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

Report Nos: 50-335/90-18 AND 50-389/90-18

Licensee: Florida Power & Light Co
9250 West Flagler Street
Miami, FL 33102

Docket Nos.: 50-335 and 50-389 License Nos.: DPR-67 and NPF-16

Facility Name: St. Lucie 1 and 2

Inspection Conducted: July 24 - August 20, 1990

Inspectors: _____ 9/14/90
S. A. Elrod, Senior Resident Inspector Date Signed

_____ 9/14/90
M. A. Scott, Resident Inspector Date Signed

Approved By: _____ 9/14/90
R. V. Crlenjak, Section Chief Date Signed
Division of Reactor Projects

SUMMARY

Scope:

This routine resident inspection was conducted onsite in the areas of plant operations review, maintenance observations, surveillance observations, review of plant changes, review of nonroutine events, and follow-up of previous inspection findings.

Results:

The licensee utilized this inspection period to perform major repairs on both units. Unit 1 performed the final reassembly of a RCP and Unit 2 ended the period performing main turbine generator work. As indicated in the outage section of this report, the licensee demonstrated overall good performance during the complex Unit 1 RCP repair.

Within the areas inspected, the following noncited violation was identified:

NCV 335/90-18-01, Failure to Install Instrumentation In Accordance With Design Mounting Details, paragraph 6.

REPORT DETAILS

1. Persons Contacted

Licensee Employees

D. Sager, St. Lucie Site Vice President
* G. Boissy, Plant Manager
* J. Barrow, Operations Superintendent
J. Barrow, Fire Prevention Coordinator
* R. Church, Independent Safety Engineering Group Chairman
H. Buchanan, Health Physics Supervisor
* C. Burton, Operations Supervisor
C. Crider, Outage Supervisor
D. Culpepper, Site Juno Engineering Manager
* R. Dawson, Maintenance Superintendent
* R. Englmeier, Quality Assurance Superintendent
* R. Frechette, Chemistry Supervisor
* C. Leppla, I&C Supervisor
* G. Madden, Plant Licensing Engineer
* L. McLaughlin, Plant licensing Superintendent
L. Rogers, Electrical Maintenance Supervisor
N. Roos, Services Manager
* D. West, Technical Staff Supervisor
J. West, Mechanical Maintenance Supervisor
W. White, Security Supervisor
G. Wood, Reliability and Support Supervisor
* E. Wunderlich, Reactor Engineering Supervisor

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

* Attended exit interview

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

2. Review of Plant Operations (71707)

Unit 1 began the inspection period in an outage to repair the 1A1 RCP, whose high vibration and excessive seal leakage had forced a unit shutdown. The unit was returned to power on August 4 - within one day of the projection, and ended the inspection period at power.

Unit 2 began the inspection period at power but was shut down on August 11, due to excessive turbine generator shaft vibration at the number nine bearing located at the exciter. The shutdown was normal and the unit was restarted on August 18, following repairs. By the morning of August 20,

vibration had increased and was unaffected by a power reduction. The unit was subsequently shut down for further root cause analysis and repair.

a. Plant Tours

The inspectors periodically conducted plant tours to verify that monitoring equipment was recording as required, equipment was properly tagged, operations personnel were aware of plant conditions, and plant housekeeping efforts were adequate. The inspectors also determined that appropriate radiation controls were properly established, critical clean areas were being controlled in accordance with procedures, excess equipment or material was stored properly and combustible materials and debris were disposed of expeditiously. During tours, the inspectors looked for the existence of unusual fluid leaks, piping vibrations, pipe hanger and seismic restraint settings, various valve and breaker positions, equipment caution and danger tags, component positions, adequacy of fire fighting equipment, and instrument calibration dates. Some tours were conducted on backshifts. The frequency of plant tours and control room visits by site management was noted to be adequate.

