

APPENDIX C

U.S. NUCLEAR REGULATORY COMMISSION
REGION IV

NRC Inspection Report: 50-382/86-33

License: NPF-38

Docket: 50-382

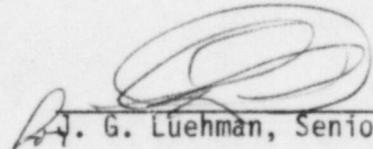
Licensee: Louisiana Power & Light Company (LP&L)
142 Delaronde Street
New Orleans, Louisiana 70174

Facility Name: Waterford Steam Electric Station, Unit 3

Inspection At: Taft, Louisiana

Inspection Conducted: December 1-31, 1986

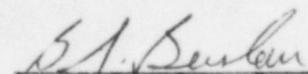
Inspectors:


R. G. Luehman, Senior Resident Inspector

2/3/87
Date


T. R. Staker, Resident Inspector

2/3/87
Date


B. A. Breslau, Project Inspector, Reactor
Project Section C

Feb 2, 1987
Date

Approved:


G. L. Constable, Chief, Reactor Project
Section C

2/3/87
Date

Inspection Summary

Inspection Conducted December 1-31, 1986 (Report 50-382/86-33)

Areas Inspected: Routine, unannounced inspection of: (1) Plant Status,
(2) Licensee Event Report Followup, (3) Monthly Maintenance, (4) Monthly

Surveillance, (5) Routine Operational Safety Inspection, (6) Preparations for Refueling, (7) Refueling Operations, (8) Radiation Protection, and (9) Followup of Previously Identified Items.

Results: Within the areas inspected, one violation and one deviation were identified: (paragraph 3 - deviation from a commitment made to the NRC in a Licensee Event Report and paragraph 10 - violation of radiation protection procedures).

DETAILS1. Persons ContactedPrincipal Licensee Employees

- J. G. Dewease, Senior Vice President, Nuclear Operations
- *R. P. Barkhurst, Vice President, Nuclear Operations
- *N. S. Carns, Plant Manager, Nuclear
- T. F. Gerrets, Corporate QA Manager
- S. A. Alleman, Assistant Plant Manager, Plant Technical Staff
- J. R. McGaha, Assistant Plant Manager, Operations and Maintenance
- J. N. Woods, QC Manager
- A. S. Lockhart, Site Quality Manager
- R. F. Burski, Engineering and Nuclear Safety Manager
- K. L. Brewster, Onsite Licensing Engineer
- *G. E. Wuller, Onsite Licensing Coordinator
- T. H. Smith, Maintenance Superintendent, Nuclear

*Present at exit interviews.

In addition to the above personnel, the NRC inspectors held discussions with various operations, engineering, technical support, maintenance, and administrative members of the licensee's staff.

2. Plant Status

The inspection period began with the reactor in Mode 5 and the reactor vessel in a partially drained condition to support ongoing work on the reactor coolant pumps and steam generators. At 8:20 p.m. on December 8, 1986, the reactor entered Mode 6 when the first stud on the reactor vessel head was detensioned.

On December 11, 1986, the licensee informed the NRC inspectors that inspection of the steam generators, prior to steam generator tube eddy current testing, had revealed that five previously installed steam generator tube plugs were missing and assumed to be in low flow areas at the bottom of the reactor vessel. The five plugs all came from the cold leg side of the same steam generator. The licensee is consulting with Combustion Engineering Inc. (CE) about the likely location of the plugs, possible inspections that could locate them, and the possibility of plug retrieval.

At 10:37 a.m. on December 14, 1986, the reactor vessel head was removed and stored in preparation for refueling. The movement of fuel in the reactor began on December 17, 1986, and was temporarily suspended on the following day in order to allow a remote inspection for the missing steam generator tube plugs.

On December 18th the NRC inspector observed a portion of the inspections performed in attempt to locate the missing steam generator tube plugs. After several fuel element assemblies were withdrawn from the core barrel assembly a camera was inserted into the reactor vessel. The camera was lowered through the lower support assembly in several locations during an unsuccessful attempt to locate the tube plugs. The complete evaluation of this problem by the licensee will be contained in the licensee's steam generator inservice inspection report required by Technical Specification 4.4.4.5.

On December 25th, after the removal of of a CEA (position A-8) from the core, a S/G tube plug was found to be resting on the core support plate. The S/G tube plug appeared to be undamaged and the licensee is planning on sending it to CE for analysis. The inspection period ended with the refueling of the reactor completed and reassembly of the reactor vessel internals in progress.

No violations or deviations were identified.

