

SSER

Task: Allegations *A-302; A-307; A-303b; A-306s; A-306x

Reference Nos.: 4-84-A-06/180; 4-84-A-06/185; 4-84-A-06/181b;
4-84-A-06/184s & x

Characterization: The allegation is that lower tier corrective action documents were not being upgraded to NCRs. Also, FCRs, DCNs, and EDNs were issued after-the-fact for nonconformances in lieu of NCRs.

Assessment of Allegation: The implied significance of this allegation is that without proper identification of nonconformances, the proper disposition, timely corrective action, determination of root causes and actions to prevent recurrences cannot be taken; that quality trending cannot be accomplished; and that the requirement of 10 CFR 50 for the reporting of Construction Deficiencies (50.55(e)), cannot occur without the identification provided in an NCR.

This allegation was addressed by an NRC staff review of selected Field Change Requests (FCRs), Design Change Notices (DCNs), and Engineering Deficiency Notices (EDNs). The methodology used in this evaluation included an evaluation of random FCRs, DCNs, and EDNs for the Reactor Coolant, Safety Injection, and Component Cooling Water Systems. Additionally, FCRs, DCNs, and EDNs were selected at random and evaluated from the various document issuance logs. The selected design change documents were then reviewed for content and for the of issuance; that is, for whether they were issued "before-the-fact," as a design change or "after-the-fact," as a nonconformance report. Finally, the staff conducted a system walkdown to verify proper identification and change control completion. The NRC staff also reviewed Tompkins-Beckwith Discrepancy Notices (DNs) for proper review and upgrading to Ebasco Nonconformance Reports (NCRs). This review was conducted by selecting DRs from the DR log and the QA records vault. The NRC staff also reviewed Request For Information (RFI) records and responses to those requests. (Also see Allegation A-187.) The following is a summary of the NRC review.

Field Change Requests (FCRs)

The NRC staff reviewed 63 FCRs and 21 revisions to those FCRs. Of the 63 FCRs reviewed, 35 clearly should have been NCRs (55%). An additional four may have reflected conditions that warranted an NCR, for a total of 39 (61%). Ebasco procedure ASP-I-4, Design Control dated June 7, 1983, states in paragraph 6.1.4, "FCRs shall not be generated in place of nonconformance reports." The practice of issuing FCRs in lieu of NCRs not only occurred in the past but continued during the staff review, as in the following examples:

1. F-MP-1818 (May 25, 1984). Miscellaneous piping; incorrect weld rod was used; the weld was removed and replaced with correct material.
Contractor - T-B.
2. F-AS-3698 (January 6, 1984). Reactor Coolant (RC) Pipe Seismic Support; bolts and embed documentation changed to reflect as-built.
Contractor - NISCO.
3. F-AS-3648 (December 2, 1983). Miscellaneous pipe supports; changed drawings to reflect as-built embed plate size and weld size.
Contractor not indicated.
4. F-AS-2338 (February 2, 1982). RC supports; unacceptable weld gap between beam and embed, because embed was cut too short; disposition was to change design; seismic review may be required.
Contractor - NISCO.
5. F-MP-1434 (February 8, 1981). RC spool piece installed backwards in pipe chase; disposition was to leave as installed.
Contractor unknown.

6. F-AS-1631 (December 20, 1979), and Revision 1 (October 10, 1980). Reactor Coolant pipe support. "Despite many attempts at repair and rewelding, these welds continue to crack." Design changed. Contractor - NISCO.
7. F-E-3089 (June 21, 1983). Combustion Engineers (CE) supplied enclosures on Reactor Coolant pump speed sensor pulse amplifiers. The enclosures were replaced with a different enclosure but without CE concurrence. FCE was issued to replace the enclosure gasket with "qualified" gasket. The gasket was installed on unapproved housing and was noted to be high in chlorine content. The housings were installed without seismic or environmental qualifications. Apparently CE discovered the change during a system walkdown. Contractor - NISCO.
8. F-MP-2138 (September 26, 1982). Replace broken 1-inch valves (cracked seats) in the RC system. Contractor - T-B.
9. F-MP-2151 (October 1, 1982). Replace a valve because it would not hold pressure for cold hydrostatic test in the RC system. Contractor T-B.
10. F-E-2288 (August 14, 1981). Five cables were pulled through wrong conduit. The corrective action was to change documentation; that is, to reflect cable routing as-built, in lieu of correct routing. Contractor - Fischbach & Moore.