The inspectors routinely conducted partial walkdowns of ESF, ECCS and support systems. Valve, breaker, and switch lineups and equipment conditions were randomly verified both locally and in the control room. The following accessible-area ESF system walkdowns were made to verify that system lineups were in accordance with licensee requirements for operability and equipment material conditions were satisfactory: Unit 1 ICW platform; Unit 1 CCW platform; Unit 1 Containment; and Unit 2 AFW/MSIV areas.

b. Plant Operations Review

The inspectors periodically reviewed shift logs and operations records, including data sheets, instrument traces, and records of equipment malfunctions. This review included control room logs and auxiliary logs, operating orders, standing orders, jumper logs and equipment tagout records. The inspectors routinely observed operator alertness and demeanor during plant tours. They observed and evaluated control room staffing, control room access, and operator performance during routine operations. The inspectors conducted random off-hours inspections to assure that operations and security performance remained at acceptable levels. Shift turnovers were observed to verify that they were conducted in accordance with approved licensee procedures. Control room annunciator status was verified. Except as noted below, no deficiencies were observed.

During this inspection period, the inspectors reviewed the following tagout (clearance):

1-4-8 containment spray isolation header "A" valve, MV 07-3B.

The inspectors reviewed quality assurance activities and findings concerning control room operations to determine if the objectives were being met. The following activities were reviewed:

Performance Monitoring Report - June, QSL-OPS-90-746, issued July 3, 1990;

Performance Monitoring Report - July, QSL-OPS-90-751, issued August 9, 1990;

Quality Assurance Audit Report, QSL-OPS-90-736, Document Control, issued May 10, 1990; and

Quality Assurance Audit Report, QSL-OPS-90-745, Corrective Action Program, issued July 10, 1990.

The above reports covered areas of regulatory concern and had substantive findings. The performance monitoring reports covered many real-time operational activities. These quality program reports effectively identified areas for improvement and have the potential to positively impact plant safety when corrective actions are implemented.

The posting of required notices to workers was reviewed and found to acceptable.

At the end of the Unit 1 refueling outage, the 1A CCW pump/motor vibration increased. After A' CCW header fill and venting of the replacement A' train containment coolers, the 1A CCW pump vibration was about 5 mils, total displacement. It had been less than 2 mils prior to the outage. No pump or motor work had been performed.

The increased vibration was initially attributed to venting problems and high flow conditions with the SDC coolers in operation. Following the cessation of SDC and after multiple ventings, the pump was declared operable based on satisfactory ASME Code Section XI testing and other site and corporate staff reviews.

During the recent short-notice outage to repair the 1A1 RCP, the licensee had the 1A CCW pump motor disassembled and inspected based on the licensee's Reliability and Support Group's recommendation. This recommendation was based on the group's more analytic evaluation using discreet vibration techniques. No motor problems were found, which resulted in a decision to disassemble and inspect the pump.

The licensee's pump inspection revealed three adverse conditions:

- The impeller was eroded and had cavitation pitting. The erosion and cavitation were postulated to be due to improper venting

and/or higher-than-normal flow rates while supplying both CCW headers with one pump during outages. The erosion had caused two holes in the impeller vanes.

- Two foreign objects, a grinding wheel and a flapper wheel, were lodged in the impeller. The flapper wheel consisted of loose sheets of grit attached to a central spinning hub and would be used to clean up worked metal areas such as weld zones. The wheels were thought to have entered the open CCW system during the replacement of the four containment coolers this past refueling outage.

- The driver side shaft sleeve was loose on the shaft. The shaft sleeve, which was replaced with the impeller, was thought to have been incorrectly installed when the pump was overhauled several outages ago.

The licensee was considering the following long term corrective actions:

- Boroscopic examination of the "B" and "C" CCW pumps for debris at their next availability; these pumps did not display any imbalance during this inspection period.

- Review of the correlation between the venting procedure and the system configuration for potential procedure changes.

- Review of operating procedures for potential changes regarding pump run out such as when one pump would supply two headers.

- Evaluation of using pump strainers to prevent debris damage after work involving system entry.

During the Unit 2 turbine generator vibration shutdown, the "D" vital power inverter, which normally supplied the "D" channels of RPS, AFAS, and ESFAS, was found with degraded performance such that the output frequency rose from 60 Hz to 62 Hz. Priority 1A NPWO 5268/62 was written to address the problem but was not worked immediately. The following day, a nonlicensed operator noted that the output voltage had risen from a nominal 120 V to 140 V. This condition persisted another day until electrical technicians began inverter maintenance. The licensee responded to the inverter malfunction within the two days allowed for a 1A priority NPWO, but slower than appropriate for the circumstances.

