UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION II
101 MARIETTA ST., N.W.
ATLANTA, GEORGIA 30323

Report Nos.: 50-250/89-07 and 50-251/89-07

Licensee: Florida Power and Light Company
9250 West Flagler Street
Miami, FL 33102

Docket Nos.: 50-250 and 50-251 License Nos.: DPR-31 and DPR-41

Facility Name: Turkey Point 3 and 4

Inspection Conducted: February 13-17, 1989

Inspectors: Stephen Tingen 4/6/89
S. Tingen Date Signed

S. Sparks 4/7/89
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Approved by: G. Belisle 4/7/89
G. Belisle, Chief Date Signed
Test Programs Section
Engineering Branch
Division of Reactor Safety

SUMMARY

Scope

This routine, announced inspection was in the areas of Inspection and Enforcement (IE) Bulletin followup, main steam and pressurizer safety valve complex surveillance and inservice testing, Information Notice followup, Emergency Diesel Generator fuel oil, and inservice stroke testing of primary containment isolation valves.

Results

Weaknesses were identified in the licensee IE Bulletin 85-03, Motor-Operated Valve Common Mode Failures During Plant Transients Due to Improper Switch Settings, program that involved failure of several valves to operate and inadequate root cause analysis for valve deficiencies, paragraph 2.a.

One unresolved item identified involving discrepancies between as-left and as-found main steam safety valves ring settings, paragraph 3.c.(1).

Within the areas inspected the following violations were identified:

Failure to adjust pressurizer safety valve (PSV) ring settings following setpoint testing and maintenance in accordance with procedures 3SMM-041.1 and 3CMM-041.1, paragraph 3.c.(2).

Failure to revise procedures to recognize correct PSV ring settings, paragraph 3.c.(3).

Failure to increase inservice testing frequency, and failure to take subsequent corrective action, paragraph 5.

In paragraph 3.c.(3), the licensee made a commitment regarding Unit 4 Pressurizer Safety Valve 551B ring settings that would be accomplished prior to startup from the present refueling outage.

In paragraph 4, the licensee made commitments involving Emergency Diesel Generator fuel oil sampling.

REPORT DETAILS

1. Persons Contacted

Licensee Employees

*T. Abbatiello, Supervisor, Quality Assurance
*J. Arias, Assistant Plant Manager
*J. Cross, Plant Manager
*R. Earl, Supervisor, Quality Control
*E. English, Supervisor, Chemistry Department
*S. Franzone, Lead Engineer
*J. Ganfrancesco, Superintendent, Maintenance
*T. Gilmore, System Engineer
*R. Hart, Supervisor, Regulation and Compliance
*E. Lyons, Compliance Engineer
*K. Miller, Inservice Test Coordinator
*J. Odom, Site Vice President
*W. Raasch, Lead Mechanical Systems Engineer
*K. Remington, Supervisor, System Performance
*S. Shiple, Electrical Engineer
*F. Southworth, Superintendent, Technical Support
*R. Steinke, Supervisor, Chemistry Department
*M. Wayland, Assistant Superintendent, Electrical Maintenance
*A. Zielonka, Supervisor, Engineering

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

NRC Resident Inspectors

*R. Butcher, Senior Resident Inspector
*G. Schnebli, Resident Inspector

*Attended exit interview

2. IE Bulletin Followup (25573) (92703)

a. (Open) 85-BU-03, T2515/73, Motor Operated Valve Common Mode Failure During Plant Transients Due to Improper Switch Settings. The purpose of this IE Bulletin is to require licensees to develop and implement a program to ensure that switch settings for high pressure coolant injection and emergency feedwater system motor operated valves (MOVs) subject to testing for operational readiness in accordance with 10 CFR 50.55a(g) are properly set, selected, and maintained.

In order to evaluate the licensee's IE Bulletin 85-03 program, the inspectors held discussions with the appropriate licensee personnel and reviewed the following:

Florida Power and Light Company's (FPL) letter, dated January 14, 1988, Serial No. L-88-18, Turkey Point Unit 3 Docket No. 50-250, IE Bulletin 85-03.

Plant work orders and assigned post maintenance test requirements for valves MOV-3-864A, MOV-3-864B, MOV-3-843A, MOV-3-843B, MOV-6459C, and MOV-3-1404.

Procedure O-CME-102.1, Revision 93, Motor Operated Valve Operator Maintenance.

