26/84

[redacted] Exhibit 4

Actions Required: None.

References

1. Memo, Documentation Control, March 1, 1977, by Ed Lemke. Attaches a list of missing documents.
2. Memo, Use of Form ASP-IV-17-1, by S. Gordy.
3. Memo, Cadweld Test Reports, LRW-T-399 to 410, S. Gordy.
4. Memo, Documentation on Slipforming Shield Wall, December 17, 1976.
5. Ltr, Ebasco to J. A. Jones, November 24, 1976.
6. Memo, Cadweld Inspections, November 17, 1976, S. Gordy.
7. Ltr, Ebasco to J. A. Jones, November 16, 1976.
8. Memo, Placement Package Documentation, November 15, 1976, S. Gordy.
9. Memo, FHB Placement Packages, November 3, 1976, S. Gordy.
10. Ltr, J. A. Jones to Ebasco, October 28, 1976.
11. Memo, Reinforcing Steel User Tests, October 20, 1976, S. Gordy.
12. Memo, Backfill Records, October 21, 1976, S. Gordy.
13. Ltr, Ebasco to J. A. Jones, October 20, 1976.
14. Memo, Cement Sample Tests, S. Gordy.

Statement Prepared By: Jack P. Strosnider Jr. 7/10/84
Jack Strosnider — Date

Reviewed By: _____ _____
Team Leader — Date

Reviewed By: _____ _____
Site Team Leader(s) — Date

Approved By: _____ _____
Task Management — Date

REVISION 3
07/11/84

SSER

Task: Allegation A-258

Reference No.: 4-84-A-06-142(1)

Characterization: It is alleged that Chicago Bridge and Iron Company (CB&I) did not maintain material traceability on certain seismic Category I structural components in the containment vessel that were fabricated from Class D materials.

Assessment of Allegation: Chicago Bridge and Iron Company (CB&I), fabricator of the containment vessel, used material they had categorized as Class D to fabricate certain nonpressure retaining structural components in the containment vessel. These structural components include seismic clips that support safety-grade class piping systems, parts of the equipment hatch handling device, parts of the personnel and escape locks, crane rails and girders, stairs, ladders, and some temporary attachments and components. EBASCO categorized these components as seismic Category I, a category requiring material traceability. But, according to CB&I quality assurance procedures, material traceability was not required for Class D material and thus was not maintained. Nonconformance Report (NCR) No. W36224, issued by EBASCO Quality Assurance Group on May 13, 1983, addressed this issue.

To resolve the material traceability problem, EBASCO contacted CB&I and requested that they conduct a search of their in-house records to establish traceability of these materials where possible. CB&I was able to provide Certificates of Compliance or Certified Material Test Reports which established material traceability for a large portion of the components. A listing of those components, which could not be identified as temporary, or for which material traceability could not be established through CB&I records, was forwarded to EBASCO Site Support Engineering (ESSE) for engineering evaluation. Based on their review, ESSE concluded that material traceability was not critical to the safe operation of the components, including bolting and angle

ESSE pointed out that in the CB&I design of the containment vessel, the structural members were categorized in material Classes A through D reflecting their order of importance, Class A being the most important and Class D the least important. Thus, there was a conscious decision by CB&I regarding the materials classification of components. ESSE indicated that they had reviewed and concurred with the CB&I materials classification system.