Design Change Notices (DCNs)

The NRC staff reviewed 14 DCNs and 5 revisions to those DCNs; of the 14 DCNs reviewed 4 should have been NCRs (29%). The misuse of DCN, although not as prevalent as the FCR misuse, is a serious problem due to the fact the NCR system was circumvented and adequate corrective action was not taken. The DCN

system allows the option for the QA review to be determined by Engineering, consequently most of the DCNs are not reviewed by QA. A proper review by QA could have turned DCNs into NCRs, as in the following examples:

1. DCN-703 (September 24, 1982), and Revision 1 (September 27, 1982). Called for replacing four 3/4-inch valves with 1-inch spare valves in the RC System because the 3/4-inch valves had cracked seats. Revision 1 identified an additional seven valves with the same problem. This clearly should have been reported under 10 CFR 50.55e, or 10 CFR 21. Appears to be related to FCR-MP-2138.
2. DCN-IC-478 (March 30, 1981). Unidentified or misidentified valves in the warehouse were retagged via this DCN. This should have been an NCR. Contractor - Ebasco.
3. DCN-ME-30 (January 6, 1983). "Replacement of unqualified solenoid valves with IE environmentally qualified valves..." The subject system was the RC System. The reason for change, to meet environmental qualification requirements..." (IEEE 323 is dated 1974; this is not a new requirement.)

DCN-ME-30, Revision 1 (May 5, 1983). Stated "Revise solenoid model to document As-Built." The NRC could not determine what was actually installed.
4. DCN-E-790 (February 8, 1982). Revised a cable routing list to reflect as-built conditions.

Engineering Discrepancy Notices (EDNs)

The NRC staff reviewed 76 EDNs for proper identification and control. An additional 35 were identified as being improperly "voided" and 1 was noted open with no action ever taken. Of the 76 reviewed, 51 should have been NCRs. Of the total 5 were turned into NCRs, the balance of 46 (60%) should have been NCRs. Additionally 3 EDNs were identified non-safety related that should have been safety related. The 46 EDNs, which should have been NCRs, plus the 14 safety-related EDNs of those incorrectly voided, yield a total of 66% which should have been NCRs, or which were improperly processed. The 35 EDNs "voided" were the result of actions by a clerk via a "speedy-memo" because these 35 EDNs could not be located; they were in effect lost. In accordance with section 6.3.2 of Ebasco procedure ASP-IV-70, Handling of Engineering Discrepancy Notices, "EDNs that are safety-related shall be forwarded to the Quality Assurance Supervisor for his concurrence...and upgrading to an NCR if required..." Since the site engineering group determined what EDNs were routed to QA for this review process, and many were not forwarded to QA, part of the system breakdown appears to have occurred in this area. Also there is no objective evidence that the QA Supervisor reviewed all safety-related EDNs forwarded to him, which accounted for the remaining part of the breakdown. There is also no method in the procedure to void EDNs.

The following examples are evidence of misuse of EDNs in lieu of NCRs:

1. EDN-EC-1476 (September 6, 1983). Stated "Weld No. W101 on Whip Restraint R-BD-2-R23, for System 19-16, that the MT or PT on the weld root pass was bypassed." The disposition was "use-as-is" based on acceptable UT.
2. EDN-E-1548 (November 19, 1983). Stated "Safety related cable was damaged." The disposition was to repair. The approval of the corrective action and reinspection was signed by the same individual. The signatures were later crossed-out and replaced with initials. The approval and reinspection are both indeterminate. Also the signatures were made by an engineer, not by a qualified inspector.

3. EDN-EC-1502 (October 5, 1983). Stated " Control room and control panel conduit was not installed per the drawing requirements." The disposition was to issue an FCR to change the drawings.
4. EDN-EC-1479 (September 8, 1983). Stated " A snubber was installed, RCSR-4167 (Reactor Coolant), as a seismic Category 1 and safety classification 1. The snubber was procured on a purchase order as non-safety related (total number ordered on this purchase order was 4)." The disposition was "Install the snubber as received. QA records to review documentation to verify snubbers are acceptable as safety-related items. If documentation does not support safety related requirements, Ebasco Purchasing Department is to obtain documentation from the vendor." This EDN was later voided by a speed memo with no explanation provided. Documents attached to this EDN included Bergen Patterson C of C dated May 4, 1982, certifying hangers "7738-02 and 7838-03 Random Short Form" were manufactured in accordance with B31.1. Also attached was the Bergen Patterson Bill of Lading stating "Inspection Not Required, Standard Travel Stops, CMTR not Required, Project - Nuclear Plant." Status of these snubbers was indeterminate.
5. Thirty-Five (35) voided EDNs - The voiding was accomplished via a speed-memo; 14 of the voided EDNs were identified as safety related. The following chronology outlines this issue:
 - o September 20, 1983 - The Ebasco Construction Administrative Engineer issued a memorandum distributed to 28 individuals stating that "the attached list identifies EDN numbers assigned to you for which we have not received the original EDN for distribution. This is an indication that EDNs have not been written or have been voided." He further states that unless his department received information regarding the EDNs by October 1, 1983, they would be voided.

- o October 27, 1983 - Later the Administrative Engineer issued an additional memorandum stating all EDNs with the exception of those on the page 2 of the attached list (containing 36 EDNs) had been clarified.
- o December 12, 1983 - An engineering clerk, issued a speed-memo to QA Records (Supervisor) stating 35 EDNs were "voided." The clerk had previously received a memorandum from the Administrative Engineer "voiding" the EDNs.

