UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION II
101 MARIETTA STREET, N.W., SUITE 2900
ATLANTA, GEORGIA 30323-0199

Report No.: 50-261/93-28

Licensee: Carolina Power and Light Company
P. O. Box 1551
Raleigh, NC 27602

Docket No.: 50-261 License No.: DPR-23

Facility Name: H. B. Robinson Unit 2

Inspection Conducted: October 17 - November 20, 1993

Lead Inspector: _____ for 12/17/93
W. T. Orders, Senior Resident Inspector Date Signed

Other Inspectors: _____ for 12/17/93
C. R. Ogle, Resident Inspector Date Signed

Approved by: _____ 12/17/93
H. O. Christensen, Chief Date Signed
Reactor Projects Section 1A
Division of Reactor Projects

SUMMARY

Scope:

This routine, unannounced inspection was conducted in the areas of operational safety verification, surveillance observation, maintenance observation, engineered safety feature system walkdown, and followup of previously identified items.

Results:

A non-cited violation was identified involving a failure to follow fuel handling procedure which resulted in a mispositioned fuel assembly (paragraph 3). A second non-cited violation was identified involving failure to perform required surveillance testing (paragraph 4). A Violation was identified involving three examples of inadequate maintenance procedures or failure to follow maintenance procedures (paragraph 5). An inspector followup item was identified involving documentation of lead-lag controller accuracy (paragraph 5). Additionally, an unresolved item was identified involving the alteration of OST-410 test data (paragraph 4).

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# REPORT DETAILS

1. Persons Contacted

*R. Barnett, Manager, Project Management
C. Baucom, Senior Specialist, Regulatory Compliance
S. Billings, Technical Aide, Regulatory Compliance
*B. Clark, Manager, Maintenance
*T. Cleary, Manager, Technical Support
D. Crook, Senior Specialist, Regulatory Compliance
*C. Dietz, Vice President, Robinson Nuclear Project
R. Downey, Shift Supervisor, Operations
J. Eaddy, Manager, Environmental and Radiation Support
S. Farmer, Manager Engineering Programs, Technical Support
R. Femal, Shift Supervisor, Operations
*W. Flanagan Jr., Acting Plant General Manager
W. Gainey, Manager, Plant Support
P. Jenny, Manager, Emergency Preparedness
D. Knight, Shift Supervisor, Operations
*J. Kozyra, Project Specialist, Regulatory Programs
*A. McCauley, Manager, Electrical Systems, Technical Support
R. Moore, Shift Supervisor, Operations
D. Morrison, Shift Supervisor, Operations
D. Nelson, Manager, Outage Management
*A. Padgett, Manager, Environmental and Radiation Control
*M. Pearson, Plant General Manager
D. Seagle, Shift Supervisor, Operations
M. Scott, Manager, NSSS Technical Support
E. Shoemaker, Manager, Mechanical Systems, Technical Support
W. Stover, Shift Supervisor, Operations
A. Wallace, Acting Operations Manager
D. Waters, Manager Regulatory Affairs
D. Winters, Shift Supervisor, Operations

Other licensee employees contacted included technicians, operators, engineers, mechanics, security force members, and office personnel.

*Attended exit interview on November 19, 1993.

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

2. Plant Status

The report period began with the unit in refueling outage 15. On November 12, 1993 the licensee initiated a startup of the reactor following the completion of outage activities. On November 14, following completion of low power physics testing, the unit was placed on line and reactor power increased to 30 percent power.

On November 16, the licensee detected that a weld on a main feedwater drain valve was leaking, a leak which ultimately forced the licensee to shut the unit down on November 17 to effect repairs. The report period ended with the unit shutdown.

3. Operational Safety Verification (71707)

a. General

The inspectors evaluated licensee activities to confirm that the facility was being operated safely and in conformance with regulatory requirements. These activities were confirmed by direct observation, facility tours, interviews and discussions with licensee personnel and management, verification of safety system status, and review of facility records.

The inspectors reviewed shift logs, Operation's records, data sheets, instrument traces, and records of equipment malfunctions to verify equipment operability and compliance with TS. The inspectors verified that, in the main, the staff was knowledgeable of plant conditions, responded properly to alarms, adhered to procedures and applicable administrative controls, was cognizant of in-progress surveillance and maintenance activities, and was aware of inoperable equipment status. The inspectors performed channel verifications and reviewed component status and safety-related parameters to verify conformance with TS. Shift changes were routinely observed, verifying that system status continuity was maintained and that proper control room staffing existed. Access to the control room was controlled and operations personnel carried out their assigned duties in an effective manner. Control room demeanor and communications were appropriate.