Sometime after the "D" inverter output voltage rise, RPS channel "D", located in the control room, blew a fuse. The operations staff, not connecting the two events, issued a NPWO for I&C to trouble shoot the fuse problem. A NPS overheard the electrical technician discussing the inverter high voltage, made the correlation between the inverter high output and the blown RPS channel fuse, and ordered the bypassing

of the "D" channel of RPS, AFAS, and ESFAS while the "D" inverter was removed from service and the protective cabinets' power source was manually switched to a vital MCC.

The licensee evaluated the extent of the problem and took corrective action to repair the inverter and assess the potential protective cabinet damage. The I&C Department found that a failed power supply in the "D" RPS channel had caused the blown fuse. Prior to this inverter failure, the electrical department had planned to examine the Unit 2 inverter internals for signs of aging and replace parts or cards in accordance with the inverter vendor manual. Close examination of the "D" inverter existing condition revealed signs of aging and indicated that this planned action was appropriate. The licensee was evaluating procedure revisions or alarm modifications that would ensure prompt action on inverter related problems.

c. Technical Specification Compliance

Licensee compliance with selected TS LCOs was verified. This included the review of selected surveillance test results. These verifications were accomplished by direct observation of monitoring instrumentation, valve positions, and switch positions, and by review of completed logs and records. Instrumentation and recorder traces were observed for abnormalities. The licensee's compliance with LCO action statements was reviewed on selected occurrences as they happened. The inspectors verified that related plant procedures in use were adequate, complete, and included the most recent revisions.

d. Physical Protection

The inspectors verified by observation during routine activities that security program plans were being implemented as evidenced by: proper display of picture badges; searching of packages and personnel at the plant entrance; and vital area portals being locked and alarmed.

As a result of the routine plant tours and operational observations described above, the inspectors determined that the plant and system material conditions were being adequately maintained. The slow review of the inverter malfunction did not actually cause a plant problem.

3. Surveillance Observations (61726)

Various plant operations were verified to comply with selected TS requirements. Typical of these were confirmation of TS compliance for reactor coolant chemistry, RWT conditions, containment pressure, control room ventilation and AC and DC electrical sources. The inspectors verified that testing was performed in accordance with adequate procedures, test instrumentation was calibrated, LCOs were met, removal and restoration of the affected components were accomplished properly, test results met requirements and were reviewed by personnel other than the individual directing the test, and that any deficiencies identified

during the testing were properly reviewed and resolved by appropriate management personnel. The following surveillance tests were observed:

OP 2-0110050, Rev 9, Control Element Periodic Exercise;

I&C 2-00110068, Rev 2, Six Month Operational CEA Block Circuit Functional Test;

OP 2-0700050, Rev 17, Auxiliary Feedwater Periodic Test; and

OP 1-2200050, Rev 40, Emergency Diesel Generator Periodic Test and General Instructions.

The licensee tested steam-driven AFW pump 2C per OP 2-0700050, Rev 17, Auxiliary Feedwater Periodic Test. Unit 2 had been shut down for approximately a week and the plant was being maintained hot by operating the "B" loop RCPs. Thus, the "A" SG and associated piping were relatively cooler and water had condensed in the steam lines. An "A" loop RCP was started to provide additional heat and steam for the 2C AFW pump test. When the test started, the "B" steam supply was opened, the pump started, and it operated normally. While waiting for AFW pump oil temperature to stabilize, operators opened a steam admission valve from the "A" main steam line to the pump as part of a separate valve stroke time test procedure. The 2C AFW pump immediately tripped on overspeed. Since either or both steam supplies could be opened automatically, this was unanticipated. The event could not be repeated. Licensee investigation determined that the main steam line drains were closed and a water slug from the steam line had entered the turbine and caused the overspeed. They found that operating procedures were focused on shutting down to cold or starting up from cold, not shutting down to hot standby and staying there. A temporary procedure change was issued to open the drains for the existing condition. Additional permanent unit shutdown procedure steps were to be added to open the main steam line drains to prevent moisture collection in the lines.