The Administrative Engineer was interviewed by the NRC during the week of April 21, 1984, and stated "No one made any effort to review the EDNs for content, safety implication of required corrective action prior to voiding them..." Examples of the voided EDNs were as follows:

1. EDN-EC-0630 (October 21, 1982). Stated "Inadequate drainage at -35' elevation floor in the RAB - Reactor Auxiliary Building."
2. EDN-EC-1175 and EDN-EC-1176 (March 18, 1983). Stated "Material on Hold" and "QC Volume AGW QC.1"; the specifics of these EDNs are unknown.

It should be noted that these EDNs were initiated by the Ebasco General Material Administrator; he was interviewed and denied having any knowledge of opening any EDNs. Both EDNs were safety related.

3. EDN-EC-1140 (March 2, 1983). Stated "Operators for valves 3FW-V-607A and 6CD-V343 are installed on the opposite valves." Although the EDN was closed, the actual installation was not verified or was incorrectly verified. The NRC inspection of these valves revealed the following:
 - o Valve 6CD-V343 has the operator tagged and identified on the name plate as 3FW-V605B.

- o Valve 3FW-V607A has the operator tagged and identified on the name plate as 6CD-V348. An additional tag was also noted attached to the operator identifying it as 6CD-V348.

Although the EDN only identifies problems with two valves, four valves were actually involved in the puzzle.

Tompkins-Beckwith (T-B) Discrepancy Notices (DNs)

The NRC staff reviewed procedure TBP-12, Nonconformances and Discrepancies, that states in section 6.2 "DNs are required to be upgraded to Ebasco NCRs when the following criteria applies..." (as defined in section 4.1).

Nonconformance - A deficiency in characteristic, documentation or procedure which renders the quality of an item or service unacceptable or indeterminate. Examples of a Nonconformance include: physical defects, test failures, incorrect or inadequate documentation; or deviation from prescribed inspection or test procedures, drawings, Code and Contract requirements.

The NRC review revealed that T-B failed to upgrade the DN's as required. The following DN's are examples that fall into this category:

W-6519 The DN was written identifying that a torque required by the flange control record was outside the range of the torque wrench. The disposition stated that an adapter was used but this was not required. Also, it states "accept-as-is" because of the successful hydrostatic test. This does not answer the question of the torque values. The problem is that the bolts were over torqued. This DN should be upgraded to an NCR because of the incorrect documentation and because the quality of the flange is indeterminate. Service conditions were not reviewed for impact.

W-6183,
W-6322,
W-6519 These DNs were written against a torque wrench being used outside of its calibrated range. The disposition stated that the torque wrench was not required because the Code only requires all bolts to be tightened equally. This does not resolve the problem of the torque wrench use. The bolts used to make up the flange still have torque requirements and the question of under torquing has not been resolved. An NCR covering the torque value of all flanges that have been improperly torqued should have been issued.

W-3656 Identified a problem with the incorrect heat number being used for Weld FWII RWIR-1. The disposition of this DN appears to be invalid because not all of the disposition required items are addressed; i.e., the attachments do not show corrected rod slip or the QC-accepted heat number change on weld record.

W-5755 This DN identifies a problem with the heat number for filler material. This DN was dispositioned without a justification for the actions taken. The action taken was changing the heat number on a rod slip because it was stated to be a clerical error.

W-742 Loss of power to ovens for an unknown length of time. The disposition was to bring the ovens back to the hold temperature for eight hours prior to issuance of a weld rod. This is a generic problem and a Code violation because the rod or wire was not rebaked as required (also see allegation A-215).

W-5917 The DN was issued on a heat number problem for filler material. (See concerns for W-3656 and W-5755 for disposition.) Also, there is no evidence that the weld record was corrected or that the QC inspector's failure to note the filler heat number problem, if in fact it was incorrect.

W-381 Identifies the problem that welds were being painted prior to the final visual inspection. The recommended disposition was to comply with Ebasco letter F-33795-E. There is no evidence that the reinspection was performed utilizing the initial inspection criteria. Also an inspection through paint is unacceptable to ASME and AWS Code requirements. Closure appears to be invalid.

The following additional DNs should have been upgraded to NCRs:

W-1876, W-5824, W-4112, W-5047, W-5692, W-5416, W-6243, W-5916, W-381, W-6349, W-2105 and W-728.

Note: There appears to be a generic problem with heat numbers being entered incorrectly or clerical errors being made on rod slips. Examples are W-5824, W-3656, W-4648, W-4968 and W-4969. A DN, NCR or CAR was not issued to prevent recurrence.

Request For Information (RFI) or Information Requests (IRs)

The NRC staff also reviewed the various forms of Request for Information and how those requests were resolved; that is, via a clarification, a Nonconformance Report (NCR) or a design change, Field Change Request (FCR) or Design Change Notice (DCN). The staff conducted the following review by contractor, as follows:

NISCO

The NRC staff reviewed the actions taken by Ebasco engineering to resolve 38 selected RFIs. This review included whether the response to the RFI was a clarification, an NCR, or an FCR. Also reviewed were the supporting documentation for work, repair, use-as-is, or the design change. The RFI document was utilized as a tool to correct problems, but was not issued as a method to resolve design problems; but it did made reference to the referenced document used to resolve the problem. This staff review revealed that the

actions taken were correct and that the quality records were complete and technically adequate.