Plant tours and perimeter walkdowns were conducted to verify equipment operability, assess the general condition of plant equipment, and to verify that radiological controls, fire protection controls, physical protection controls, and equipment tagging procedures were properly implemented.

b. Bolt Found In Reactor

On October 13, 1993, while examining the lower core support plate, the licensee identified a bolt in a flow hole in the plate at location E-5. Initial attempts to remove the bolt dislodged it causing it to fall further into the vessel. The bolt was eventually removed from the bottom of the reactor vessel and transferred to the spend fuel pit. The licensee's engineering evaluation concluded that the bolt was most likely a reactor coolant pump diffuser bolt. The evaluation surmised that the recovered bolt was one of two RCP diffuser assembly bolts discovered missing, but not recovered in 1986.

The conclusion that the bolt was from a RCP diffuser assembly was arrived at by comparing the dimensions of the bolt to bolts installed in primary system components. The evaluation noted that the bolt most closely matched the diffuser bolts. Furthermore, damage observed on the recovered bolt was similar to damage

observed on a RCP diffuser bolt from the same model RCP removed from the Ginna vessel in 1990.

In the event that the bolt was not one of those not recovered in 1986, the evaluation cites a Westinghouse analysis that documents the acceptability of operating with one of the sixteen RCP diffuser bolts missing. The inspectors have no further questions on this issue.

c. Improper Fuel Assembly Positioning During Refueling Operations

At approximately 5:44 p.m. on October 16, 1993, fuel assembly U06 was erroneously placed in core location F11 as opposed to the required location of F05. Upon recognition that the fuel assembly was improperly positioned, the licensee moved the assembly to the correct core location and stopped fuel reload. Following a critique of the event refueling operations were resumed. Fuel reload was completed on October 19, 1993.

The inspectors interviewed the refueling floor SRO, the manipulator operator, the upended operator and the STA positioned in the control room during the event. The inspectors also reviewed shift supervisor and control room operator log entries for the event; examined the fuel handling data sheet for the reload; and reviewed source range nuclear instrument data collected during the reload. The inspectors examined the results of a review of the event conducted by the Operations Manager. Based on this information, the inspectors concluded that the mis-positioning occurred as a result of the STA reading the incorrect fuel location from the fuel handling data sheet. The STA was charged with tracking the reload as designated on the fuel handling data sheet. This consisted of a line-by-line tracking of the reload on the fuel handling data sheet. The STA relayed the desired fuel manipulations to the other members of the reload crew via headsets and initialed the fuel handling data sheets when steps were completed. The fuel assembly was placed in the wrong position when the STA specified the wrong core location. The inspectors noted that the erroneous F11 core location provided by the STA was the ultimate destination for the next fuel assembly in the reload.

As a contributing factor, the inspectors also noted that no other member of the refueling team detected the error in the specified fuel location until the assembly was in place. The upender operator stated that the procedure was being used at the upender station to follow the evolution. However, as a result of turnover and a focus on upender activities, he failed to note the error. The Refueling Floor SRO stated he was referring to the procedure in an effort to be cognizant of the locations for the next two fuel assemblies. This technique failed to detect the error due to the symmetrical fuel sequencing used. No procedure was in use at the manipulator station.

Following the initial cessation of fuel handling activities and the critique, the STA was removed from duties in the fuel reload. The licensee made changes to Operations Management Manual, OMM-006, Refueling Organization, to more clearly delineate responsibilities of the refuel team. As a result of the mis-positioning, the manipulator operator station was also provided a copy of the fuel handling procedure to track the reload sequence. The Operations Manager also indicated that he reviewed his expectations for conduct of fuel load with the cognizant Operations personnel.

The inspectors noted from a log of source range counts maintained during the reload and ERFIS source range data that there was no discernable increase in the source range counts during the mis-positioning.