3. Licensee Event Report (LER) Followup

The following LERs were reviewed and closed. The NRC inspectors verified that reporting requirements had been met, that causes had been identified, that corrective actions appeared appropriate, that generic applicability had been considered, and that the LER forms were complete. Additionally, the NRC inspectors confirmed that no unreviewed safety questions were involved and that violations of regulations or Technical Specification (TS) conditions had been identified.

(Closed) LER 382/85-009 - "Containment Air Lock Surveillance." In addition to the status board in the shift supervisor's office, containment entry times are placed in the control room log which is required to be reviewed by oncoming shifts. Both of the above practices act to backup the computer task card surveillance program the licensee is using which has demonstrated a high degree of reliability for regularly scheduled surveillance requirements.

(Closed) LER 382/86-004 - "Personnel Error Resulted in Improper Tag-Out Causing the Low Pressure Safety Injection Pump Being Inoperable Due to the Discharge Valve Being Closed." The NRC inspector verified that the proper step had been added to UNT-5-003 Revision 5, "Administrative Procedure Clearance Requests, Approval, and Release." Step 5.1.7 requires the operator to have the clearance or a copy when in the Radiologically Controlled Area (RCA).

(Closed) LER 382/86-008 - "Operator Error During Surveillance Testing Resulted in Inadvertent Actuation of Emergency Feedwater System." The NRC inspector verified that OP-903-107, Revision 4, "Plant Protection System Channel A B C D," contains the required bistable verifications to ensure bypass signals are present prior to testing. The NRC inspector has also evaluated the fact that two operator errors caused actuation of the

emergency feedwater system within a week of each other. Performing surveillances on the plant protective system with various bistables in bypass/trip is a condition that has not been frequently encountered by operators at Waterford 3. The added procedural guidance as well as further experience should help prevent operators from making similar mistakes in the future.

(Closed) LER 382/86-012 - "Lack of Interdepartmental Communications Resulted in Deficient Fire Door Surveillance." The NRC inspector verified that the changes to OP-903-001, "Technical Specification Surveillance Logs," Attachment 10.5, committed to in the report, were made.

(Closed) LER 382/86-015 - "Simultaneously Using Two Methods of Draining Reactor Coolant System Results in Loss of Shutdown Cooling." This report was previously discussed in NRC Inspection Report 50-382/86-17. During this inspection period the NRC inspector has reviewed the changes to OP-1-003, "Reactor Coolant System Drain Down," and OP-901-046, "Loss of Shutdown Cooling." It was noted that the change to OP-1-003 was not made on or before September 30, 1986, as stated in the report. The NRC inspector has discussed this problem with licensee management and expressed concern about the fact that the corrective actions for such a significant event were not made in a timely manner. The failure to update the procedure by the time specified in the licensee event report is an apparent deviation and is identified as 382/8633-01.

(Closed) LER 382/86-016 - "Insufficient Procedural Requirements Resulted in the Boron Concentration for the Safety Injection Tanks to Fall Below the Technical Specification Limit." The events discussed in this report were previously reviewed in paragraph 11 of NRC Inspection Report 50-382/86-16. During this inspection period the NRC inspector verified that the changes to OP-9-008, "Safety Injection System," described in the report were implemented.

(Closed) LER 382/86-011 - "Walkdown as a Result of Part 21 Report Identified Two Missing Internal Penetration Seals in Addition to Several Deficient Seal Arrangements." The licensee has contacted the NRC Office of Nuclear Reactor Regulation (NRR) concerning the problems outlined in this report and it was determined that a deviation to 10 CFR Appendix R requirements is not required. The licensee is preparing documentation to support the adequacy of the installed seals in accordance with guidance of Generic Letter 86-10 and this documentation will be reviewed by NRR. The NRC inspector discussed with plant management the fact that although this problem with the fire seals had been informally discussed with NRR the actual commitments contained in this report were only pursued after they were brought to management's attention by the NRC inspector.

No violations were identified. One deviation is discussed in conjunction with LER 382/86-015 above.

4. Followup of Previously Identified Items

(Closed) Open Item 382/8629-03, "Followup of Licensee's Action on Airpax Control Tachometer." The NRC inspector has reviewed the documentation the licensee has compiled which supports the position that the problem with the power supply was an isolated equipment problem rather than a generic problem with the tachometer power supply. Additionally, the NRC inspector emphasized to plant management that followup to potentially applicable 10 CFR Part 21 Reports should not be overlooked for over a year as was the case with the report that documented the above problem.

No violations or deviations were identified.

5. Monthly Maintenance

Station maintenance activities affecting safety-related systems and components were observed/reviewed to ascertain that the activities were conducted in accordance with approved procedures, regulatory guides and industry codes or standards, and in conformance with TS.