Procedure O-PME-120.4, Revision 32, Motor Operated Valve Operator Inspection.

Procedure O-GME-102.4, Revision 78, MOVATS Testing of Safety-Related Limitorque Motor Operated Valve Actuators.

Maintenance Work Histories dating back to April 1987 for all Unit 3 IE Bulletin 85-03 valves.

Administrative Procedure 190-28, Post Maintenance Testing.

Fourteen MOVs are in the Turkey Point Unit 3 IE Bulletin 85-03 program. Unit 3 IE Bulletin 85-03 valve testing was completed during the 1987 spring/summer refueling outage; Unit 4 testing is still in progress. In order to determine how effective the licensee's IE Bulletin 85-03 program is in assuring MOV operability, the inspector reviewed the maintenance histories for all 14 Unit 3 IE Bulletin 85-03 valves dating back to completion of the 1987 refueling outage testing to present. Plant Work Orders (PWOs) were written by plant personnel to document MOV deficiencies. Reviewing a valve's maintenance history consisted of reviewing all the PWOs filed against the valve. Review of the IE Bulletin 85-03 valve maintenance histories revealed that two valves recently experienced failures, root causes analysis of valve failures and other associated MOV problems were not always adequate, and MOVs were not being tested following maintenance in accordance with administrative requirements.

The following Unit 3 IE Bulletin 85-03 valve failures have occurred since the 1987 refueling outage:

Valve	PWO No.	Date	Description
MOV-3-1404	63-3672	10/15/88	Valve will not operate, overload tripped
MOV-3-1404	63-2082	01/30/88	Actuator gear - housing cracked
MOV-6459A	69-5508	01/14/89	Valve will not operate, thermal overloads tripped
MOV-6459A	69-5606	02/02/89	Valve will not operate, thermal overloads tripped.

The cause of the cracked gear housing and thermal overloads tripping is presently unknown. Because of these failures, MOV-3-1404 and MOV-6459A valve actuators were replaced with Unit 4 valve actuators; however, a root cause evaluation was not performed to determine why these valves failed. Root cause determination has to be addressed or the same problems may occur with the Unit 4 actuators installed on the Unit 3 valves. Other examples of insufficient root cause determination are as follows:

Valve	PWO No.	Date	Description
MOV-3-864B	63-502	11/21/87	Valve leaks by seat
MOV-3-864A	63-1220	05/16/87	Water found in actuator grease
MOV-3-864A	63-2675	11/30/88	Small amount of water issued from actuator when grease plug removed.

Valve MOV-3-864B is the Unit 3 Refueling Water Storage Tank to High Head Safety Injection Pump Suction valve which is normally open. The corrective action for the valve seat leakage was to cycle the valve while measuring the motor current. The motor current readings were satisfactory and as corrective action, the valve was manually seated with three hard handwheel turns. This corrective action was insufficient, in that, it did not determine why the valve was leaking by the seat. In addition, over torquing an MOV handwheel could result in damage to the actuator and/or valve.

Water has been found in the actuator of valve MOV-3-864A twice. Corrective action has involved grease replacement after the first discovery of the water in the actuator, and inspection of grease after the second discovery. No root cause determination has been made on how the water got into the actuator.

Administrative Procedure 190.28 provides MOV post maintenance test requirements. One requirement contained in this procedure is to measure motor starting and running current if maintenance is performed on valve packing. During the inspection, the inspectors found several instances where valves were repacked without obtaining the required current measurements following maintenance. In November 1988, valves MOV-3-843A and MOV-3-843B were repacked per PWOs 63-2558 and 63-2237. The inspector could find no evidence of motor current being measured following this maintenance. Measuring motor current following maintenance on MOV packing is not an ASME Section XI Code requirement; however, it is a procedural requirement. Since this is not a code requirement, a violation is not warranted. However, this matter was fully discussed with licensee personnel and they are reviewing this matter. Based on this review, appropriate corrective action will be taken.

Status of IE Bulletin 85-03 Action Items a through f.