The failure to properly position fuel assembly U06 is a violation of the requirements of Fuel Management Procedure, FMP-019, Fuel and Insert Shuffle. This violation will not be subject to enforcement action because the licensee's efforts in identifying and correcting the violation meet the criteria specified in Section VII.B of the Enforcement Policy. This identified as a non-cited violation, NCV: 93-28-01, Failure To Follow Fuel Handling Procedure Results In Mispositioned Fuel Assembly.

d. Improper Inverter B Fuses

At 11:30 a.m. on November 11, 1993, the licensee declared inverter B inoperable after discovering that non-Q fuses installed in the inverter's power module 1 and 2 outputs. This inverter, powered from the 125 V station batter B, provides 120 V AC power to instrument buses 3 and 8. Included on their instrument buses are ESF equipment and instrumentation. Of concern was the potential disablement of the Hi-Hi containment pressure logic used to actuate containment spray and steam line isolation, as a result of an unqualified power source. The licensee entered TS 3.0 which required hot shutdown within 8 hours and cold shutdown in 30 hours. The unit was in hot shutdown when the condition was discovered. The licensee made a 4-hour non-emergency notification to the NRC in accordance with the requirements of 10 CFR 50.72 (b)(2) i at 2:40 p.m. on November 11, 1993.

Following this discovery, the licensee qualified the fuses by performing a commercial grade item dedication and seismic analysis. The inspectors reviewed the engineering evaluation which documented the qualification and have no questions on its content. Additionally, the inspectors witnessed a portion of the testing accomplished for the dedication.Following the completion of this engineering evaluation, the licensee exited TS 3.0 at 6:49 p.m. on November 11, 1993.

The inspectors interviewed the fuse control program engineer and a procurement engineer on the event. The inspectors determined that the improper fuse had been detected by the fuse control program engineer during a post-maintenance review of the completed fuse data sheet. It was apparent to the inspectors that this condition was identified as the direct result of a thorough review by the fuse control program engineer. A casual review would not have detected the problem. The inspectors were provided documentation to demonstrate that the non-qualified variant of the fuse had been inadvertently substituted for the correct, Q-fuse as a result of an error in the procurement process. The original purchase order, dated January 23, 1991, specified a certificate of conformance and seismic qualification certification, required of a Q-fuse. However, the purchase order inappropriately specified the part number for an "augmented quality non-safety related fuse." This inconsistency in the purchase order requirements was detected by the fuse supplier who requested amplification. The revised purchase order inappropriately deleted the requirements for a Q-fuse and instead specified the reduced pedigree fuse variant.

e. Fuel Assembly Loose Part

In Inspection Report 93-21, the resident inspectors documented the fact that loose parts had been found in a control rod guide tube of fuel assembly U-24. It was determined that the loose parts came from a broken fuel inspection tool. One of the loose parts, a split sleeve was recovered from the end of an RCCA rod. More thorough inspection confirmed that the remaining parts were in the dashpot section of the guide tube. The licensee opted to relocate the assembly to a core location where an RCCA is not required instead of attempting to remove the remaining parts.

The licensee and Siemens performed an evaluation to verify that leaving the loose parts in the fuel assembly would not jeopardize its mechanical integrity nor the nuclear core design.

The evaluations concluded that the mechanical integrity of the assembly would not be jeopardized. This conclusion was based in part, upon the fact that the loose parts are contained in the guide tube. In other words, there is no possibility of the parts migrating to other regions of the reactor coolant system. Further, a review of the flow velocities inside the tube indicates that the motive force for moving the parts or fretting the guide tube are low. Review of the materials used to manufacture the loose parts revealed that they are compatible with the Reactor Coolant System both from a chemistry standpoint and from consideration of differential thermal expansion. The licensee concluded that there are no significant concerns associated with operating the unit with the loose parts in the assembly.

Nuclear core design concerns have been examined by Siemens. The analysis included the clockwise rotational shuffle of U24 and its

symmetric partners to adjacent quadrants to move U24 from its former interior location to the periphery. This review encompassed thermal margins, cycle length, reactivity margins, and overall cycle operation. All were found to be minimally impacted. Based on the results of the analysis, the licensee concluded that there are no significant core design concerns and that it would be safe to operate the unit with the current core configuration.

Based on a review of these evaluations, Inspector Followup Item 93-21-05, Fuel Assembly Loose Part is closed.