The NRC inspector observed a portion of a preventative maintenance activity on the Plant Stack "B" radiation monitor (filter replacement). This activity is performed weekly so normally containment purge is not in progress. However, during this evolution the plant was in Mode 5 with containment purge operating. This condition presented a problem because the installed radiation monitors have no bypass around the filters so the monitor must essentially be secured when changing the filters. Upon initially returning the monitor to service spiking of the iodine channel is routinely experienced. While preparing to perform this maintenance licensee operations personnel recognized the potential problem that plant conditions presented. Not wanting the containment purge to be secured inadvertently during the evolution the operators decided to provide additional guidance beyond what was provided in the preventative maintenance instructions.

MI-3-350 Revision 5, "Containment Purge Isolation Area Radiation Monitor Channel 'A' or 'B' Functional Test," contains instructions for jumpering out the containment purge trip function for the applicable radiation monitor. The Control Room Supervisor directed the Instrument and Control technician assisting with the maintenance to place the jumper in accordance with the procedural guidance of MI-3-350 and to remove it when the work was completed. The NRC inspector questioned the practice of using MI-3-350 as only a reference and not using it or any other procedure to install and remove the jumper. The licensee's followup of the NRC inspector's concern is outlined below:

- a. The Control Room Supervisor correctly identified the initial procedural shortcoming however, he did not correct it using an approved method nor a method that would permanently correct the problem.

- b. As indicated above, the filter replacement procedure needed to be upgraded to require installation and removal of the jumper when containment purge was in progress or anticipated, to prevent inadvertent isolations of the purge valves.
- c. MI-3-350 Revision 5 as well as MI-3-352 Revision 5, "Purge Isolation Area Radiation Monitor Safety Channel Calibration," are deficient in that they only require independent verification of jumper removal contrary to paragraph 5.1.1.1 of UNT-5-004 Revision 3, "Temporary Alteration Control," which requires independent verification on both installation and removal.

The licensee held a critique of this event on December 4, 1986, and a Quality Notice describing the event and the recommended corrective actions will be generated.

The NRC inspector observed a portion of the replacement of the hydraulic governor on Emergency Diesel Generator A as performed per Condition Identification Work Authorization (CIWA) 028391.

The NRC inspector reviewed MM-8-032, Revision 1, "RCP Shaft Seal Replacement," and observed that the procedure required the plant to be in Mode 6 (Refueling). The NRC inspector noted that there is no requirement to detension the reactor vessel head closure bolts in order to replace a Reactor Coolant pump shaft seal; additionally, the present frequency of RCP seal replacement is much more frequent than each refueling so it would not appear to make sense to have Mode 6 as a prerequisite for seal replacement.

The NRC inspector reviewed the maintenance documentation for reactor coolant pump (RCP) seal replacement work and installation of the reactor vessel alignment pins. While reviewing the RCP seal work packages, the NRC inspector observed that the signoff for seal removal, step 8.2.4 of MM-8-030, Revision, "RCP Shaft Seal Removal," was not completed for pumps 1A and 2A. Since these seals had been removed, this administrative discrepancy was brought to the attention of maintenance personnel, and the signoffs were completed. The NRC inspector observed involvement of the licensee's Quality Control (QC) group by review of a QC inspection report dated December 12, 1986. This report on the installation of the reactor vessel alignment pins included the following findings; steps in the alignment pin installation procedure were not performed as written, steps were performed out of sequence, and an "O" ring part number was not identified. The discrepancies were brought to the craft head supervisors and plant managers attention by the QC supervisor. The licensee's corrective actions regarding this situation will be monitored by the NRC inspector.

The NRC inspector observed the reinstallation of valve CAR 202B in the Containment Atmosphere Release system, as performed per CIWA 030380. The Clearance Authorizations for CIWA's 030380 and 030375 (rework valve CAR 202B) were reviewed. The NRC inspector had the following comments:

- a. There was no cleanliness control form in the work package. A form was later added to the work package.
- b. The signoffs in the CIWA for clearance adequate, scaffolding erected, and Health Physics notified prior to and valve removal were not completed.
- c. Clearance Authorization 86-1466 for CIWA 030375 (rework valve CAR 202A) did not have a independent verification performed. This was brought to the attention of operations personnel and a verification was performed.
- d. Radiation Work Permit (RWP) 86001465 for CIWA 030380 was not adhered to. CIWA 030375 was performed without a RWP. These comments are discussed further in paragraph 11 of this report.

No violations or deviations were identified.