(1) IE Bulletin 85-03, Action Items a and b, require that the design basis for the operation of each IE Bulletin 85-03 valve be reviewed and documented, and switch settings be reviewed and revised as necessary. Per the licensee, 90 percent degraded voltage was a criteria for determining valve thrust values. The inspectors questioned the basis for the percent degraded voltage and was informed by the licensee that, after further investigation, degraded voltage values of 80 and 88 percent were considered to be applicable and factored into thrust valves. Since there appeared to be a change in criteria for degraded voltages used to determined MOV thrust values, this area will be reviewed in more detail during a subsequent IE Bulletin 85-03 inspection. As previously discussed, several valves have failed since completing the IE Bulletin 85-03 program. Until the root cause of these failures is determined, the adequacy of the design review and switch setting policy performed as a result of IE Bulletin 85-03 is questionable.

(2) IE Bulletin 85-03, Action Item c, required that switch settings be changed as appropriate, based on the design review performed, and that each valve be demonstrated operable by testing the valve at the maximum differential pressure it will see during the worst case accident. The licensee utilized the Motor Operated Valve Actuator Test System (MOVATS) to obtain the as-found switch settings and verify the as-left switch settings. Differential pressure testing was accomplished by placing all IE Bulletin 85-03 MOVs with identical actuators, valves, and

functions into a test group. At least one valve out of each test group was tested at the maximum achievable differential pressure utilizing reactor plant normal installed equipment. All remaining MOV switches in the test group were set to develop more thrust at torque switch trip than the test valve. The inspector considered that the licensee action response to IE Bulletin 85-03 Action Item c to be acceptable.

(3) IE Bulletin 85-03, Action Item d, required procedures to be prepared or revised to ensure that switch settings are maintained throughout plant life, and provide provisions to monitor valve performance. Review of the licensee's procedures indicated that revised switch settings have been incorporated, and that instructions were provided to ensure switches were correctly set. The licensee does not have a program to monitor valve performance throughout plant life. In order to complete Action Item d, the licensee has to develop a program that will monitor valve performance throughout plant life and provide post maintenance test requirements.

Review of the licensee MOV procedure revealed that the electrical maintenance procedures provided the necessary instructions to ensure that switch settings are correctly set. However, the licensee's program is lacking in regards to mechanical maintenance procedures. As previously discussed, the actuator for Unit 3 Valve MOV-3-1404 was removed and replaced with a Unit 4 actuator. The instructions used to exchange the actuators were written on the PWOs by a Job Planner, who is an ex-mechanic who copied the instructions from an old procedure that had expired. Valve MOV-3-1404 is presently lying on a shop bench waiting for a procedure from Corporate to provide instructions for disassembly, which is delaying root cause analysis of the crack in the actuator body. The licensee does not have a station procedure to remove/reinstall or disassemble/repair the MOV-3-1404 actuator. In order for a MOV program to be considered acceptable, permanent station procedures to perform MOV mechanical maintenance are required. In the past, Corporate has issued temporary procedures to accomplish mechanical maintenance, but these procedures expire after one year.

(4) As requested Action Item e of IE Bulletin 85-03, the licensee identified the selected safety-related valves, the valves' maximum differential pressures, and the program to assure valve operability in their letters dated May 15, May 28, October 10, and November 18, 1986. Review of these responses indicated the need for additional information which was contained in an NRC, Region II, letter to the licensee dated August 18, 1987.

Review of the licensee's September 17, 1987, response to this request for additional information indicated that the licensee's

selection of the applicable safety-related valves to be addressed and the valves' maximum differential pressures meets the requirements of IE Bulletin 85-03 and that the program to assure valve operability requested by Action Item e of IE Bulletin is now acceptable.

(5) IE Bulletin 85-03, Action Item f, required that a written report be issued to the NRC on completing the IE Bulletin 85-03 program. The licensee issued the Unit 3 report on January 14, 1988. The Unit 4 IE Bulletin 85-03 program is in progress and will be completed during the present refueling outage.

b. IE Bulletin 86-03 Followup

(Closed) 86-BU-03, Potential Failure of Multiple ECCS Pumps Due to Single Failure of Air-operated Valve in Minimum Flow Recirculation Line. This bulletin required licensees to determine if a single valve failure due to loss of air or electric power in the safety injection (SI) pumps recirculation line would result in dead heading and subsequent failure of the SI pumps. The licensee determined that this did apply and has completed the corrective action.

Unit 3 valves, 3-856A and 3-856B, and Unit 4 valves, 4-856A and 4-856B, are installed in series in the SI pump minimum flow common recirculation line to the Refueling Water Storage Tank (RWST). These valves fail-closed on loss of air or electrical power resulting in dead heading all SI pumps. Modifications PL/M 86-181, for Unit 3, and 86-182, for Unit 4, replaced air operated valves 856A and B with motor operated valves. The motor operated valves are open during normal operation and during SI injection. On loss of electrical power the valves fail as is. Isolating the RWST will also be available in the event of a single failure since the valves are in series and only one valve will be required to be closed for isolation.