4. Surveillance Observation (61726)

a. General

The inspectors observed certain safety-related surveillance activities on systems and components to ascertain that these activities were conducted in accordance with license requirements. For the surveillance test procedures listed below, the inspectors determined that precautions and LCOs were adhered to, testing was accomplished by qualified personnel in accordance with an approved test procedure, test instrumentation was properly calibrated, and that the tests conformed to TS requirements. Upon test completion, the inspectors verified the recorded test data was complete, accurate, and met TS requirements, test discrepancies were properly documented and rectified, and that the systems were properly returned to service. Specifically, the inspectors witnessed/reviewed portions of the following test activities:

| | |
|---|---|
| OST-404 | Diesel Generators Emergency Field Flashing And Manual Closure Of Generators Main Breaker |
| SP-1259 | Emergency Diesel Generator B Load Acceptance And Load Rejection Testing |

b. Safety Injection and Emergency Diesel Generator Auto Start Test

On October 25, 1993, the inspectors witnessed accomplishment of a potion of Operations Surveillance Test Procedure, OST-163, Safety Injection Test and Emergency Diesel Generator Auto Start On Loss of Power and Safety Injection and Emergency Diesel Trips Defeat. This refueling interval test is accomplished to ensure that the safeguards system is functional and that the safety injection sequence has the proper timing. During the first portion of this testing, with the emergency busses powered from offsite power, the ESF sequence was manually initiated from the control room. During this phase of the testing, EDG B failed to start. Nevertheless, the appropriate components for Train B started and EDG A also properly started. The SWBP A failed to start, however, all other expected train A components started.

Both an operator at EDG B and the system engineer, noted that the air start solenoid valves actuated to admit air to the engine for starting. However, the engine was not observed by either individual to rotate. Immediately thereafter, an engine start failure light was noted on the engine control panel. This indicated that the starting sequence was automatically terminated following the failure of the engine to achieve approximately 200 RPM within 10-seconds of the engine start signal. Additionally, an air receiver low pressure alarm occurred immediately after the aborted starting attempt.

Following this failure, the engine was left undisturbed to facilitate troubleshooting. Checks were conducted to verify proper operation of the ESF logic and selected portions of the EDG starting circuitry. Also, fuel lines on the engine were verified to be free of air. The engine was then rotated with starting air in accordance with prescribed barring-over procedures. These checks were conducted without incident and failed to provide any indication of why the EDG failed to start. The engine was then started, first using normal operating procedures and then by repeating the ESF sequence test. These starts were also conducted without incident.

On October 27, 1993, additional troubleshooting was completed. During inspection of the air start distributor, the licensee observed that springs for three of the pilot valves in the air start distributor had failed. The springs were replaced and following satisfactory post-maintenance testing, EDG B was returned to service on October 30, 1993. The springs for EDG A were also replaced though none were observed to have failed. The failed springs were submitted for failure mode analysis by the licensee.

The manufacturer's technical manual recommended periodic inspection of the air start distributor. However, this recommendation was contained in a description of the engine's air start system. It was not included in the section of the technical manual addressing maintenance nor in a vendor letter outlining recommended supplemental maintenance. Furthermore, the licensee indicated that during recent contacts on the need for air distributor preventive maintenance, the vendor specifically recommended that none be performed. The licensee stated their intention to verify that maintenance recommendations in the technical manual and other vendor correspondence were included in the sites EDG maintenance program.

The failure of SWBP A to start was determined by the licensee to result from a failure of contacts on the STX relay in the starting circuit. The relay was replaced on October 26, 1993. The SWBP A started in the proper sequence during a subsequent performance of OST-163 on October 26, 1993.

During the performance of OST-163 on October 25, it was also noted by an operator at EDG A that a one-half inch bolt used to secure the air inlet baffle had failed. This bolt is one of three used to retain the internal baffle in the "Y" shaped air inlet housing to the turbo housing. The head of the bolt was lockwired and remained on the exterior of the air inlet housing. The threaded portion of the bolt was ejected or had fallen from the air inlet housing where it was recovered. In response to this failure, the licensee replaced the air inlet baffle retaining bolts on both engines. The failed bolt was submitted for failure analysis. The licensee also stated their intention to upgrade the air inlet housing to a redesigned configuration which incorporate a cast baffle as an integral part of the air inlet housing.

The inspectors also witnessed a portion of the undervoltage/safety injection automatic function test on October 27, 1993. During this portion of OST-163, both EDGs started and loaded. However, it was observed by the licensee that an auxiliary contact on EDG B failed to operate. This resulted in loss of input for the breaker position to the plat computer. More importantly, this also required that the EDG B output breaker be manually opened when the test was complete. The breaker was repaired on October 28, 1993. The troubleshooting of the breaker revealed a loose linkage associated with an auxiliary switch.