6. Monthly Surveillance

The NRC inspectors observed/reviewed TS required testing and verified that testing was performed in accordance with adequate procedures, that test instrumentation was calibrated, that limiting conditions for operation (LCO) were met, and that any deficiencies identified were properly reviewed and resolved.

The NRC inspector observed a portion of the performance of MI-3-125, Revision 2, "Core Protection Calculator Calibration Channel B." Additionally, several unsuccessful attempts to perform OP-903-69, "Integrated Emergency Diesel Generator (EDG)/Engineered Safety Features Test," on EDG "A" were observed. The major problems appear to have been due to an improperly adjusted governor. The licensee has generated a Potentially Reportable Event (PRE 86-113) summarizing the problems. EDG "A" remained inoperable and the licensee pursued vendor assistance to correct the remaining problems. The EDG was originally taken out of service for governor modifications and required routine maintenance.

No violations or deviations were identified.

7. Potential Generic Problems

The NRC inspector provided the licensee with a copy of a 10 CFR Part 21 report on the potential failure of transducers produced by the Validyne Engineering Sales Corporation. This potential failure, due to the occurrence of an open coil in the pressure sensor, was encountered while the vendor was performing temperature compensation testing.

No violations or deviations were identified.

8. Routine Operational Safety Inspection

By observation during the inspection period, the NRC inspectors verified that the control room manning requirements were being met. In addition, the NRC inspectors observed shift turnover to verify that continuity of system status was maintained. The NRC inspectors periodically questioned shift personnel relative to their awareness of the plant conditions.

Through log review and plant tours, the NRC inspectors verified compliance with selected TS and limiting conditions for operations.

During the course of the inspection observations relative to protected and vital area security were made including access controls, boundary integrity, search, escort, and badging.

On a regular basis, RWPs were reviewed and the specific work activity was monitored to assure the activities were being conducted per the RWPs. Selected radiation protection instruments were periodically checked and equipment operability and calibration frequency were verified.

The NRC inspectors kept themselves informed on a daily basis of overall status of plant and of any significant safety matter related to plant operations. Discussions were held with plant management and various members of the operations staff on a regular basis. Selected portions of operating logs and data sheets were reviewed daily.

The NRC inspectors conducted various plant tours and made frequent visits of the control room. Observations included: witnessing work activities in progress; verifying the status of operating and standby safety systems and equipment; confirming valve positions, instrument and recorder readings, annunciator alarms; and housekeeping.

During a routine tour of the control room the NRC inspector observed an evolution in progress involving the shutdown cooling system (SDC). At the completion of the evolution the NRC inspector reviewed OP-009-005 Revision 6, "Shutdown Cooling System." Section 6.5 (Removing Shutdown Cooling from Service RCS Temp Less Than or Equal 200° F) and Section 6.8 (Removing Shutdown Cooling from Service RCS Temp 200° F) of OP-009-005 both begin with a caution about the need to maintain the SDC suction line relief valves operable (in order to comply with TS 3.4.8.3.a.1) but then each section goes on to require that certain valves be shut which would isolate the relief valves. Experienced operators appear to realize the procedure is misleading and so when securing a SDC train to place it in standby they follow the caution as a requirement and do not strictly follow the procedural steps which would place the plant in a condition where part of the low temperature overpressurization protection system is isolated. The procedure should be revised to include a specific section for taking a SDC train out of operation and placing it in standby. Section 6.5 and 6.8 are intended for use in fully securing the system and not for placing it in a standby condition. Placing a train in standby implies SDC and the suction line relief valves are still required to be

operable even though the SDC train being secured might not be required to be in operation. The NRC inspectors discussed with licensee operations personnel the practice of using cautions/notes as procedural requirements even when those cautions/notes do not agree with actual procedural action steps.

During a routine health physics survey of the room that houses the equipment drain tank it was discovered that the tank had partially collapsed. It appears that this tank, which normally receives various low temperature drains containing low levels of radioactivity, had been subjected to a vacuum condition sufficient to buckle the tank. With the plant in a shutdown condition the tank was immediately isolated and work was begun to replace it. The licensee is attempting to identify the system alignment that caused the vacuum condition. In the meantime, however, the NRC inspector felt it was necessary to discuss the general subject of tank protection with licensee management. In response to IE Bulletin 80-05, "Vacuum Condition Resulting in Damage to Chemical Volume Control System (CVCS) Holdup Tanks (Sometimes Called 'Clean Waste Holdup Tanks')," the licensee stated that the nitrogen makeup regulator is of sufficient size to prevent a vacuum in the equipment drain tank under maximum pumpout conditions.