Within the areas inspected, no violations or deviations were identified.

3. Main Steam and Pressurizer Safety Valve Complex Surveillance Testing, Inservice Testing, and Information Notice Followup (61701) (73756) (92701)

The inspectors reviewed the Unit 3 Pressurizer Safety Valve (PSV) and Main Steam Safety Valve (MSSV) setpoint test results obtained during the 1987 Refueling Outage (RFO), the Unit 4 PSV setpoint results obtained during the 1988 RFO, and the Unit 4 MSSV setpoint results obtained during the 1986 RFO. MSSV and PSV test specifications are contained in ASME Code Section XI, 1980 Edition, which invokes ANSI/ASME-PTC-25-3-1976, Safety Relief Valves Performance Test Codes.

In order to evaluate the licensee's MSSV and PSV setpoint programs, the inspectors conducted discussions with appropriate licensee personnel and reviewed the following:

FPL Inter-office correspondence, dated August 12, 1986, Site File No: P-71, Turkey Point Units 3 and 4 Pressurizer Safety Valve Ring Settings.

Procedures 3/4-CMM-041.1, Pressurizer Safety Valve Repair and Setting.

Procedures 3/4-SMM-041.1, Pressurizer Safety Valve Setpoint Testing.

WYLE Laboratories, Turkey Point Unit 4, MSSV Test Reports dated April 1984 and February 1986.

WYLE Laboratories, Turkey Point Unit 3, MSSV Test Reports dated May 1985 and April 1987.

Crosby Valve and Gauge Company, Unit 3, PSV Field Service Report dated April 2. 1987.

a. MSSV Testing

Every RFO all 12 MSSVs are removed from the applicable Unit and sent to WYLE Laboratories for seat leakage and setpoint testing. The following are the results of the Unit 3 1987 RFO and Unit 4 1986 RFO as-found MSSV setpoint testing conducted by WYLE Laboratories:

UNIT 3

Valve No.	Setpoint Tolerance PSIG	As-found Setpoint PSIG	Percent Deviation From Setpoint Tolerance
BL0387	1085 ± 1%	1091	0.0
BL0388	1085 ± 1%	1058	-2.5
BL0389	1085 ± 1%	1052	-3.0
BL0391	1100 ± 1%	1122	+2.0
BL0392	1100 ± 1%	1115	+1.4
BL0393	1100 ± 1%	1097	0.0
BL0395	1115 ± 1%	1112	0.0
BL0396	1115 ± 1%	1141	+2.3
BL0397	1115 ± 1%	1092	-2.0
BL0390	1130 ± 1%	1130	0.0
BL0394	1130 ± 1%	1142	+1.1
BL0398	1130 ± 1%	1114	-1.4

UNIT 4

Valve No.	Setpoint Tolerance PSIG	As-found Setpoint PSIG	Percent Deviation From Setpoint Tolerance
BL0399	1085 ± 1%	1076	0.0
BL0400	1085 ± 1%	1066	-1.8
BL0401	1085 ± 1%	1076	0.0
BL0402	1100 ± 1%	1076	-2.2
BL0403	1100 ± 1%	1091	0.0
BL0404	1100 ± 1%	1099	0.0
BL0405	1115 ± 1%	1129	+1.3
BL0406	1115 ± 1%	1089	-2.3
BL0407	1115 ± 1%	1074	-3.7
BL0408	1130 ± 1%	1122	0.0
BL0409	1130 ± 1%	1140	0.0
BL0410	1130 ± 1%	1144	+1.2

Following repair of Unit 3 and Unit 4 MSSVs at Wyle Laboratories all valves were checked for seat leakage and setpoint. All final setpoints were within the allowed setpoint tolerance range. With the exception of setting and maintaining MSSV ring settings, the inspectors considers that the licensee MSSV setpoint meets the ASME Code Section XI requirements. Ring settings are discussed in paragraph 3.c.

