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FEB 22 1989

Docket Nos. 50-250, 50-251
License Nos. DPR-31, DPR-41

Florida Power and Light Company
ATTN: Mr. W. F. Conway
Senior Vice President - Nuclear
P. O. Box 14000
Juno Beach, FL 33408-0420

Gentlemen:

SUBJECT: NRC INSPECTION REPORT NOS. 50-250/89-05 AND 50-251/89-05

This refers to the Nuclear Regulatory Commission (NRC) inspection conducted by R. W. Newsome on January 30 - February 3, 1989. The inspection included a review of activities authorized for your Turkey Point facility. At the conclusion of the inspection, the findings were discussed with those members of your staff identified in the enclosed Inspection Report.

Areas examined during the inspection are identified in the report. Within these areas, the inspection consisted of selective examinations of procedures and representative records, interviews with personnel, and observation of activities in progress.

Within the scope of the inspection, no violations or deviations were identified.

In accordance with Section 2.790 of the NRC's "Rules of Practice," Part 2, Title 10, Code of Federal Regulations, a copy of this letter and its enclosure will be placed in the NRC Public Document Room.

Should you have any questions concerning this letter, please contact us.

Sincerely,



Caudle A. Julian, Chief
Engineering Branch
Division of Reactor Safety

Enclosure:
NRC Inspection Report

cc w/encl:
J. S. Odom, Vice President
Turkey Point Nuclear Plant
J. E. Cross, Plant Manager
Turkey Point Nuclear Plant
L. W. Bladow, Plant QA Superintendent
J. Arias, Jr., Regulatory and Compliance
Supervisor
State of Florida

bcc: (See page 2)

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REPORT DETAILS

1. Persons Contacted

Licensee Employees

- *J. Arias, Jr., Senior Technical Advisor
- R. Atkisson, Technical Licensing/Juno Beach Staff
- F. Carr, NDE Supervisor/Juno Beach Staff
- *R. Earl, QC Supervisor
- *S. Franzone, Lead Engineer/Juno Beach Staff
- *S. Hale, Engineering Project Manager
- *R. Hart, Regulation and Compliance Supervisor
- *L. Pearce, Operations Superintendent
- *R. Reinhardt, QA Engineer
- *R. Stevens, Manager Plant Licensing
- L. Thompson, Mechanical Engineer
- *H. Young, Project Site Manager

Other licensee employees contacted during this inspection included craftsmen, engineers, mechanics, security force members, technicians, and administrative personnel.

NRC Resident Inspectors

- R. Butcher, Senior Resident Inspector
- G. Schnebli, Resident Inspector
- T. McElhinney, Resident Inspector

*Attended exit interview

Acronyms and initialisms used throughout this report are listed in the last paragraph.

2. Replacement and Repair of Reactor Vessel Bottom Mounted Instrumentation Conduits (57050) (57060) (73052) (73055) (55150)

- Background

During the performance of the Unit 3 Reactor Coolant System Overpressure Test, leaks were identified on three Bottom Mounted Instrumentation (BMI) conduits at the seal table. All of the conduits for Unit 3 were liquid penetrant (PT) inspected and a total of six conduits were identified as having PT indications. The locations for two of the leaking conduits that contained through wall cracks were J-7 and J-12. The third leaking conduit, identified as E-5, was leaking at the lower 5/16" nut adjacent to the 3/4" to 5/16" reducer union as a result of insufficient mechanical sealing at



this location. Conduit E-5 was corrected as a maintenance item. The remaining four conduits showing PT indications were at locations N-12, M-3, H-4, and R-8. Appropriate Nonconformance Reports (NCR) were written requiring that two conduits, J-7 and J-12, be repaired by replacing the top 5 feet of the conduit at the seal table. The indications identified on conduits N-12, M-3, and H-4 were removed by light grinding at the affected areas and a final PT examination and wall thickness verification was accomplished. The PT indication identified on conduit R-8 was located on the structural weld that joins the seal table to the conduit and the licensee has decided not to remove this indication at this time but will reinspect this weld at the next planned outage and determine appropriate action at that time.