Tompkins-Beckwith (T-B)

The NRC staff reviewed the actions taken by Ebasco Engineering to resolve Information Requests (IRs). A sample of 20 IRs were selected from the Ebasco Engineering files. The review revealed that Ebasco responded to the request by clarification (referring to appropriate drawing revision or specification/procedural requirement) NCR, DN, FCR, or DCN. This provided direction to T-B on how to proceed. Design information was not provided on this document; rather to the referenced document containing the required information.

In conclusion, based upon objective evidence, the NRC staff found that the QA program requirements for nonconformance identification, control, and proper corrective action was not complied with. That is, the design change control system was incorrectly substituted to report "after-the-fact" nonconformances and that T-B DNs were not properly upgraded to NCRs. Additionally, the QA program was, in effect, circumvented, and the required review for 10 CFR 50.55(e) reportability was not accomplished.

Potential Violations: Misuse of the corrective action system is a violation of 10 CFR 50, Appendix B, Criterion XV and XVI and 10 CFR 50.55(e), Reporting of Construction Deficiencies.

Actions Required: LP&L shall prior to fuel load review all FCRs, DCNs EDNs, and T-B DNs to assure that proper corrective action was taken, including an adequate review by QA. This action shall include the steps required by 10 CFR 50, Appendix B, Criterion XVI, Corrective Action, and for Construction Deficiency Reporting, in 10 CFR 50.55(e). This review shall also include the

examination of improper voiding of all other design changes or discrepancy notices that affected safety-related systems or that were misclassified as non-safety related.

References

1. Ebasco Procedure, ASP-I-4, Design Control.
2. Ebasco Procedure, ASP-IV-73, Processing of Design changes in ESSE.
3. Ebasco Procedure, ASP-IV-70, Handling of Engineering Discrepancy Notices.
4. Ebasco Procedure, ASP-IV-122, Site Control and Processing of Defects/Non-Compliance Conditions to LP&L.
5. Ebasco Procedure, ASP IV-56, Control of Information Request Between Ebasco and Site Contractors.
6. Tompkins-Beckwith (T-B) Procedures:
TBP-17, Design Changes and Field Revisions.
TBP-12, Nonconformances and Discrepancies.
7. NISCO Procedure, Field Information Change Request Procedure.
8. Memorandum dated September 20, 1983, Mr. R. E. Greenwell to Distribution.
9. Memorandum dated October 27, 1983, Mr. R. E. Greenwell to Distribution.
10. Speed-memo dated December 12, 1983, Mr. M. Lambert to L. Lubinski.
11. Speed letter D. McCorkle to J. Tompeck, no date, File No. 0043.

NOTE: All procedure reviews included all revisions.

Statement Prepared By: _____
R. E. Farrell _____
Date

Statement Prepared By: _____
J. J. Harrison _____
Date

Statement Prepared By: _____
D. Summers _____
Date

Reviewed By: _____
Team Leader _____
Date

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

Approved By: _____
Task Management _____
Date

Document Name: *file*
SSER X A-302

Requestor's ID:
JOYCE

Author's Name:
RFarrell/JHarrison

Document Comments:
A-307, A-303b, A-306s, x

Document Name:
SSER A-296

Requestor's ID:
CONNIE

Author's Name:
R. W. Hubbard

Document Comments:

A-296, Rev. 1, 6/26/84

RETYPE REV. 2 (FINAL)

DO NOT REROUTE

WCC
6/29

A-296

FINAL SSER ROUTING

Revision :	0	1	2	3
Denny Crutchfield		<i>[Signature]</i>		
Jim Gagliardo		<i>[Signature]</i>		

~~Date 8510020317~~

SSER

Task: Allegations A-296, A-306a, 306k, 306l, 306m

Reference No.: 4-84-A-06/177, 184a, 184k, 184l, 184m

Characterization: It is alleged that Tompkins-Beckwith (T-B) may have violated the ASME Code requirements by failing to visually examine the shop pipe welds for leaks during hydrostatic tests.

Assessment of Allegation: ASME Code Section III requires that, at the completion of Class 1, 2, or 3 piping system or subsystem installation, a hydrostatic test be performed, during which a visual examination for leakage is made of all welds.

The allegation challenges the correctness of the T-B records on visual examination of pipe welds during hydrotesting. The ^{believe}allegor feels that all welds (shop and field) should be identified by name on the weld checkoff list and that it is particularly important to identify shop welds since they were not subjected to a hydrostatic test in the vendor's shop. The ^{believe}allegor claims that it is unlikely that shop welds were examined during hydrotesting, since they were not specifically mentioned on the test instruction sheet and do not appear on the weld checkoff list.

After completion of the Class 1 and 2 hydrostatic weld inspection, according to T-B's Hydrostatic Test Procedure TBP-36, the information from the Hydrostatic Test Data Sheet and the weld check-off list was combined with data from other sources and ASME Form N5, Certification of Inspection, was completed. The authorized nuclear inspector (ANI) signed the reverse side of Form N5 to verify that the piping was installed in accordance with the ASME Code.