b. PSV Setpoint Testing

Turkey Point PSVs, 3 per Unit, are installed on uninsulated loop seals attached to be top of the pressurizer. The loop seal piping temperature has been measured to be approximately 110°F. The PSVs are manufactured by Crosby and seat leakage is not a problem. Each refueling outage all PSVs are removed and seat leaked and setpoint tested on a test stand by the licensee. Nitrogen at ambient temperature is the test medium and no method of correlation is utilized. Three consecutive lifts, within allowable tolerance, is required to verify the setpoint. All Unit 3 PSV as-found setpoints obtained during the 1987 RFO were within the allowable setpoint tolerance range of 2485 ± 1 percent psig, and all as-left setpoints were within specifications. The Unit 4 1988 RFO PSV as-found setpoints were initially not correctly obtained and therefore not accurate. Prior to setpoint testing a PSV, the lower rings are adjusted to obtain a "crisper pop"; the Unit 4 PSV rings were not adjusted properly during the as-found testing and therefore did not yield an accurate setpoint. After discovery of this discrepancy by the licensee, the lower ring settings were then properly adjusted to obtain a "crisp pop" and the valves were retested and setpoints adjusted to specified tolerances. With the exception of setting and maintaining PSV ring settings, the inspectors considered that the

licensee PSV setpoint program meets the ASME Code Section XI requirements. Ring settings are discussed in the following paragraph.

c. PSV and MSSV ring settings are required to be strictly controlled in order to maintain the valve's design blowdown and flow capacities. During the MSSV and PSV setpoint program review, the inspectors noted the following areas where PSV and MSSV ring settings were not adequately maintained.

(1) During the 1985 and 1987 RFOs, all Unit 3 MSSVs were sent to WYLE laboratories for testing. The 1985 and 1987 MSSV WYLE Test Reports document the as-found ring settings which is determined prior to performing any testing and also documents the as-left ring settings which are the ring settings after all maintenance and testing have been completed. In several instances the 1985 MSSV as-left ring settings were not the same as the 1987 as-found ring settings. Once adjusted, MSSV rings are locked in place; therefore, the 1985 as-left and 1987 as-found ring settings should have been the same. Examples of Unit 3 MSSV ring setting discrepancies are as follows:

Valve No.	1985 RFO As-Left Ring Settings	1987 RFO As-Found Ring Settings
BL0398	-6/+165	-6/+197
BL0391	-6/+165	-6/+199
BL0389	-6/+165	-8/+217
BL0388	-6/+165	-7/+183

The Unit 4 1984 and 1986 MSSV WYLE Test Reports also indicate discrepancies between ring settings. Examples of such are as follows.

Valve No.	1984 RFO As-Left Ring Settings	1986 RFO As-Found Ring Settings
BL0399	-6/+165	-8/+203
BL0403	-6/+165	-8/+133
BL0409	-6/+165	-8/+223

The reason for the discrepancies between the as-left and as-found MSSV ring settings is unknown. This matter is identified as unresolved item 250, 251/89-07-01 pending completion of the licensee investigation into why these MSSV ring setting discrepancies exist.

(2) During the Unit 3 1987 RFO, Unit 3 PSVs 551A and B were setpoint tested in accordance with Procedure 3SMM-041.1 which requires that the as-found PSV lower ring setting be determined and documented in the procedure. After testing completion, Procedure 3SMM-041-1 requires the lower PSV ring to be returned to the previous as-found recorded setting. In lieu of returning the lower rings to the as-found setting, the lower rings on valves PSV 551A and B were set to the on site vendor recommendations which conflicts with the instructions contained in Procedure 3SMM-041.1.

During the Unit 3 1987 RFO, Unit 3 PSV, 551C, was repaired for seat leakage and setpoint tested in accordance with Procedure 3CMM-041.1 which requires the as-found upper and lower ring settings be counted and documented in the procedure. After completing the testing, Procedure 3CMM-041.1 required the rings to be returned to the previously recorded as-found settings. In lieu of returning both upper and lower rings to the as-found setting as required by the procedure, both upper and lower rings were set to the on site vendor recommendations which conflicts with the instructions contained in Procedure 3CMM-041.1.

Failure to adjust PSV ring settings following setpoint testing and maintenance in accordance with Procedures 3SMM-041.1 and 3CMM-041.1 is identified as Violation 250, 251/89-07-02.