In order to isolate the sections of conduits J-7 and J-12 that were being replaced, a freeze seal was established below the cut locations. The conduits were cut at approximately 5 feet below the seal table, disassembled above the seal table and the seal table itself cut (approximately 3 inch square) around the affected conduits to allow the conduits to be removed. A coupling and new guide conduit was installed which met or exceeded the original design requirements and a plate was welded to the seal table to replace that portion cut out. To accommodate a slight shortening of the length of the thimble above the seal table, the guide conduit stub was shortened and the support for the BMI thimble isolation valves were revised by slotting the holes in the support.

The above changes do not constitute an unreviewed safety question or require a change to the plant Technical Specifications. Westinghouse has performed a 10 CFR 50.59 review for each of these items and concluded that no unreviewed safety question exists.

The preliminary root cause evaluation performed by Westinghouse on the Unit 3 removed conduits J-7 and J-12 indicated that the likely cause for the cracks is stress corrosion cracking which is chloride induced. The point of origin of the linear indications is believed to be pitted areas. The mode of propagation is transgranular and the cracks are outside diameter initiated. Westinghouse determined that the rounded indications were visible using PT methods of examination and that PT was the best method for identifying pits and cracks on the conduits. Indications of less than 1/16" dimension were not considered to be detrimental to the item under test. The finalized root cause evaluation report for conduits J-7 and J-12 is expected from Westinghouse near the end of February 1989.

Based on the findings in Unit 3, the licensee PT inspected the conduits at the seal table in Unit 4. This inspection revealed 4 conduits which exhibited indications. These conduits were located at positions F-2, H-1, N-10, and E-11. By the conclusion of this NRC inspection, the licensee had initiated NCR N-89-0186 which requires these indications to be removed by mechanical means and the final surface to receive a PT examination and verification that the wall thickness requirements have not been violated. The removal of these



PT indications had not been accomplished by the end of this NRC inspection.

The NRC inspector conducted reviews of procedures and documentation records, conducted interviews with licensee/contractor personnel, and observed activities relative to the corrective actions accomplished by the licensee. These reviews and observations were conducted in order to determine whether NDE and welding activities were being accomplished in accordance with applicable codes and specifications and regulatory requirements. The reviews and observations conducted by the NRC inspector are documented in the following sub-paragraphs.

a. Procedure/Document reviews

The following listed procedures/documents were reviewed in order to determine the adequacy of the licensee's quality control system, examination procedures, and welding program relative to the required examinations, replacement welding, and repair activities associated with the replacement/repair of the BMI conduits.

- NCR 89-0030
- NCR N-89-0114
- ASP-2 (R5) Preparation of Site Procedures
- ASP-9 (R6) Plant Construction Administrative site Procedure Turkey Point Plant "Material Control"
- ASP-24 (R0) Plant Construction Administrative Site Procedure Turkey Point Plant "System Cleanliness"
- ASP-6 (R7) Plant Construction Administrative Site Procedure Turkey Point Plant "Control Of Welding Special Processes"
- W SECL-89-065 W Nuclear Safety Evaluation Check List required by 10CFR50.59
- P C/M 89-067 (R0) Flux Map Thimble Guide Conduit Repairs
with CRN-M-1845,
1846,1847
- DEEP 89-067 Flux Map Thimble Guide Conduit Repairs
 - Design Interface Record
 - Nuclear Safety Evaluation Checklist
- Procedure For Freeze Seal Application
- T.S. 9.5 (R2) Liquid Penetrant Inspection
with TCR-07



- WELD CONTROL MANUAL

WPS-43F (R7)	Weld Process Specification WPS-43
WTS-6 (R2)	Weld Procedure Qualification Requirements
WTS-5 (R2)	Welding Performance Qualification Requirements
WTS-3 (R4)	Weld Material Control
Standard No. M-3.50 (R5)	Inspection And Nondestructive Examination Requirements Nuclear And Non-Nuclear Welds
Standard No. M-3.45 (R3)	General Welding Standard Nuclear Piping And Components