The ASME Code and T-B Procedure TBP-36 specify only that a visual examination during hydrotesting for leakage is to be performed without reference to where the pipe weld was made. The Test Information Sheet, however, states that the inspection is to verify that there will be no leakage from any permanent field welds. The welds identified on the checkoff list are all field welds. Although the words "field welds" ^{were}are included in the hydrostatic test

instructions, an inspector conducting a visual review of all field welds for leakage would ^{most likely} certainly be aware of any shop welds that might be leaking. In addition, during the 10-minute minimum test period, plus the time required for visual examination, any drop in test pressure resulting from leakage would be noticeable and would indicate a condition requiring investigation.

The ASME Code does not require that all weld (shop or field) visual inspections be documented individually. A lack of documentation identifying each shop weld examined during field hydrotests does not violate the ASME Code. The basis for T-B system acceptance is the ANI's signature on Form N5, Certification of Inspection.

In assessing this allegation, the NRC staff reviewed the actual results obtained during the hydrostatic test. Although the wording on the test instruction sheet did not accurately reflect the intent of T-B Procedure TBP-36, the hydrostatic test was conducted in full accordance with the requirements of the procedure and the ASME Code.

The NRC staff discussed its findings with the alleged, who expressed general satisfaction with the resolution, but who feels that verification should be obtained to confirm that the shop welds were indeed inspected for leakage during the hydrostatic tests.

The staff concludes that this allegation has neither safety significance nor generic implications.

Potential Violations: The lack of confirmation that the shop welds were inspected may constitute a violation of the ASME Code.

Actions Required: LP&L shall, prior to issuance of the plant operating license, provide evidence to NRC for verifying visual shop weld inspections.

See Item No. 8 ⁱⁿ the Enclosure to AL, D. Eisenbud TO

J.M. Cain ✓ ~~11/13/84~~ June 13, 1984.

(LP&L) DATED

Handwritten note:
I am not
sure if
this is
the right
way to
handle it
to be
sure

Handwritten note:
LETTER FROM

References

1. T/B Hydrostatic Test Procedure TBP-36
2. T/B Hydrostatic Test Data Sheet
3. T/B Weld Check Off List
4. T/B Hydrostatic Test Instructions
5. W3-QAIRC-0584, June 24, 1983
6. W3-QA-25549, July 1, 1983
7. W3-QA-23487, February 23, 1983

Statement Prepared By: _____
R. W. Hubbard _____
Date _____

Reviewed By: _____
Team Leader _____
Date _____

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

Approved By: _____
Task Management _____
Date _____

SSER

8/28

Revise p.1
as noted
for Rev. 3

Task: Allegation A-171

Reference No.: 4-84-A-06-66

Characterization: It is alleged that, EBASCO's practice of allowing the use of oversize Cadweld sleeves to make Cadweld splices might have impaired the quality of Cadweld splicing, and that this practice was authorized by a "speed letter" which is not part of the quality system.

Assessment of Allegation: The NRC staff reviewed a file of speed letters, which were not part of a quality assurance records system, and extracted two letters which authorized the use of Cadweld sleeves one size larger than the reinforcing bar to be spliced. No documentation from the sleeve manufacturer, Erico Products, Inc. (Erico), could be located in the files for the Waterford 3 project, although several EBASCO personnel indicated that manufacturer's procedures had been followed when the larger splice sleeve was used. The NRC staff was aware of the fact that use of a larger sleeve has been an accepted industry practice as long as the powder charge was increased so as to completely fill the annular space between the bars and the sleeve with the Cadweld melt material.

At the request of the NRC staff, EBASCO obtained documents supporting the actions they had taken. These documents contained Erico's statment that the practice of using a sleeve of the next larger size than the reinforcing bars to be spliced was acceptable with an increase in the powder charge. Additionally the results of a series of tensile tests performed earlier by Erico to support the application of the larger sleeve were also obtained. Erico enclosed another set of documents which defined the necessary weights of the various charges required for increasing the powder charge. The NRC staff agreed that this practice and the associated information was acceptable.

The NRC staff was aware that the result of using a charge too small for a splice would be easily detected during a visual inspection by the QC inspector by observing incomplete filling in the end(s) of the sleeve.

Two other speed letters reviewed by the NRC staff addressed the use of a specific #6 Cadweld sleeve for use in a direct weld to a steel plate or shape with proper end preparation for a J-groove weld, and addressed the practice of adding powder to some cartridge kits. Both of these actions were acceptable to the NRC staff under the manufacturer's standard use of this commercial construction product.

The NRC staff had no major concern over the fact that speed letters were used in these instances. The practices noted in these speed letters were basically the recommendations by the manufacturer and represented standard construction practice. These practices had generally developed since the original specification for the project was prepared, so they were not specifically addressed by that specification, ~~from the standpoint of quality assurance it would have been preferable if these issues had been addressed by an FCR, DCN or a specification revision,~~ but the technical issues involved were acceptable to the NRC staff. This allegation has neither safety significance nor generic implications.

DOPE 8570620476

A-171
[Potential Violations: None.]

Actions Required: None.