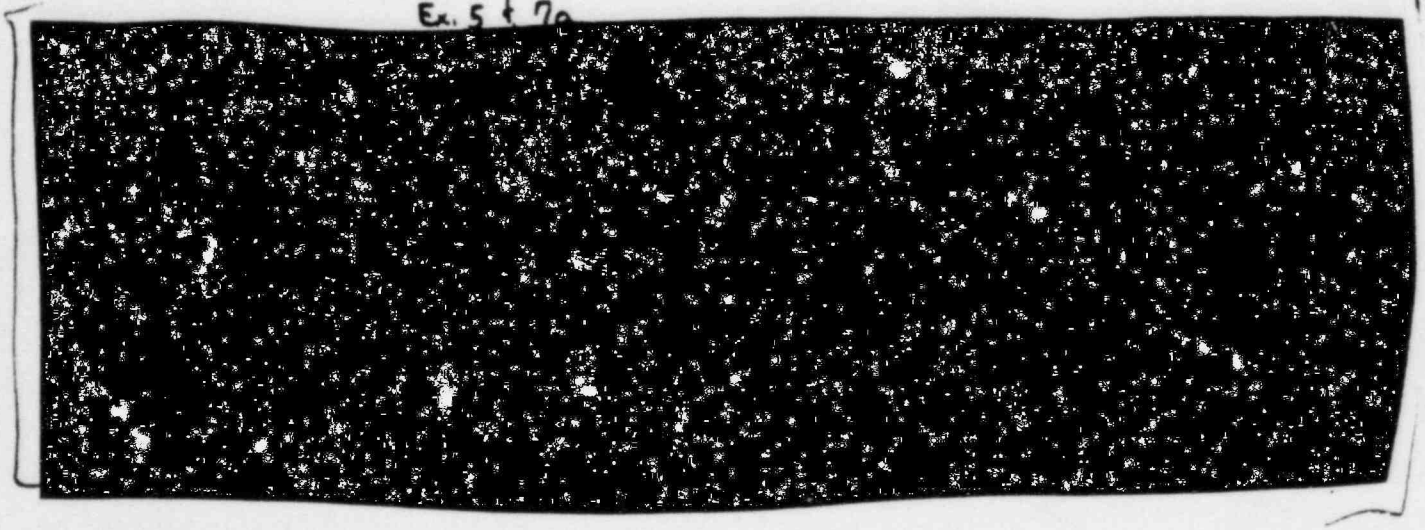
The NRC staff reviewed the ESSE evaluation, including in the resolution of NCR W36224, and performed an independent assessment of the components with potential safety significance, specifically the equipment hatch handling device and the personnel and escape locks. The equipment hatch handling device is used for opening, closing, and storing the 14foot diameter equipment hatch during maintenance operations but is not relied upon to maintain containment integrity during normal or postulated accident conditions. The NRC staff concurred with the ESSE conclusion that material traceability is not essential for this component. The personnel and escape locks each have two gasketed doors in series with valve and interlock mechanisms so that containment integrity can be maintained during entry and exit. The NRC staff review of the bill of materials and drawings for the personnel and escape locks showed that the Class D materials in these components were used primarily in the fabrication of actuating mechanisms for valves and interlocks, and for miscellaneous items such as valve handles, bolting, and indicator plates for which material traceability is not critical. The main concern regarding these components is operability and LP&L is required by the final safety analysis report and in their Technical Specifications to perform operability testing of the personnel and escape locks each time they are opened and at periodic intervals. This surveillance testing should provide adequate assurance that these components will perform satisfactorily.

Based on the review of the ESSE evaluation of this issue and on its own independent review and and evaluation, the NRC staff concluded that the traceability issue for Class D material used in the containment vessel as addressed in NCR W3-6224 has been satisfactorily resolved through the actions taken in the

One issue with possible generic implications is that EBASCO did not perform a comprehensive, initial review of the contractor's (CB&I) procedures to determine that they were consistent with EBASCO specifications. Vendor and contractor QA procedures should have been reviewed to ensure that they were consistent with the prime contractor's specifications and quality assurance program. Although a failure in the quality assurance program in effect initially did occur because of inconsistency between documents was not identified, the same program through internal review identified the material traceability issue. NCR 6224 was written and no violation of NRC regulations was identified.

This allegation has neither safety significance nor generic implications.

Ex. 5 & 7c



Actions Required: None.

References

1. NCR W3-6224 issued May 13, 1983.

2. CB&I Nuclear Quality Assurance Manual for ASME Section III Products; Section 4.0, Procurement and Material Control; Revision 6; April 3, 1975.