(3) FPL inter-office correspondence dated August 12, 1986, File No: P-7-1, identified a discrepancy between the current PSV ring settings and as-shipped from Crosby ring settings, and requested that procedures be revised to require setting of PSV rings to the original as-shipped settings prior to the return to service following the next maintenance or testing activity. The following April, during the 1987 RFO, all Unit 3 PSVs were tested. The procedures used to test the PSVs, 3SMM-041.1 and 3CMM-041.1, had not been revised to reset the ring settings to the as-shipped values as requested in the August 12, 1986 inter-office correspondence, and as a result, the rings were not adjusted to the as-shipped valves.

During the Unit 4 1988 RFO, PSV 551B was replaced, and the replacement valve's rings were set in accordance with Procedure 4CMM-041.1 which specified -5 notches for the lower ring and -235 notches for the upper ring. The inspectors requested the as-shipped vendor ring settings for the replacement valve and was informed by the licensee that the ring settings were -16 notches for the lower ring and -260 notches for the upper ring. During replacement of the Unit 4 PSV 551B, the licensee failed to revise Procedures 4CMM-4.11 and 4SMM-4.11 to recognize the replacement PSV ring settings. Per telecon on March 2, 1989, the licensee committed to adjust PSV 551B ring settings to

vendor specifications or evaluate if the present ring settings are adequate prior to Unit 4 startup from the present RFO.

Failure to revise procedures to recognize correct PSV ring settings is identified as Violation 250, 251/89-07-03.

d. IE Information Notice 86-05, Main Steam Valve Test Failures and Ring Setting Adjustments, and Supplement 1 Followup

This Information Notice alerts licensees that MSSVs on pressurized water reactors may have never been adequately tested to verify that the valves could pass full rated steam flow. Several examples were cited where utilities had to adjust the MSSV ring settings from vendor original specifications to new settings based on full flow testing performed on the licensee's MSSVs.

During the Unit 3 1987 RFO, WYLE tested the MSSVs for blowdown, and made the required ring setting adjustments to obtain a four to five percent blowdown for each valve. While testing for blowdown, valve disk lift was measured and verified to lift the required amount to pass full rated steam flow. Unit 4's MSSVs, were tested and adjusted for blowdown during the present refueling outage at WYLE. The Unit 4 MSSV WYLE Test Report was not yet available. The following Unit 3 MSSV ring settings were adjusted to the following settings in order to obtain the desired blowdown:

Valve No.	Name Plate Ring Settings	Ring Settings Required for 4-5 Percent Blowdown
BL0387	-6/+158	-8/+160
BL0388	-7/+183	-8/+160
BL0389	-6/+217	-8/+200
BL0391	-6/+199	-8/+160
BL0392	-8/+180	-6/+172
BL0393	-18/+208	-6/+162
BL0395	-6/+172	-8/+160
BL0396	-6/+158	-10/+180
BL0397	-6/+168	-8/+200
BL0390	-5/+175	-10/+280
BL0394	-8/+200	-6/+162
BL0398	-6/+197	-8/+170

Within the areas inspected, two violations were identified.

4. TI 2515/100 - Proper Receipt, Storage, and Handling of Emergency Diesel Generator (EDG) Fuel Oil (25588)

The inspectors reviewed the EDG fuel oil storage and supply system, with emphasis on licensee programs to insure adequate Fuel Oil (FO) quality. This inspection was performed using the guidance contained in Temporary Instruction (TI) 2515/100, and specific details are included below:

- The licensee periodically recirculates FO in the main storage tank using a temporary setup to remove accumulated particulates. Recirculation is performed at intervals less than one year.

- All FO storage tanks have been cleaned and inspected per approved procedures within the ten year minimum in accordance with Regulatory Guide (RG) 1.137, Fuel-Oil Systems for Standby Diesel Generators.

- Chemical additions to the EDG FO to prevent oxidation and bacterial growth are done using Procedure O-NCOP-022, Diesel Fuel Oil Delivery Truck Chemical Addition.

- Periodic skid tank, day tank, and main storage tank sampling is conducted in accordance with ASTM D4057-81, Manual Sampling of Petroleum and Petroleum Products, and is being performed using approved procedures. Samples are analyzed per ASTM D975-77, Standard Specification for Diesel Fuel Oils, and EDG vendor Maintenance Instruction 1750, Rev. H. Main storage tank samples are taken from the FO transfer line, which is approximately 9 inches above the tank bottom.

- Day tanks and integral tanks are being checked for water monthly, and after each EDG operation greater than one hour. Accumulated water is drained from the main storage tank once every 92 days per Procedure O-OSP-022.6.