Because of other plant problems, nitrogen to the equipment drain tank has been isolated for a number of months. The NRC inspector emphasized to licensee management the need to maintain such overpressure systems operable especially on tanks such as the equipment drain tank which do not have a vacuum breaker. Review of the annunciator response procedure for annunciator C-8 on the G panel (Equipment Drain Tank Pressure Hi/Lo) revealed that the Plant Effects/Operator Actions section does not consider damage to the tank as a possible problem on low pressure. The NRC inspector also asked licensee operations personnel why this annunciator had not provided the control room operator warning of the vacuum condition in the tank. The licensee responded that frequent alarms have been received on that annunciator ever since the nitrogen was secured so, the operators were less sensitive to alarms on that annunciator than they probably should have been.

No violations or deviations were identified.

9. Preparations for Refueling and Refueling Activities

The NRC inspectors verified the completion of selected surveillances required by TS prior to and during Core Alterations and movement of irradiated fuel. The NRC inspectors also observed portions of the licensee's actual refueling activities. The use of approved procedures, control of access to the refueling areas, and the presence of the supervision required by TS 6.2.2.c were among the requirements verified during the observation of refueling activities.

No violations or deviations were identified.

10. Radiation Protection

After reviewing several RWPs as well as some the associated work, the NRC inspector had the following comments:

- a. The work tasks on RWPs 86001247, 86001248, 86001249, and 86001250 included the removal of Reactor Coolant pump seal packages. RWP 86001250 did not include any respiratory protective requirements. The three remaining RWPs required the use of air fed hoods only. Respirators were worn during the performance of some of the tasks included on these RWPs. These RWPs should have contained instructions allowing the relaxation of respiratory requirements as required by step 5.2.6 of HP-1-110, Revision 6.
- b. The prejob ALARA Review Checklists (HP-AD-7) for RWPs 86001247, 86001248, 86001249, and 86001250 were incomplete. These checklists did not contain the previous man-rem history or present man-rem goal. The checklists performed for RWPs 86001249 and 86001250 did not receive the reviews, as specified by sections 5.1.3 and 5.1.4 of HP-1-101, Revision 3, "ALARA Program Implementation," for jobs with a man-rem estimate of greater than 10 and 25. The man-rem estimates recorded on these RWPs were 20 and 38 respectively.
- c. RWP 86001465 required that an air sample was to be taken during removal of valve CAR 202B from the Containment Atmosphere Release System (CARS). This requirement was waived by the health physics (HP) technician assigned to this job and no sample was taken. HP technicians are responsible for ensuring compliance with RWP requirements per section 4.7 of HP-1-101, Revision 3.

Examples a, b, and c above are considered an apparent violation for failure to adhere to procedures for personnel radiation protection. This is identified as 382/8633-02.

Additionally, the NRC inspector identified other less significant problems with the licensee's radiation protection procedures and practices which are outlined below:

- ° There was no man-rem estimate on RWP 86001248, as required by step 5.2.7 of HP-1-110, Revision 6, "Radiation Work Permits."
- ° RWPs 86001247, 86001249, and 86001250 had man-rem estimates of 2.5, 20, and 38 respectively. The plant ALARA coordinator stated that the actual estimate was one man-rem for each of these RWPs. This estimate was based on previous performance of the tasks on these RWPs. Step 5.2.7 of HP-1-110, Revision 6 requires the use of historical data when calculating the man-rem estimate to be entered on an RWP.

- ° CIWA 030375 (rework valve CAR 202A) was performed without the use of an RWP. RWP 1465 was written for this job, but it was decided that an RWP was not required and it was replaced by a statement in the CIWA requiring a HP technician to be present when opening the CAR system. When HP personnel were asked why the RWP was not used for this job, they answered that section 1.1 of HP-1-110, Revision 6, "Radiation Work Permits," stated that RWPs were for use in radiation controlled areas and valve CAR 202A was not located in a radiation controlled area. The NRC inspector brought step 5.1 of HP-1-101, Revision 3, "ALARA Program Implementation," to the attention of plant HP personnel. This section requires the initiation of an RWP for all radiation exposure related activities including maintenance.

In response to the NRC inspector's concerns with improperly completed RWPs, licensee Health Physics personnel reviewed all active RWPs and placed all new work in a hold status until this review was complete. Additionally, the licensee is presently rewriting procedure HP-1-110, "Radiation Work Permits," to clarify the requirements and responsibilities.

One violation (examples a, b, and c above) and no deviations were identified.

11. Exit Interview

The inspection scope and findings were summarized on January 6, 1987, with those persons indicated in paragraph 1 above. The licensee acknowledged the NRC inspector's findings.