The inspectors reviewed the data collected for the test. (This review was completed prior to the completion of the licensee's full review of the data.) The inspectors observed that SWBP A operated within its timing tolerance during the test performance on October 26, 1993. However, the same pump started too quickly and was outside of tolerance on October 27, 1993. This phenomena was attributed by the licensee to the design of the SWBP starting circuitry. The SWBP starts on a safety injection signal only after a SW pump is started. Thus, slight variations in the SW pump breaker closing time can be reflected as slight variations in the SWBP starting time. The inspectors reviewed the starting circuitry for the SWBP with the licensee. Additionally, the inspectors also reviewed an evaluation by NED that documents the acceptability of the SWBP starting 0.2 seconds early. The inspector have no further questions on this issue.

The overall conduct of OST-163 as observed by the inspectors was good. The test anomalies described above had minimal impact on the smooth performance of the OST. The evolution pre-brief witnessed by the inspectors was adequate. There was a strong emphasis by Operations personnel in promptly restoring decay heat removal which was interrupted at the start of the OST by procedure. The inspectors have no further questions on this issue.

c. Failure To Perform Required Surveillance Tests

On October 15, a Nuclear Assessment Department audit revealed that two Engineering Surveillance Tests (ESTs) were performed outside their Technical Specification required interval. EST-010, the Containment Personnel Airlock Leakage Test, was performed on April 26, 1992, and again on December 21, 1992. The required interval is a maximum of 230 days. The actual interval was 239 days. Similarly, EST-002, which is the Nuclear Instrumentation System Power Range Axial Offset Calibration test, was performed on June 18, 1993, and again on July 30, 1993. The maximum allowed interval is 38 days. The actual interval was 42 days.

The licensee's investigation into the event identified that the surveillance data base and work process used by Technical Support do not automatically reset scheduled due dates for surveillance tests if they are performed early. Instead, the system depends on the responsible engineer to notify the Technical Support Surveillance Coordinator (TSSC) to reset the due date. If the responsible engineer forgets to do this or the TSSC fails to do it when asked, the scheduled due date may be outside the maximum allowed interval.

The licensee's investigation also noted that Technical Support Guideline TSG-116, "Technical Support Surveillance Control," requires no review of the completed surveillance schedule by management, making the process solely dependent on the responsible engineer and the EST Coordinator, nor did Technical Support management keep track of the EST completion dates, depending solely on the EST Coordinator, the responsible engineer, and the data base to ensure the ESTs were performed on time. It was also noted that the TSSC did not pursue discrepancies when recording test completion dates.

There was minimal safety significance associated with performing the tests late in that when the tests were completed, they were satisfactorily.

The licensee reviewed EST schedule to determine if other ESTs had been missed or performed late during Cycle 15. Three additional surveillance tests, although not required by Technical Specifications, were identified as having missed their testing interval.

The licensee intends to revise procedure TSG-116 and the EST data base to redefine Technical Support management, TSSC and System Engineer responsibilities relative to the control and monitoring of surveillance test performance.

The failure to perform the TS required surveillance in the required interval is a violation of the applicable equipment TS. This violation will not be subject to enforcement action however

because the licensee's efforts in identifying and correcting the violation meet the criteria specified in Section VII.B of the Enforcement Policy. This identified as a non-cited violation, NCV: 93-28-02, Failure To Perform Required Surveillance Testing.

d. Alteration Of OST-410 Test Data

On October 25, 1993, the licensee informed the inspectors that they had terminated a contractor for altering test data. The altered data was a 2510 KW EDG A kilowatt reading logged on October 21, 1993, at 11:05 p.m. during the performance of OST-410, Emergency Diesel Generator "A" Twenty-Four Hour Load Test. This was the EDG A kilowatt loading recorded for the 10-minute period immediately prior to 11:05 p.m. In a written statement, the terminated individual acknowledged changing the 2510 KW reading to 2500 KW. This change was made after concerns were raised by Operations on the 2510 KW reading exceeding the maximum specified loading for the test of 2500 KW, as well as, other minor administrative test deficiencies. In his statement, the terminated individual documented his belief that the EDG A KW meter could not be read to an accuracy of 10 KW. Furthermore, he attributed the alteration to thoughtlessness and not an intent to falsify the document.

As documented in written statements another engineering technical support engineer was aware of the data alteration. However, this engineer did not see the altered data as a violation of the OST since calculations demonstrated that the power factor did not change whether a 2510 or 2500 KW loading was used. The licensee stated that this second individual had been the subject of disciplinary action. The licensee also stated that another individual who was involved peripherally had also received disciplinary action.