- Process Sheet 89-112 (R2) Flux Map Thimble Guide Conduit Repairs J-7 (sign off sheets)
- Process Sheet 89-113 (R2) Flux Map Thimble Guide Conduit Repairs J-12 (sign off sheets)
- Process Sheet 89-107 (R1) Seal Table Flux Map Thimble Guide Conduit Repair H-4, M-3, N-12 (sign off sheets)

- b. Portions of the above listed documents were reviewed in order to verify that the repair organizations program adequately satisfy the requirements of the ASME B&PV code. The repair organization is Florida Power and Light (FP&L), however, the welders are employed by Bechtel with FP&L supervising all welding activities and has contractual control which provides the necessary authority to assign and remove welders as required.
- c. The inspector reviewed the replacement conduit and coupling material certifications records to verify the material being used as replacement was as required by specification requirements.
- d. The inspector reviewed the Weld Material Request Reports listed below in order to verify filler metal compatibility with the replacement basemetal material.

Request Report No.

30063	30066	30064
30065	30069	30071
40159	30074	30072

- e. The inspector reviewed the qualification documentation for four of the Bechtel welders which were used to make repair welds on conduits J-7 and J-12. These reviews were made in the following areas: person certified; activity qualified to perform; effective period of certification; basis used for certification; and, periodic recertification.



- f. The inspector reviewed the below listed liquid penetrant materials certification records to ascertain if the sulfur and halogen content of the material was within acceptable content limits. These materials were used to perform examinations on the BMI conduits.

<u>Materials</u>	<u>Batch Number</u>
Liquid Penetrant	87A015
Cleaner/Remover	87M025
Developer	88L019, 84A062

- g. The inspector reviewed the qualification documentation for the below listed examiners in the following areas: employer's name; person certified; activity qualified to perform; effective period of certification; signature of employer's designated representative; basis used for certification; and, annual visual acuity, color vision examination, and periodic recertification.

<u>Examiner</u>	<u>Method-Level</u>
DMA	VT-1/II, MECH-II, PT-II
MJF	VT-1/II, MECH-II, PT-II
JFO	VT-1/II, PT-II
BN	VT-1/II, MECH-II, PT-II
RLS	VT-1/II, MECH-II, PT-II
JRL	VT-1/II, PT-II
CLG	VT-1/II, PT-II
JJB	PT-II

- h. Data Review and Evaluation, Unit 3

Records of completed examinations were selected and reviewed to ascertain whether: the method(s), technique, and extent of the examination complied with the repair/replacement procedures and applicable NDE procedures; findings were properly recorded and evaluated by qualified personnel; programmatic deviations were recorded as required; personnel, instruments, and NDE materials were designated. Records selected for this review are listed below.

<u>Inspection Report No.</u>	<u>Description</u>
W89-159	Initial PT of indications on J-7 & J-12
W89-187	PT examination of 16 conduits
W89-188	PT examination of conduit N-12
W89-189	PT examination of 28 conduits
W89-190	Initial PT of indications on H-4, M-3, & R-8
W89-204	PT of cut locations on replaced conduits
M89-384	Verification of as-built dimensions J-7
M89-392	Verification of existing dimension J-7
M89-362	Verification of tubing tab for J-7



