

SSER

Task: Allegation A-223

Ref. No.: 4-84-A-06/11

Characterization: The allegation is that there were documentation discrepancies between the field construction and QC packages, that Operational Control Records (OCRs) 492 and 903 had Penetrant Test (PT) reports and signatures missing and that repair data and documentation was confusing.

Assessment of Allegation: The implied significance of this allegation is that incomplete, missing, and conflicting documentation raise a question regarding the quality of the installation and the inspection results.

The NRC staff investigated this allegation by reviewing nine OCR packages, including OCRs 492 and 903. This was done to determine if the problems identified were generic. Systems reviewed included Reactor Coolant, Safety Injection, Feedwater, Charging Water, and Main Steam.

The review of OCRs 492 and 903 revealed no missing PT reports nor missing signatures. Ebasco originally reviewed all Mercury packages in accordance with QAI-9. Deficiency Reports (DR) were issued and tracked for all discrepancies noted during the Ebasco review. Deficiencies were corrected prior to system turnover.

During the NRC staff review of OCRs 1782 and 1924, one weld from each package was found to have missing PT record. LP&L and Ebasco had PTs performed on these two welds and both welds were acceptable.

The staff also found that field construction records (green sheets) were destroyed and that the only remaining record of work performed was the QA copy (pink sheets). These QA records were generally in poor physical condition and because of the many crossouts and explanatory notes, were confusing and difficult to follow however, the records were acceptable and adequately documented the actual as built configuration. Later revisions of weld record QA sheets showed significant improvement in the quality of the records and had original data recorded on the original record form.

The NRC staff reviewed the QA documentation for approximately 600 welds and concluded the following: the missing PT records were isolated cases; the records were poorly maintained; weld history was difficult to follow; the filing system was extremely cumbersome, making retrieval difficult; and records were not always original copies (but originals are not a requirement). Even though the noted problems are a NRC concern, all requested records were available and were found to be acceptable. This allegation therefore has neither safety significance nor generic implications.

Potential Violations: None.]

Actions Required: None.

8510010517 840611
PDR ADOCK 05000382
E PDR

References:

1. Mercury Operational Control Records (OCR):

OCR 492
903
1019
1020
1022
1855
1881
1782
1924

2. DCN-NYC-IC-232R1-33 randomly selected instrument lines listed therein.

Statement Prepared By: J. W. Farren
Date

Reviewed By: Team Leader
Date

Reviewed By: Site Team Leader(s)
Date

Approved By: Task Management
Date

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Potential Violations: None.

Actions Required: None.

retrievability

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Document Name:
SSER A-242

Requestor's ID:
STCINDY

Author's Name:

Document Comments:

~~DOPE 8509300530~~

SSER

Task: Allegation A-242

Reference Number: 4-84-A-06-128

Characterization: The allegation is that hydrostatic tests performed without the use of highpoint vents are valid. This allegation raised additional concerns about the adequacy of instrument tubing installations relative to sloping requirements.

Assessment of allegation: The NRC staff review of LP&L's Final Safety Analysis Report (FSAR) and applicable procedures reveals that all hydrostatic tests are to conform to the requirements of ASME III, Classes 2 and 3 Article NC-6000, "Testing," which requires that "vents shall be provided at all highpoints of the component or system in the position in which the test is to be conducted, to purge air pockets while the component or system is filling." This requirement is restated in Ebasco Procedure ASP-IV-63 Section 7.4.4. The use of highpoint vents during hydrostatic testing was indeed a requirement, based upon an FSAR commitment to the applicable testing section of the ASME Code.

The NRC staff examination of 27 hydrostatic document test packages, including the applicable valve lineup sheets and isometrics, revealed that for each of the corresponding hydrostatic tests, highpoint vents had not been used. The staff also reviewed Field Change Request FCR-1CP-19, Rev. 2. This document, issued August 6, 1980, does not mention the use of highpoint vents. An examination of the hydrostatic test index reveals that all Waterford Unit 3 hydrostatic tests had been performed on dates subsequent to the issuance of the field change request (FCR), and would therefore have been performed in accordance with its requirements.

During the NRC examination of the hydrostatic test packages, it was observed that each of the 27 packages contained a "Test Instructions" sheet, which instructs workers to "Fill lines with root valve open until you can hear water running into the process pipe, then close the root valve." This instruction was found only on the test instructions sheet, and not as part of the approved procedures for performance of hydrostatic test. Discussions with LP&L revealed that this instruction was their preferred method of venting the system to be tested, and that this was an appropriate means of assuring that the system under test is full.

Although LP&L failed to implement the requirement for use of high- point vents during hydrostatic tests, NRC considers the alternate method of venting systems through the root valve to the process line sufficient to preclude an invalidation of hydrostatic tests. Since a primary function of any hydrostatic test is to assure the integrity of the system tested, the verification of test parameters, such as pressure and time, and the required physical inspection of components comprising the system, are essential keys to providing assurance of successful completion. The staff examination of test data reports indicates

that quality verification of these parameters had been accomplished. However, of potential concern are the effects of an improperly vented system on instruments performing an operational function. In particular, the effects of air entrapment upon instrument time response characteristics. This matter was discussed with LP&L personnel, who indicated that LP&L Maintenance Procedure MI-4-315, "Blowdown and Backfilling Instrument Impulse Lines," had been developed to alleviate any problems in this area, and that if, during operation, installations are identified which are susceptible to air entrapment, they will be reworked to correct the problem. A review of Sections 8.1 through 8.3 of this procedure revealed that appropriate controls had been established to minimize air entrapment.