- Filter and strainer preventative maintenance is being performed per vendor recommendations, and is controlled by plant procedures.

In addition to the TI 2515/100, the inspectors also compared the licensee EDG FO program with RG 1.137. Although the licensee is not committed to RG 1.137, consideration could result in potential improvements to FO quality. The following items were discussed with the system engineers and licensee management:

- RG 1.137 requires that prior to adding new FO to the main storage tanks, onsite samples should be taken and tests should be conducted to determine specific or API gravity, water and sediment, and viscosity. The licensee currently samples new fuel and tests for the above properties (and other properties), but results are not available until after fuel is transferred to the main storage tank. Licensee management committed verbally to onsite EDG fuel oil testing for API gravity, water and sediment, and viscosity prior to adding fuel oil to the main storage tanks.

- ANSI N195-1976, Fuel Oil Systems for Standby Diesel-Generators, which is referenced in RG 1.137, states the FO system shall be provided with a strainer of duplex design, and one differential pressure indicator for each duplex strainer. The licensee's system contains a single strainer at the pump suction, with a pressure indicator at the pump discharge.

- Duplex filters at the pump discharge are run as dual element. Currently, the EDG is declared inoperable when these filters are replaced per the quarterly preventative maintenance procedure. System engineers are currently planning a special test to determine if operating the EDG fuel oil filters in a single element line up in lieu of the current duplex lineup is prudent. Licensee management committed to conducting this test, and implementing a single element filter alignment in EDG operating procedures by May 26, 1989. This commitment is identified as Inspector Follow-up Item (IFI) 89-07-04.

Within this area, no violations or deviations were identified.

5. Inservice Testing - Primary Containment Isolation Valve Stroke Time Testing (73756)

The inspectors reviewed primary containment isolation valve stroke time results obtained from Operating Procedure 0209.1, Valve Exercising Procedure, dating back to 1986. The requirements for performing valve stroke times are contained in the licensee's Inservice Test Program for Pumps and Valves, which invoke Section XI, Subsection IWV of the 1980 American Society of Mechanical Engineers (ASME) Code Edition thru Winter 1981 Addenda.

Paragraph IWV-3417(a) requires that if a stroke time increase of 25 percent or more from the previous test for valves with full-stroke times greater than 10 seconds or 50 percent or more for valves with full-stroke times less than or equal to 10 seconds is observed, test frequency shall be increased to once each month until corrective action is taken, at which time the original test frequency shall be resumed. In any case, any abnormality or erratic action shall be reported.

The inspectors reviewed testing records and interviewed licensee personnel regarding the general methods used during valve stroke testing. The licensee stated that for an occasional valve stroke time that exceeded the 50 percent (or 25 percent, as appropriate) requirement, the corrective action may involve re-stroking the valve two or three more times. If subsequent re-stroking results in stroke times which exceeded the 50 percent requirement for increased testing frequency, the valve is placed in the monthly surveillance frequency and corrective action is taken. However, if subsequent re-stroking results in stroke times which did not appear to be abnormal and which would not increase testing frequency, no further action is taken and testing frequency remains unchanged. Specifically, the following two cases were identified by the inspectors:

- Valve CV-4-2907, tested January 7,1988, initially opened in 8.8 seconds, which was greater than 50 percent from the previous test. The valve was re-stroked in 5.0 seconds and 4.2 seconds (less than 50 percent from the previous test), and the surveillance frequency remained unchanged.

- Valve CV-3-4658A, tested on August 7, 1988, initially closed in 1.48 seconds, greater than 50 percent from the previous test. Subsequent valve stroke times were 0.61 and 0.59 seconds, and surveillance frequency remained unchanged.

Failure to increase testing frequency when valves initially exceeded a stroke time increase of 50 percent or more for valves with full-stroke times less than or equal to 10 seconds, and failure to take appropriate corrective action is a violation of the ASME code Section XI Paragraph IWV 3417(a) and is identified as Violation 250, 251/89-07-05.

In addition, the inspectors also noted valves CV-4-519A, CV-3-6275C, CV-4-6275C, and POV-4-2600 in which the stroke times were annotated in the procedure to be abnormally low, and the licensee has not used this low stroke time as a basis for determining subsequent surveillance frequency. All stroke times should be used in the determination of surveillance frequency. Until this practice is corrected, it will be identified as IFI 250, 251/89-07-06.