References

1. Speed letter from EBASCO to J. A. Jones, JAJ No. 0257, September 29, 1977.
2. Speed letter from EBASCO to J. A. Jones, JAJ No. 0369, May 10, 1978.
3. Speed letter from EBASCO to J. A. Jones, JAJ No. 0440, October 19, 1978.
4. Speed letter from EBASCO to J. A. Jones, JAJ No. 0775, September 7, 1979.
5. Telex dated April 24, 1984 from Abe Cochran, Civil QC Supervisor, EBASCO to Mr. R. T. Benko of Erico Products, Inc.
6. Telex dated April 26, 1984 from Mr. R. T. Renko of Erico Products Inc. to Mr. Abe Cochran, EBASCO.
7. Letter dated April 26, 1984, from Mr. R. T. Renko of Erico to Abe Cochran, EBASCO.
8. Cadweld rebar splicing by Erico, 1980.

Statement Prepared By:

L. Yang

Date

Reviewed By:

Team Leader

Date

Reviewed By:

Site Team Leader(s)

Date

Approved By:

Task Management

Date

SSER

Task: Allegation A-171

Reference No.: 4-84-A-06-66

Characterization: It is alleged that, EBASCO's practice of allowing the use of oversize Cadweld sleeves to make Cadweld splices might have impaired the quality of Cadweld splicing, and that this practice was authorized by a "speed letter" which is not part of the quality system.

Assessment of Allegation: The NRC staff reviewed a file of speed letters, which were not part of a quality assurance records system, and extracted two letters which authorized the use of Cadweld sleeves one size larger than the reinforcing bar to be spliced. No documentation from the sleeve manufacturer, Erico Products, Inc. (Erico), could be located in the files for the Waterford 3 project, although several EBASCO personnel indicated that manufacturer's procedures had been followed when the larger splice sleeve was used. The NRC staff was aware of the fact that use of a larger sleeve has been an accepted industry practice as long as the powder charge was increased so as to completely fill the annular space between the bars and the sleeve with the Cadweld melt material.

At the request of the NRC staff, EBASCO obtained documents supporting the actions they had taken. These documents contained Erico's statment that the practice of using a sleeve of the next larger size than the reinforcing bars to be spliced was acceptable with an increase in the powder charge. Additionally the results of a series of tensile tests performed earlier by Erico to support the application of the larger sleeve were also obtained. Erico enclosed another set of documents which defined the necessary weights of the various charges required for increasing the powder charge. The NRC staff agreed that this practice and the associated information was acceptable.

The NRC staff was aware that the result of using a charge too small for a splice would be easily detected during a visual inspection by the QC inspector by observing incomplete filling in the end(s) of the sleeve.

Two other speed letters reviewed by the NRC staff addressed the use of a specific #6 Cadweld sleeve for use in a direct weld to a steel plate or shape with proper end preparation for a J-groove weld, and addressed the practice of adding powder to some cartridge kits. Both of these actions were acceptable to the NRC staff under the manufacturer's standard use of this commercial construction product.

The NRC staff had no major concern over the fact that speed letters were used in these instances. The practices noted in these speed letters were basically the recommendations by the manufacturer and represented standard construction practice. These practices had generally developed since the original specification for the project was prepared, so they were not specifically addressed by that specification. From the standpoint of quality assurance it would have been preferable if these issues had been addressed by an FCR, DCN or a specification revision, but the technical issues involved were acceptable to the NRC staff. This allegation has neither safety significance nor generic implications.

① We made the judgment
and stand by it. The
information & techniques
the licensee used were
known in the industry
as being acceptable as
we stated!

Lawrence
3/15/84

Potential Violations: None.

Actions Required: None.

References

1. Speed letter from EBASCO to J. A. Jones, JAJ No. 0257, September 29, 1977.
2. Speed letter from EBASCO to J. A. Jones, JAJ No. 0369, May 10, 1978.
3. Speed letter from EBASCO to J. A. Jones, JAJ No. 0440, October 19, 1978.
4. Speed letter from EBASCO to J. A. Jones, JAJ No. 0775, September 7, 1979.
5. Telex dated April 24, 1984 from Abe Cochran, Civil QC Supervisor, EBASCO to Mr. R. T. Benko of Erico Products, Inc.
6. Telex dated April 26, 1984 from Mr. R. T. Renko of Erico Products Inc. to Mr. Abe Cochran, EBASCO.
7. Letter dated April 26, 1984, from Mr. R. T. Renko of Erico to Abe Cochran, EBASCO.
8. Cadweld rebar splicing by Erico, 1980.

Statement Prepared By:

L. Yang

Date

Reviewed By:

Team Leader

Date

Reviewed By:

Site Team Leader(s)

Date

Approved By:

Task Management

Date

Document Name:
SSER X A-88

Requestor's ID:
JOYCE

Author's Name:
R. W. Hubbard

Document Comments:
A-89, A-90, A-91, A-315

Final

~~Dupe~~
8510020432

SSER

Task: Allegation Nos. A-88, A-89, A-90, A-91, A-315

Reference Number: 4-83-A-88; 4-84-A-12

Characterization: It is alleged that the hydrostatic testing required by the ASME Code for instrumentation and control tubing (ASME Code Class 2 and 3 piping) systems installed by the Mercury Construction Company had three different but related problems: (1) that EBASCO Nonconformance Report (NCR) W3-6719 concerning hydrostatic test pressures was improperly closed; (2) that test data sheets were missing or had incorrect static head calculations, and were unsigned during field tests; and (3) that test gauge readings were improperly recorded.