A related issue of this allegation concerns the adequacy of instrument tubing installations in view of the elimination of slope requirements by engineering analysis. A staff review of Ebasco letter LW3-1191-82 revealed that in general it was LP&L's position that slope deviations have no effect on instrument function.

This documented position could be interpreted to be a generic acceptance of slope deviations. However, the NRC staff review of the applicable specification and procedures revealed that slope requirements of one-fourth inch per foot were consistently specified, and the review of an Ebasco memorandum of September 28, 1982, indicates that ESSE will continue to review each nonconformance report that identifies a questionable slope in tubing installations. To confirm this, the staff examined 54 Mercury nonconformance reports. Each NCR examined that cited slope deviations was initiated between August 30, 1982 and May 31, 1983. The staff observed that disposition of slope deviations had been performed on a case-by-case basis. Dispositions included rework, use-as-is, or a combination of these categories. Many slope deviations were those which involve inadequate slope; that is, a slope which was less than the specific one-fourth-inch per foot, or no slope, indicating a level line.

In some instances, however, slope deviations exhibited negative or reverse configurations. NRC reviewed the dispositions for these conditions. Several installations were required to be reworked; however, a significant number were dispositioned use-as-is. The technical justification for this disposition was based on case-specific analysis. Consideration of variables, such as operating pressure, line configuration and instrument function, were evaluated by the engineer in determining the acceptability of each installation. In summary, NRC observed that deviations in instrument tubing slope requirements had been consistently documented and evaluated by the applicant.

The NRC finds that the applicant has failed to comply with FSAR and procedural commitments for the use of highpoint vents during the performance of hydrostatic test. However, based upon other factors, the technical significance of this issue is considered minimal in its effect upon hydrostatic testing. These findings were discussed with the allegor.

In addition, NRC finds no evidence that would indicate that slope requirements had been generically eliminated from design, construction, or inspection processes.

This allegation has neither safety significance nor generic implications.

Potential Violations: Contrary to 10 CFR 50 Appendix B Criterion XI, Ebasco Procedure ASP-IV-63, and ASME III Class 2 and 3 Article NC-6211, hydrostatic tests were not performed in accordance with written test procedures which incorporate the requirements and acceptable limits contained in applicable design documents.

Actions Required: LP&L must change the Final Safety Analysis Report to delineate an exception to Subsection NC-6211 of the ASME III Code requiring use of high point vents.

References:

1. Waterford Unit 3 - Final Safety Analysis Report
2. Ebasco Procedure - ASP-IV-63 "H" Draft, JULY 24, 1982, "Guidelines for Hydrostatic and Pneumatic Integrity Test"
3. Mercury Quality Control Procedure - MCP-2170 Rev. 7, February 20, 1983, "Hydrostatic or Pneumatic Testing Procedure"
4. ASME III 1974 Edition, Summer 1976 Addenda, Article NC-6000 Testing.
5. Ebasco Field Change Request - No. FCR-1CP-19 Marcy 21, 1980, FCR-1CP-19 Rev. 1 April 28, 1980, FCR-1CP-19 Rev. 2, August 6, 1980.
6. (27) Hydrostatic Document Test Packages
7. LP&L Maintenance Procedure - MI-4-315 Rev. 0, "Blowdown and Backfilling Instrument Impulse Lines" April 25, 1983.
8. Hydrostatic Test Index, Final Issue August 31, 1983.
9. (54) Mercury Nonconformance Reports, detailing Tubing Slope Violations
10. Ebasco Letter No. LW3-1191-82, from R. K. Stampley to George B. Rogers dated September 17, 1982.
11. Ebasco Interoffice Correspondence, File #ES-6369-82 from J. Debruin to J. Gutierrez dated September 28, 1982.
12. LP&L Letter W3P84-0468 from R. W. Naylor to File #Q3-A17.02.04 dated February 24, 1984.

Attachment 1 - Hydrostatic Test Package Sample
Attachment 2 - Conversation Record

- Attachment 3 - ASME III Article NC-6000
- Attachment 4 - Ebasco Procedure ASP-IV-63
- Attachment 5 - Mercury QCP - MCP-2170
- Attachment 6 - Field Change Request #FCR-1CP-19 Rev. 2
- Attachment 7 - Test Instructions Sheet
- Attachment 8 - LP&L Maintenance Procedure MI-4-315
- Attachment 9 - Nonconformance Report Samples
- Attachment 10 - Ebasco Letter LW3-1191-82
- Attachment 11 - Interoffice Correspondence ES-6369-82

Prepared by

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Reviewed by:

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HYDROSTATIC TEST PACKAGES

ALLEGATION SSER A-128

<u>Pck. No.</u>	<u>System</u>	<u>TDS Date</u>	<u>ASME Class</u>	<u>Comments</u>
M65-36-3	Component Cooling	12/2/81	III, P-3	
M67-36-3	Component Cooling	12/4/81	III, P-3	
M113-36-3	Component Cooling	3/15/82	III, P-3	
M115-36-3	Component Cooling	2/1/82	III, P-3	
M739-66	Plant Protection	6/14/82	III, P-3	
M-231-59	Containment Sp.	6/7/82	III, P-3	
M-540-59	Containment Sp.	3/10/82	III, P-3	
M-541-59	Containment Sp.	4/25/83	III, P-3	
M-542-59	Containment Sp.	3/9/83	III, P-3	
M-543-59	Containment Sp.	3/14/83	III, P-3	
M-717-59	Containment Sp.	3/9/83	III, P-3	
M-808-59	Containment Sp.	5/6/83	III, P-3	
M-256-52A-1	Reactor Coolant ^{Pp}	4/24/82	III, P-2	
M-262-52A-1	Reactor Coolant ^{Pp}	5/19/83	III, P-2	
M-207-76	Steam Generators	5/31/83	III, P-2	

M-211-76	Steam Generators	5/4/83	III, P-2
M-865-52A-2	Reactor Vessel Loop Note: Valve Lineup indicates vent used.	8/13/83	III, P-2
M-868-52A-2	Reactor Vessel Loop	7/29/83	III, P-2
M-860-52A-2	Reactor Vessel Loop Note: Valve lineup indicates vent used.	8/25/83	III, P-2

<u>Pck. No.</u>	<u>System</u>	<u>TDS Date</u>	<u>ASME Class</u>	<u>Comments</u>
M336-52B	Pressurizer & Quench Tank	6/26/83	III, P-2	
M858-52A-2	Reactor Vessel & Loop	8/22/83	III, P-2	
M394-73	Emergency Feed- water	8/10/83	III, P-3	
M395-73	Emergency Feed- water	1/8/83	III, P-3	
M737-73	Emergency Feed- water	5/18/83	III, P-3	
M738-73	Emergency Feed- water	5/20/83	III, P-3	
M533-60C	Safety Injection tank	6/25/83	III, P-2	

- 3 -

M531-60-C

Safety Injection
Tanks

6/25/83

III, P-2

Attachment 9
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Nonconformance Reports Mercury No./Ebasco No.	Slope Deviations Date	Disposition
1237/4692	11/22/82	Accept-as-is
2299/5708 A, B	2/17/83	
1311/4881	2/17/83	Accept-as-is
1675/5286	2/1/83	Accept-as-is
1849/5386	11/4/82	Rework
1392/5016	11/4/82	Accept-as-is
1319/5017	11/4/82	(Not a slope issue)
1388/5019	11/4/82	Accept-as-is
1401/5045	11/8/82	Accept-as-is
1427/5108	11/11/82	Accept-as-is
1428/5109	11/11/82	Accept-as-is
1532/5137	11/14/82	Accept-as-is
1536/5153	11/15/82	Accept-as-is
1539/5155	11/15/82	Accept-as-is
1540/5156	11/15/82	Accept-as-is
1541/5157	11/15/82	Accept-as-is
1542/5158	11/15/82	Accept-as-is & Rework
1543/5159	11/15/82	Accept-as-is
1517/5176	11/18/82	Accept-as-is
1518/5177	11/18/82	Accept-as-is & Rework
1519/5178	11/18/82	Accept-as-is & Rework
1522/5180	11/18/82	Accept-as-is
1618/5209	11/23/82	Accept-as-is & Rework
1648/5220	11/27/82	Accept-as-is
1627/5240	11/26/82	Accept-as-is
2195/5700		Rework

Attachment 9

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Nonconformance Reports
Mercury No./Ebasco No.

Slope Deviations

Date

Disposition

1601/5241	11/27/82	Rework
1607/5325 A, B	12/13/82	Accept-as-is
1049/4696	10/6/82	Accept-as-is
0759/4437	8/30/82	Accept-as-is
0984/4652	9/29/82	Accept-as-is
1056/4692	10/6/82	Accept-as-is
1050/4695	10/6/82	Accept-as-is
0981/4811	10/19/82	Accept-as-is
1772/5330	12/4/82	Accept-as-is
1422/5131	11/13/82	Accept-as-is
1193/5280	12/8/82	Rework/Accept-as-is
2826/5921	3/18/83	Rework
3305/6329	5/31/83	Rework
3643/6569	5/31/83	Rework
0986/4720	10/4/82	Accept-as-is
0988/4722	10/2/82	Accept-as-is
1036/4760	10/11/82	Accept-as-is
1109/4784	10/15/82	Accept-as-is
1045/5410	12/29/82	Rework
2855/5940	3/22/83	Rework
1322/5104		Accept-as-is
2120/5619		Rework
2298/5714		Rework
0613/4218		Accept-as-is
1616/5207		Accept-as-is
1629/5219		Accept-as-is
0753/4445		

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