3. Material Requirements Table for Contract No. 71-2426.

4. EBASCO Internal memorandum from B. Grant, to L. A. Stinson; Subject: Relocation; dated July 19, 1983.

5. Waterford Steam Electric Station Final Safety Analysis Report, Section 3.8.

6. Waterford Steam Electric Station; Technical Specifications Section 3/4, Containment Airlocks.

Statement Prepared By: Jack R. Strosnider Jr. 9/16/89
J. Strosnider Date

Reviewed By: _____ _____
Team Leader Date

Reviewed By: _____ _____
Site Team Leader(s) Date

Approved By: _____ _____
Task Management Date

REVISION 1
07/01/84

SSER

Task: Allegation A-259

Reference No.: 4-84-A-06/142(3)

Characterization: It is alleged that "Class D" material used by Chicago Bridge and Iron (CB&I) in the fabrication of certain non-pressure bearing structural components inside the containment building was not welded with traceable weld rod and that the welds are not traceable to a specific welder.

Assessment of Allegation: This allegation is related to Allegation A-258 regarding the traceability of materials categorized by CB&I as Class D that were used in the fabrication of certain non-pressure bearing structural components in the containment vessel. As described in the assessment of Allegation A-258, these structural components included seismic clips that support safety-class piping systems, parts of the equipment hatch handling device, parts of the personnel and escape locks, crane rails and girders, stairs, ladders, and some temporary attachments and components. EBASCO categorized these components, with the exception of temporary items, as seismic Category I. As such, they required material traceability. But, according to CB&I quality assurance procedures, material traceability was not required for what they categorized as Class D material and thus was not maintained. As stated in the assessment of Allegation A-258, the traceability of the Class D structural steel was satisfactorily resolved by Nonconformance Report (NCR) W3-6224. Even so, this NCR did not address the traceability of the weld material.

To assess this issue, the NRC staff reviewed the structures in which the "Class D" material was used and requested LP&L to provide the quality assurance (QA) documentation for welds in several of the structural components considered to have the greatest safety significance. These components were the containment spray system pipe supports (seismic clips), crane girders, and equipment hatch handling device. The staff also requested QA documentation for such items as welding procedures, welder identification and qualifications, weld rod identification, and the inspection results for certain welds in these components. This QA information is required for welds in safety-related structures. LP&L was unable to produce the records requested by the NRC staff. The inability to produce the appropriate QA records makes the quality of these safety-related structures indeterminable and the NRC staff has concluded that LP&L must take additional actions, as described below, to resolve this issue.

Ex. 5 1 7a

[redacted]

Ex. 5 & 7a

Actions Required: See Item No. 15 in the enclosure to the letter from D. Eisenhut (NRC) to J. M. Cain (LP&L), June 13, 1984.

References:

1. Assessment of Allegation A-258
2. Nonconformance Report W3-6224 issued May 13, 1983
3. Code of Federal Regulations, Title 10, Part 50, Appendix B.

Statement Prepared By: Jack R. Strosnider Jr. 9/14/84
J. Strosnider Date

Reviewed By: _____ _____
Team Leader Date

Reviewed By: _____ _____
Site Team Leader(s) Date

Approved By: _____ _____
Task Management Date

REVISION 2
06/21/84

SSER

Task: Allegation A-260

Reference No.: 4-84-A-06-142(3)

Characterization: It is alleged that there is a lack of traceability of certain materials used in non-pressure retaining components in the containment vessel such as equipment door handling device, personnel and escape lock hardware, and miscellaneous structures. This allegation is related to Allegation A-258.

Assessment of Allegation: The alleger suggested that in order to resolve the issue of lack of traceability, samples of the materials in question should be taken and mechanical and chemical analyses performed to determine if the materials were acceptable.

The alleger's suggestion is a plausible solution to the issue of traceability of materials. However, the NRC staff determined as a result of its inspections that this concern was satisfactorily resolved with regard to the base metal as described in the NRC staff's assessment of Allegation A-258. However, the issue of traceability of the weld material, process and personnel used in welding the Class D materials inside the containment has not been satisfactorily resolved. The allegers suggestion has been identified as an option in resolving the issue in Allegation A-259.

This allegation has neither safety significance nor generic implications.

Ex. 5 & 7a
[redacted]
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Actions Required: None.

References

1. Allegation A-258 and A-259.

Statement Prepared By: Jack R. Strosnider Jr. 9/10/84
J. Strosnider — Date

Reviewed By: _____ _____
Team Leader — Date

Reviewed By: _____ _____
Site Team Leader(s) — Date

Approved By: _____ _____
Task Management — Date