The inspectors reviewed the altered data sheet and noted that no initials or other discriminating marks were provided to indicate that the data had been altered. Additionally, the inspectors reviewed an evaluation performed by Engineering Technical Support on October 29, 1993, of the significance of the 10-minute EDG loading to 2510 KW. The evaluation concluded that there was no technical significance to this brief excursion.

The inspector noted that OST-410 was accomplished as a result of a commitment made in response to NRC violation 93-07-01: Failure To Establish Adequate EDG Surveillance Test Procedures as Required by TS 4.6.1.1.

Pending further review by the NRC, this item is identified as an Unresolved item, URI 93-28-03: Alteration Of OST-410 Data.

5. Maintenance Observation (62703)

a. General

The inspectors observed safety-related maintenance activities on systems and components to ascertain that these activities were conducted in accordance with TS, approved procedures, and appropriate industry codes and standards. The inspectors determined that these activities did not violate LCOs and that required redundant components were operable. The inspectors verified that required administrative, material, testing, radiological, and fire prevention controls were adhered to. In particular, the inspectors observed/reviewed the following maintenance activities:

| | | |
|---|---|---|
| WR/JO | 93-ALCW1 | DA-20B Check Valve Disassembly |
| WR/JO | 93-ALCU1 | Repair EDG Air Start Solenoid Conduit Repairs |

b. Pressurizer Pressure Transmitter Calibration

On October 15, 1993, the inspectors were informed by the licensee that pressurizer pressure transmitters, PT-455, PT-456, and PT-457 had been found out-of-tolerance on September 16, 1993. This discovery was made during a routine, refueling interval calibration of the instruments. These instrument provide pressure inputs for the low pressure reactor trip, high pressure reactor trip, and safety injection initiation. All three instruments were found out-of-tolerance high with a 40 psig maximum error observed.

The licensee's investigation indicated that this out of tolerance condition resulted from an improper use of the calibration pressure source on September 16, thereby, resulting in erroneous "as found" data. The improper use of the test equipment was attributed to the failure of a Nuclear Craft Resource individual to properly account for the weights used on the dead weight pressure tester and to correct leaks on the dead weight pressure test setup. The licensee informed the inspectors that the following corrective actions had been taken: calibration of the pressure transmitters on October 13, 1993, and a subsequent re-calibration on October 15, 1993; suspension of all calibrations involving dead weight testers by Nuclear Craft Resource personnel; review of the event with Nuclear Craft Resource personnel; and a review of other calibrations completed by Nuclear Craft Personnel using a dead weight tester. Additionally, the licensee stated their intention to conduct training on proper use of the dead weight tester with Nuclear Craft Resource personnel.

During their review of this issue, the inspectors noted that all three instruments had been readjusted on October 15, 1993. This occurred just two days after the instruments had been properly calibrated. A review of the data, indicated that all three

instruments had experienced setpoint changes. The magnitude of these changes had exceeded the setpoint tolerances specified for the instruments. While attempting to understand the reason for instrument drift out-of-tolerance in two days. The inspectors noted that the tolerance of the dead weight meter as specified in Maintenance Management Procedure, MMM-020, Control Of Portable Measuring And Test Equipment exceeded the pressurized pressure transmitter accuracy as specified in MMM-006, Calibration Program. The inspectors questioned the licensee on these observations. In response, the licensee attributed the apparent instrument drift to the use of the less accurate MT&E. The licensee also stated that though MMM-006 required the use of MT&E with an accuracy greater than the end use instrument or device, the dead weight tester was acceptable. This acceptability was based on an exception in MMM-006 which allows less accurate MT&E if supported by an engineering evaluation or other appropriate justification. It was argued by the licensee that the original setpoint calculations provided the engineering justification for use of the less accurate dead weight tester. The inspectors requested documentation to support this conclusion. The licensee was unable to provide this information and as a result developed Calculation #RNP-I/INST-1048, Pressurizer Pressure Error Analysis.

Technical Specification 6.5.1.1. Procedures, Tests, and Experiments, requires, in part, that written procedures by established, implemented, and maintained for the activities recommended in Appendix A of Regulatory Guide 1.33, Rev 2. 1978. Paragraph 8 of Appendix 8 requires that procedures provided to ensure the proper calibration of installed plant instrumentation. Maintenance Management Manual Procedure, MMM-006, Calibration Program is provided to ensure the proper calibration of installed plant instrumentation.