Assessment of Allegation: According to the ASME Code, at the completion of assembly work on a piping system, a hydrostatic test must be performed to verify the integrity of the system. The system involves introducing water into the system at a pressure that is 1.25 times greater than the design pressure for the piping. Prior to the test, a test instruction sheet describing the steps to be taken during the startup, running, and completion of the test is prepared; any special notes are included. A hydrostatic test data sheet is also made, which includes specific information about the system being tested, such as design pressure, test pressure, and minimum test pressure. During the test, the readings from two gauges located in close proximity are recorded on the test data sheet.

First, it was alleged that an ASME Code violation occurred because of underpressurization of some systems.

The NRC staff learned that NCR W3-6719 resulted from an EBASCO letter that questioned whether the additional pressure resulting from the static head of water present during the hydrostatic test had been considered in determining the system test pressure. The accompanying examples were based on the principle that the minimum hydrotest pressures should occur throughout the whole system.

EBASCO Site Support Engineering (ESSE) responded to the NCR by stating that the hydrostatic pressure had been adequate. They based their rebuttal on ASME Code Interpretation III-1-78-11, which states that "for piping systems it is a requirement of NB, NC, ND, NE, NF, NG-6221(b) of Section III that all items within a designated and protected system be hydrostatically tested at 1.25 times the system design pressure at the location that determined the design pressure." This is considered the system's lowest point. The system design pressure at this point includes the pressure created by the static head of water present in the system.

The NRC staff agreed that this interpretation always results in the lowest design pressure and corresponding lowest test pressure at the highest point in the system. The staff believes that the appropriate pressure was considered in determining the system test pressure. Thus, this part of the allegation has neither safety significance nor generic implications.

Secondly, it was alleged that neither the information needed to determine the static head pressure nor the resulting calculation were available or included in the record package, and that not all the forms were signed.

The NRC staff found that most test instruction sheets contained statements that "static head pressure for this test is within the \pm tolerance given for test pressure on Attachment A (Hydrotest Data Sheet) and that if the test is conducted within these tolerances then neither maximum or minimum pressures will be violated." The NRC staff reviewed the test instruction sheets and agreed that there was no information, as alleged, in the hydrotest package; however, the staff found that static head pressure was included in the hydrotest pressure, and concluded that determination of the static head pressure was not necessary and was only important to keep the hydrotest pressure within the tolerances specified. Thus, this part of the allegation has neither safety significance nor generic implications.

Thirdly, it was alleged that gauge readings during the hydrostatic test were improperly recorded, because the gauges should not have read the same pressure due to the deviations found during calibration readings.

The NRC staff believes it was very possible for the same recorded readings to occur, because both gauges were parallel (side by side). EBASCO kept sufficient control on gauge calibration to assure that at least one gauge was operational during all tests. EBASCO NCR W3-6719 stated that both test gauges were documented as having the same pressure readings, and that these pressure readings were "usually the same suggested pressure listed at the top of the test data sheet."

The NRC staff determined that, at the start of each test, EBASCO calibrated the gauges and verified the results. At the completion of the test, a second calibration was made. When the post-test results were out of tolerance, the data from that gauge were discarded, since only one operational gauge was needed to verify the hydrostatic test pressure. In all cases reviewed by the NRC staff, at least one value was within the tolerances required. Also, the NRC staff determined that any errors that might have occurred, such as loss of calibration, would have done so after the test, because EBASCO used needle valves to adjust the test pressure and to obtain close control of the exact test required. Thus, this part of the allegation has neither safety significance nor generic implications.

In assessing this allegation, the NRC staff also reviewed calculations and assumptions contained in the ESSE response to the EBASCO NCR, and found that the NCR was properly closed out. An interpretation by the ASME Code group which defined the method of calculating the hydrotest pressure negated the need for static head pressure calculations. The staff also reviewed Mercury hydrostatic test procedures and analyzed the validity of EBASCO's engineering calculations used in justifying the NCR closeout. The staff found the test procedures and calculations acceptable and in conformance with ASME Code requirements.

This allegation has neither safety significance nor generic implications.

Potential Violations: None.

Action Required: None.

References

1. Test Instruction Sheet.
2. Hydrostatic Test Data Sheet.
3. EBASCO Letter W3QA1RG-0705, August 4, 1983.
4. ASME Code Interpretation III-1-78-11, January 5, 1978.