M89-374	Verification system cleanliness maintained J-7
M89-407	Verification of installation J-7
W89-234	QC weld travler field welding FW-J7-1
W89-258	QC weld travler field welding FW-J7-2
W89-230	QC weld travler field welding FW-J7-3
M89-235	QC weld travler field welding FW-J7-4
M89-414	Visual leak inspection after freeze seal removal J-7
M89-432	Verified free path test using dummy flux detector J-7
M89-489	Pressure testing J-7
M89-370	Verification of system cleanliness and flushing J-7
W89-250	QC weld travler field welding FW-J12-1
W89-260	QC weld travler field welding FW-J12-2
W89-254	QC weld travler field welding FW-J12-3
W89-259	QC weld travler field welding FW-J12-4
M89-422	Verification of guide tube cut J-12
M89-433	Verification of free path testing using dummy flux detector J-12
M89-431	Verification of installation of J-12
M89-489	Pressure testing J-12
M89-352	H-4, M-3, N-12
	Verified initial tube OD measurements
	Verified indications removed
	Verified ground areas blended
	Performed final PT
	Verified final tube OD measurements

i. Data Review and Observations, Unit 4

As a result of the PT examinations conducted on the BMI conduits at the Unit 4 seal table, 4 conduits were identified as having PT indications which would require repair. The conduits which revealed indications are located at positions H-1, F-2, N-10, and E-11.

The NRC inspector reviewed the initial PT Inspection Report, W89-205, which shows all conduits other than H-1, F-2, N-10, and E-11 as being acceptable. The inspector has also reviewed NCR N-89-0186 which spells out the corrective actions that will be implemented to remove the indications from the 4 defective conduits.

Following the review of the above mentioned documents, the NRC inspector requested the licensee to PT the 4 conduits that had shown indications while the NRC inspector observed the examinations. These conduits were tested in the presence of the inspector and during this time the inspector requested that 2 additional conduits, which had been reported as having no reportable indications, be re-examined while the inspector observed. These additional conduits, at positions N-8 and L-14, were subsequently re-examined while the NRC inspector observed. The re-examination of these 6 conduits was requested by the NRC inspector in order to evaluate the PT examiners qualifications and technique and the adequacy of the PT examination

procedure being used to identify and subsequently accept any repaired defective conduits. As a result of these re-examinations, which had essentially the same results as those originally reported, there is good assurance that the PT examinations of the Unit 3 and Unit 4 conduits has adequately identified any defective conduits.

In the areas inspected, violations or deviations were not identified.

3. Steam Generator Circumferential Weld Ultrasonic Indications, Unit 4

- Background

During the routine Ultrasonic (UT) inservice inspection (ISI) examination of Steam Generator (SG) B circumferential weld 4-SGNB-CL, eight indications were detected. All of the indications were initially detected while manually scanning the weld from the outside surface of the SG with the sound beam directed toward the weld from the upper shell side of the weld. The ultrasonic transducer used was a 60 degree shear wave angle beam transducer having a 1/2" by 1" element and a frequency of 2.25MHz. None of these indications appeared to be open to the surface and all appeared to be located at approximately 1/2" to 3/4" deep from the inside surface. A subsequent magnetic particle (MT) examination of the inside surface of the weld confirmed that there were no linear indications at the inside surface of the weld. Three of the indications were considered "spot" indications because the length of these indications is so short that a length measurement could not be assigned to them. A fourth indication was of low amplitude and considered acceptable. Of the remaining four indications, the largest was selected for extensive evaluation. This was accomplished through several different manual ultrasonic examination techniques and through the use of an automated ultrasonic image enhancement system, P-Scan. Also, the original construction radiographs of this weld were reviewed which revealed scattered bits of acceptable slag. And, finally, an information only radiograph was made of the area containing the largest indication. This radiograph did not reveal any discernable indications in the area.

- a. The NRC inspector reviewed the below listed NDE packages in order to assess the validity of the information and the evaluation of the detected indications. Most of the NDE equipment calibrations, material certifications, and personnel qualifications were reviewed during a previous NRC inspection. See NRC Inspection Report Number 50-250, 251/88-33 for the specific items reviewed.



Examination

Initial 60 degree exam

Re-examination of area containing largest indication with 60 degree angle beam.

Re-examination of area containing largest indication using higher frequency to minimize beam divergence and improve resolution.

Time of flight ultrasonic technique used in area of interest.

Area of interest examined from inside the SG using a 0 degree, 5.0 MHz dual element transducer.

Area of interest examined from inside the SG using a 60 degree shear wave angle beam.