The inspectors did not note any valves where the limiting stroke times were exceeded and corrective action was not initiated. In addition, valves placed on increased surveillance frequencies were tested at the required time intervals.

In addition to reviewing valve stroke times, the inspectors questioned the licensee on the basis for specified ultimate valve stroke times. Paragraph IWV-3413 of the Code states that the limiting value of full-stroke time of each power operated valve shall be specified by the owner. A valve in which the stroke time exceeds the ultimate stroke time is declared inoperative if not corrected within 24 hours as required by Section XI Paragraph IWV-3417(b). The ultimate valve stroke time should be based on individual valve characteristics, with consideration given to system conditions. Licensee procedures reviewed by the inspectors revealed that ultimate valve stroke times were specified for each valve; however, the licensee could not a provide an adequate basis for these times. The inspectors noted the following two valves in which the ultimate stroke time specified by procedure was greater than the recommended stroke time:

- For pressurizer power operated relief valves, a Westinghouse evaluation requires the valves to open in 2 seconds, while the licensee specified ultimate stroke time was 10 seconds. This item was previously identified by NRC resident inspectors.

- For steam generator blowdown control valves, the recommended actuator name plate closing time is 2-3 seconds, while the licensee specified ultimate stroke time was 15 seconds. Valve actuation can be adjusted by throttling the solenoid exhaust valve.

The licensee commented that ultimate stroke times for some valves are conservative, and were not necessarily based on specific valve characteristics but on system response requirements. The inspectors stated that a conservative valve ultimate stroke time may not be representative of the point at which the valve should be declared inoperable. Limiting values of full-stroke times for power operated valves will be addressed in a Generic Letter on Inservice testing soon to be issued by the Nuclear Regulatory Commission.

Within this area, one violation was identified.

6. Corrective Action Program

The inspectors discussed with licensee personnel the effectiveness of quality verification activities for the following violations identified in this report:

a. Violation 250, 251/89-07-02 - Failure to adjust PSV ring settings following setpoint testing and maintenance in accordance with Procedures 3SMM-041.1 and 3CMM-041.1. The licensee should have been aware of this problems but was not.

b. Violation 250, 251/89-07-03 - Failure to revise procedures to recognize correct PSV ring settings. This violation identifies two examples where procedures were not revised to recognize correct PSV ring settings. In the first example, the licensee recognized that the procedures needed to be revised, but did not take action to revise the procedures in a timely manner. In the second example, the licensee should have been aware that the procedures needed to be revised, since the replacement valve required different ring settings.

c. Violation 250, 251/89-07-05 - Failure to increase inservice testing frequency, and failure to take adequate corrective action. The licensee stated that they were aware that the valves initially exceeded stroke time requirements, but considered the current re-stroking practice to be prudent and sufficient corrective action. Therefore, increased surveillance frequency was not necessary.

7. Exit Interview

The inspection scope and findings were summarized on February 17, 1989, with those persons indicated in paragraph 1. The inspectors described the areas inspected and discussed in detail the inspection results listed below. The licensee did not identify as proprietary any of the material provided to or reviewed by the inspectors during this inspection. Dissenting comments were not received from the licensee.

Item Number	Description and Reference
250, 251/89-07-01	Unresolved Item - Discrepancies between as-left and as-found MSSV ring settings, paragraph 3.c.(1).
250, 251/89-07-02	Violation - Failure to adjust PSV ring settings following setpoint testing and maintenance in accordance with Procedures 3SMM-041.1 and 3CMM-041.1, paragraph 3.c.(2).
250, 251/89-07-03	Violation - Failure to revise procedures to recognize correct PSV ring settings, paragraph 3.c.(3).
250, 251/89-07-04	Inspector Followup Item - Perform special testing and implement single element EDG fuel oil filter operation in EDG operating procedures by May 26, 1989, paragraph 4.
250, 251/89-07-05	Violation - Failure to increase inservice testing frequency, and failure to take subsequent corrective action, paragraph 5.
250, 251/89-07-06	Inspector Followup Item - Use of abnormally low stroke times in determining stroke frequency surveillance requirements.

The licensee made a verbal commitment regarding Unit 4 PSV 551B ring settings that would be accomplished prior to startup from the present refueling outage, paragraph 3.c.(3).

Licensee management made a verbal commitment to perform onsite EDG fuel oil testing for API gravity, water and sediment, and viscosity prior to adding oil to the main storage tanks, paragraph 4.