Statement Prepared by _____
R. W. Hubbard

Date

Reviewed by: _____
Team Leader

Date

Reviewed by: _____
Site Team Leader

Date

Reviewed by: _____
Task Management

Date

SSER

Task: Allegation Nos. A-88, A-89, A-90, A-91, A-315

Reference Number: 4-83-A-88; 4-84-A-12

Characterization: It is alleged that the hydrostatic testing required by the ASME Code for instrumentation and control tubing (ASME Code Class 2 and 3 piping) systems installed by the Mercury Construction Company had three different but related problems: (1) that EBASCO Nonconformance Report (NCR) W3-6719 concerning hydrostatic test pressures was improperly closed; (2) that test data sheets were missing or had incorrect static head calculations, and were unsigned during field tests; and (3) that test gauge readings were improperly recorded.

Assessment of Allegation: According to the ASME Code, at the completion of assembly work on a piping system, a hydrostatic test must be performed to verify the integrity of the system. The system involves introducing water into the system at a pressure that is 1.25 times greater than the design pressure for the piping. Prior to the test, a test instruction sheet describing the steps to be taken during the startup, running, and completion of the test is prepared; any special notes are included. A hydrostatic test data sheet is also made, which includes specific information about the system being tested, such as design pressure, test pressure, and minimum test pressure. During the test, the readings from two gauges located in close proximity are recorded on the test data sheet.

First, it was alleged that an ASME Code violation occurred because of underpressurization of some systems.

The NRC staff learned that NCR W3-6719 resulted from an EBASCO letter that questioned whether the additional pressure resulting from the static head of water present during the hydrostatic test had been considered in determining the system test pressure. The accompanying examples were based on the principle that the minimum hydrotest pressures should occur throughout the whole system.

EBASCO Site Support Engineering (ESSE) responded to the NCR by stating that the hydrostatic pressure had been adequate. They based their rebuttal on ASME Code Interpretation III-1-78-11, which states that "for piping systems it is a requirement of NB, NC, ND, NE, NF, NG-6221(b) of Section III that all items within a designated and protected system be hydrostatically tested at 1.25 times the system design pressure at the location that determined the design pressure." This is considered the system's lowest point. The system design pressure at this point includes the pressure created by the static head of water present in the system.

The NRC staff agreed that this interpretation always results in the lowest design pressure and corresponding lowest test pressure at the highest point in the system. The staff believes that the appropriate pressure was considered in determining the system test pressure. Thus, this part of the allegation has neither safety significance nor generic implications.

Secondly, it was alleged that neither the information needed to determine the static head pressure nor the resulting calculation were available or included in the record package, and that not all the forms were signed.

The NRC staff found that most test instruction sheets contained statements that "static head pressure for this test is within the \pm tolerance given for test pressure on Attachment A (Hydrotest Data Sheet) and that if the test is conducted within these tolerances then neither maximum or minimum pressures will be violated." The NRC staff reviewed the test instruction sheets and agreed that there was no information, as alleged, in the hydrotest package; however, the staff found that static head pressure was included in the hydrotest pressure, and concluded that determination of the static head pressure was not necessary and was only important to keep the hydrotest pressure within the tolerances specified. Thus, this part of the allegation has neither safety significance nor generic implications.

Thirdly, it was alleged that gauge readings during the hydrostatic test were improperly recorded, because the gauges should not have read the same pressure due to the deviations found during calibration readings.

The NRC staff believes it was very possible for the same recorded readings to occur, because both gauges were parallel (side by side). EBASCO kept sufficient control on gauge calibration to assure that at least one gauge was operational during all tests. EBASCO NCR W3-6719 stated that both test gauges were documented as having the same pressure readings, and that these pressure readings were "usually the same suggested pressure listed at the top of the test data sheet."

The NRC staff determined that, at the start of each test, EBASCO calibrated the gauges and verified the results. At the completion of the test, a second calibration was made. When the post-test results were out of tolerance, the data from that gauge were discarded, since only one operational gauge was needed to verify the hydrostatic test pressure. In all cases reviewed by the NRC staff, at least one value was within the tolerances required. Also, the NRC staff determined that any errors that might have occurred, such as loss of calibration, would have done so after the test, because EBASCO used needle valves to adjust the test pressure and to obtain close control of the exact test required. Thus, this part of the allegation has neither safety significance nor generic implications.

In assessing this allegation, the NRC staff also reviewed calculations and assumptions contained in the ESSE response to the EBASCO NCR, and found that the NCR was properly closed out. An interpretation by the ASME Code group which defined the method of calculating the hydrotest pressure negated the need for static head pressure calculations. The staff also reviewed Mercury hydrostatic test procedures and analyzed the validity of EBASCO's engineering calculations used in justifying the NCR closeout. The staff found the test procedures and calculations acceptable and in conformance with ASME Code requirements.

This allegation has neither safety significance nor generic implications.

Potential Violations: None.

Action Required: None.

References

1. Test Instruction Sheet.
2. Hydrostatic Test Data Sheet.
3. EBASCO Letter W3QA1RG-0705, August 4, 1983.
4. ASME Code Interpretation III-1-78-11, January 5, 1978.

Statement Prepared by _____

R. W. Hubbard

Date

Reviewed by: _____

Team Leader

Date

Reviewed by: _____

Site Team Leader

Date

Reviewed by: _____

Task Management

Date