Results

Detected eight indications. All indications were detectable from one direction only. All were considered volumetric, (not open to the surface). Three indications had no appreciable length dimension. One indication was considered acceptable due to low signal amplitude. The four remaining indications were reportable and had some appreciable length. The largest indication was selected for extensive evaluation.

The indication was shown to be in two segments, one of 3" and one of 1.2" seperated by 1" of sound material.

Examination shows indication to be in two segments, 1.8" long and .5" long seperated by 1.5" of sound material. Also, the signal amplitude is reduced considerably. The through wall dimension is measured as approx. .13".

Indication is measured as being at .5" deep from the inside surface.

With the 0 degree, no indications were observed.

With the 60 degree, a 10% DAC indication was detected only while the sound beam was directed toward the upper shell. The indication did not appear to be continuous but was short lengths of reflectors with short seperations between them. The depth of the indications appeared to be .6" to .7".

Area of interest examined from inside the SG using a 70 degree, dual element, refracted longitudinal mode, ultrasonic probe.

The 70 degree revealed 3 or 4 indications in a 3" area. The depth of the indications appeared to be at .55" from the inside surface of the weld.

Inside surface of SG is examined using a fluorescent magnetic particle method.

No linear indications were revealed.

Original weld acceptance construction radiographs were reviewed. (The NRC inspector reviewed several of these radiographs)

Weld exhibits scattered acceptable slag inclusions.

Information only radiograph of the area of interest is taken. (The NRC inspector reviewed this radiograph)

No appreciable indications noted.

Area of interest is examined using an automated, P-Scan ultrasonic image enhancement system.

A "finger print" of the area is established which will be used for comparison purposes at a future examination. This examination appears to show several short indications with small separations between them.

Based on the various examination results and reviews, the indications revealed by ultrasonics logically appear to be small acceptable slag type indications that were introduced into the weld at the fabrication stage of this weld.

- b. The licensee will re-scan the area of interest at the next refueling outage in order to confirm that no growth of the indication has taken place. The re-scan will be accomplished with the P-Scan system and the "finger print" established during this outage will be compared with the results of the scan at that time.
- c. Based on the NRC Inspector's discussions with licensee personnel and the reviews of the above described licensee actions, the licensee's actions and disposition of the ultrasonic indications appears to be adequate at this time.

In the areas inspected, violations or deviations were not identified.



4. Exit Interview

The inspection scope and results were summarized on February 3, 1989, with those persons indicated in paragraph 1. The inspector described the areas inspected and discussed in detail the inspection results. Although reviewed during this inspection, proprietary information is not contained in this report. Dissenting comments were not received from the licensee.

5. Acronyms and Initialisms

ASME	-	American Society of Mechanical Engineers
ASP	-	Administrative Site Procedures
B&PV	-	Boiler and Pressure Vessel
BMI	-	Bottom Mounted Instrumentation
CRN	-	Change Request Notice
DAC	-	Distance Amplitude Correction
DEEP	-	Design Equivalent Engineering Package
FP&L	-	Florida Power and Light Company
ISI	-	Inservice Inspection
MECH	-	Mechanical
MHz	-	Megahertz
MT	-	Magnetic Particle Test
NCR	-	Nonconformance Report
NDE	-	Nondestructive Examination
NRC	-	Nuclear Regulatory Commission
OD	-	Outside Diameter
P C/M	-	Plant Changes and Modifications
PT	-	Liquid Penetrant Test
QC	-	Quality Control
TCR	-	Temporary Change Request
T.S.	-	Technical Specification
WPS	-	Weld Process Specification
WTS	-	Welding Control Technique Sheet
No.	-	Number
NRC	-	Nuclear Regulatory Commission
OD	-	Outside Diameter
PT	-	Liquid penetrant
QA	-	Quality Assurance
R	-	Revision
RT	-	Radiographic Test
SG	-	Steam Generator
UT	-	Ultrasonic
VT	-	Visual