Contrary to the above, on September 13, 1993, the licensee failed to follow MMM-006, in that no documented engineering evaluation or other appropriate justification existed to support using a dead weight tester for the pressurizer pressure transmitter calibration. The analysis was required since the dead weight tester did not have sufficient accuracy to satisfy the requirements of MMM-006.

The failure to have an engineering evaluation or other appropriate justification documented to support the use of the less accurate dead weight tester is a violation of the requirements of MMM-006. This is identified as one of three examples of inadequate procedures of failure to follow procedures identified in this report which in the aggregate comprise Violation 93-28-04, Three Examples of Inadequate Procedures or Failure To Follow Procedures.

The inspectors reviewed an unofficial copy of the error analysis and a copy was provided to Region II for review. This error analysis concluded that sufficient margin to the reactor trip and

safety infection setpoints existed even with the use of the dead weight tester. The inspectors noted, however, that only a 1.02 psig margin existed for the low pressure reactor trip setpoint. Further, this was accomplished with the accuracy of a circuit component, the lead-lag controller, greater than that specified in MMM-006. The inspectors requested documentation to support the lead-lag controller accuracy used in the error analysis. This is identified as an inspector followup item, IFI 93-28-05: Documentation Of Lead-Lag Controller Accuracy.

c. RC Filter Changeout

On November 7, 1993, the inspectors witnessed changeout of the RCS filter. In all, eight filter elements from the filter housing were transferred to a movable waste pig. The removal of the first three filter elements was accomplished with a long handled filter removal tool. However, after the third element was transferred, the tool failed. Following this failure, the health physics supervisor elected to transfer the remaining filters by hand. The cumulative dose recorded by the licensee, exclusive of NRC inspector dose, was 0.622 person-rem.

The inspectors noted that there were indications of potential problems with the filter handling tool even prior to lifting the first element. The filter handling tool air reservoir completely emptied while the workers were performing pre-operational familiarization on the tool. Additionally, the inspectors noted that some of the air line fittings were wrapped with duct tape. After the second filter element was transferred, the air reservoir again bled down. The health physics technicians involved, stated that the tool had been effectively used in the past without the need to interrupt filter changeout to recharge the reservoir.

The inspectors concluded that the failure of the filter removal tool added dose to that received by the mechanics and health physics technician. The failure of the licensee to plan for any backup capability for the filter changeout tool, such as a standby source of air or a spare manual tool is considered a weakness.

The licensee generated a concern form to address this situation. Despite this weakness, the inspectors found the overall conduct of the job satisfactory. The pre-job brief was thorough and the personnel involved continued to operate smoothly after the tool failed.

d. Inadequate Procedure Employed During Valve Maintenance

On November 8, 1993, the licensee was attempting to heat up the reactor coolant system using reactor coolant pump heat. The operators discovered that they could not attain a heatup rate desired, and began an investigation. After extensive troubleshooting, it was determined that pressurizer spray valve

PCV-455B was not isolating flow when it was in the closed position. It was ultimately determined that the valve had been improperly reassembled when the valve had undergone maintenance during the refueling outage.

The licensee concluded that the valve, a Fisher ball valve, and it's air operator had been mis-coupled during the maintenance such that the valve was approximately 90 degrees open when the actuator was in the closed position. After considerable verbal communication with the valve vendor, the licensee was able to re-couple the valve and achieve acceptable performance.

A review of the event, revealed that the procedure used, CM-121, Pressurizer Spray Valve Maintenance, PCV-455 A/B, was inadequate to effectively guide the mechanic in the reassembly of the valve and that the mechanic had not followed the procedure.

The procedure was inadequate in that it did not address the valve in it's as built configuration. More specifically, the valve is installed with the actuator positioned horizontally and the procedure addresses the valve as if it were installed vertically. Due to the unique off center, circular coupling between the valve and the actuator, the licensee believes that the procedure deficiency promulgated the erroneous coupling.

The procedure required in part, that the maintenance personnel align match marks on the valve and the actuator arm when they originally re-assembled the valve. The maintenance personnel found that there were no match marks. Instead of stopping the maintenance, and identifying the problem such that an adequate technical review and procedure change could be affected, they relied instead on verbal communication with the valve vendor.

Technical Specification 6.5.1.1, Procedures, Tests, and Experiments requires, in part, that written procedures be established, implemented, and maintained covering the activities recommended in Appendix A of Regulatory Guide 1.33, Rev. 2. 1978. Regulatory Guide 1.33, Paragraph 9, requires that maintenance be performed in accordance with written procedures. Procedure CM-121, Pressurizer Spray Valve Maintenance, PCV-455 A/B was furnished to provided guidance in the maintenance of valve PCV-455 B. Contrary to those requirements, Procedure CM-121, Pressurizer Spray Valve Maintenance was not only inadequate, but the maintenance technicians failed to follow the instructions. This is identified as one of three examples of inadequate procedures or failure to follow procedures identified in this report which in the aggregate comprise Violation 93-28-04, Three Examples of Inadequate Procedures or Failure To Follow Procedures.

e. Inadequate Procedure Controlling Maintenance On Service Water Pump D

On November 1, 1993, during post maintenance testing of the D service water pump, the licensee detected that the pump was not producing adequate flow. Subsequent investigation revealed that the pump impeller clearance had been mis-adjusted during maintenance.

Procedure CM-704, Service Water Pump Motor Maintenance, had been used on September 16, to set the impeller clearance. The procedure was identified at that time to have improper instruction for setting the clearance. The procedure instructed maintenance personnel to set the clearance half way between the impeller to casing top and bottom contact, as opposed to .020 inches from bottom contact.

Another procedure, CM-010, Service Water Pump Overhaul, had been used on August 5, to properly set the impeller clearance. It was noted at that time, that CM-704, and CM-010 did not agree with respect to the guidance delineated concerning the clearance. A minor adverse condition report (MAC) was generated to correct CM-704. There was no urgency associated with the change, nor was the procedure flagged to identify the discrepancy before reuse. The procedure was still in review to address the proposed changes on September 16, when the clearance was improperly set. The impeller clearance was properly adjusted and the pump was returned to service.

Technical Specification 6.5.1.1, Procedures, Tests, and Experiments requires, in part, that written, approved, adequate procedures be established, implemented, and maintained covering the activities recommended in Appendix A of Regulatory Guide 1.33, Rev. 2. 1978. Regulatory Guide 1.33, Paragraph 9, requires that maintenance on safety related equipment be performed in accordance with written procedures. Procedure CM-704, Service Water Pump Motor Maintenance is provided to facilitate maintenance, in part, on the D service water pump. Contrary to the above, Procedure CM-704, Service Water Pump Motor Maintenance inadequate to facilitate maintenance on the D service water pump in that it provided erroneous guidance for setting the pump impeller clearance. This event is identified as one of three examples of inadequate procedures or failure to follow procedures identified in this report which in the aggregate comprise Violation 93-28-04, Three Examples of Inadequate Procedures or Failure To Follow Procedures.

6. Exit Interview (71701)

The inspection scope and findings were summarized on November 20, 1993, with those persons indicated in paragraph 1. The inspectors described the areas inspected and discussed in detail the inspection findings

listed below and in the summary. The licensee did not identify as proprietary any of the materials provided to or reviewed by the inspectors during this inspection.

| Item Number | Description and Reference |
|---|---|
| 93-28-01 | NCN: Failure to follow fuel handling procedure, paragraph 3.c. |
| 93-28-02 | NCV: Failure to perform required surveillance testing, paragraph 4.c. |
| 93-28-03 | URI: Alteration of OST-410 data, paragraph 4.d. |
| 93-28-04 | VIO: Three examples of inadequate procedure, paragraph 5.b., 5.d., and 5.e. |
| 93-28-05 | IFI: Documentation of lead-lag controller accuracy, paragraph 5.b. |

7. List of Acronyms

| | |
|---|---|
| CCW | Component Cooling Water |
| CFR | Code of Federal Regulations |
| EDG | Emergency Diesel Generator |
| ERFIS | Emergency Response Facility Information System |
| HVAC | Heating Ventilation Air Conditioning |
| IEN | Inspection Enforcement Notice |
| LCO | Limiting Condition for Operation |
| LER | Licensee Event Report |
| LOCA | Loss of Coolant Accident |
| MII | Management Information Items |
| MMM | Maintenance Management Manual |
| NRC | Nuclear Regulatory Commission |
| OST | Operations Surveillance Test |
| PIC | Process Instrument Calibration |
| PPM | Parts Per Million |
| SI | Safety Injection |
| SRO | Senior Reactor Operator |
| TAVE | Average Temperature of the Reactor Coolant |
| TI | Temporary Instruction |
| TMI | Three Mile Island |
| TREF | Reference Temperature of the Reactor Coolant |
| TS | Technical Specification |
| URI | Unresolved Item |
| VIO | Violation |