The inspectors determined that the above surveillances were performed properly.

4. Maintenance Observation (62703)

Station maintenance activities involving selected safety-related systems and components were observed/reviewed to ascertain that they were conducted in accordance with requirements. The following items were considered during this review: LCOs were met; activities were accomplished using approved procedures; functional tests and/or calibrations were performed prior to returning components or systems to service; quality control records were maintained; activities were accomplished by qualified personnel; parts and materials used were properly certified; and radiological controls were implemented as required. Work requests were reviewed to determine the status of outstanding jobs and to assure that priority was assigned to

safety-related equipment. Portions of the following maintenance activities were observed:

PWOs 7735/70, 7177/61, and 7255/61 worked the 1A1 RCP repair (see outage activities below);

PWO 7175/61 replaced/ reworked instrument mounts in the containment during the outage (see plant changes below);

PWOs 2766/61 and 5897/61 worked the 1A CCW pump (see paragraph 2 above);

PWO 5268/62 worked the 2D vital 120 volt inverter (see paragraph 2 above); and

PWO 6335/62 worked the electronics for CEA 56.

The above PWOs were, for the parts of the evolutions observed, performed within in the applicable site work control procedures and within regulatory parameters.

CEA 56 failed to respond to a group withdrawal signal during the Unit 2 initial startup attempt on August 17. Attempts to clear the CEA control and operation in individual mode were not successful. I&C troubleshot the controls and found a coil driver card with two failed computer chips. The chips would not pass two phases of power to driver coils that provide CEA motive power. The chips were properly diagnosed and replaced within an hour, allowing startup preparations to resume.

The inspectors found that the above work was carried out effectively.

5. Outage Activities (62703)

The inspectors observed the following SNOW activity during the ongoing Unit 1 outage:

As discussed in NRC report 50-335,389/90-16 (section 2), Unit 1 was shut down to repair the 1A1 RCP, which had high vibration indications and excessive seal leakoff.

During the pump overhaul, the licensee had:

replaced the pump impeller, pump shaft, and hydrostatic bearing with the used assembly removed from the 2B1 RCP during the last Unit 2 refueling outage;

installed a new 1A1 pump cover and other peripheral parts; and

contracted the services of the RCP vendor, Byron Jackson, and another company experienced in RCP repair, Babcock and Wilcox.

The licensee had expended considerable resources attempting to correct the pump's problems and adequately reassemble it. Because of the complexity of the pump reassembly task and the degree of dimensional configuration control required during each work phase or major step, the licensee appropriately required: meetings with the vendor, review of work accomplishments, and coordination between trades and various support groups. As expected, because of the complexities discussed above, some degree of rework was required.

In the area of procedure preparation and specific job preplanning, more attention could have been paid to detail. This is considered a minor comment in light of the job scope. On multiple occasions, the reassembly procedure required changes due to the as-found condition being different than anticipated and/or the vendor requirements being changed based on inspection results. The licensee planned to incorporate lessons learned for future RCP work.

HP aspects of the RCP repair were challenging and well controlled overall. The several minor inspector comments were quickly resolved by the HP staff. Three highly radioactive pump pieces were located inside containment during this work, the RCS was open at the pump casing, and divers conducted underwater disassembly operations in the refueling canal. The highly radioactive pieces by themselves represented a great potential for overexposure of workers during handling; none occurred due to good overall practices. Some foreign material from the internal rubbing of the pump parts was found in the RCS and on the pump parts themselves. Cleanup and verification of cleanness included a number of radiologically significant actions; HP control of this work was good.

As stated above, the utility has demonstrated that they could organize to resolve complex problems with no simple solutions and return the plant to an operable condition.

6. Design, Design Changes, and Modifications (37700/37878)

The inspectors reviewed the following modifications with regard to plant implementation:

PCM 150-190D, Unit 1 Waste Gas System - Sampling System, pump bypass option

PCM 128-190D, Unit 1 Waste Gas Analyzer Oxygen Analyzer Replacement

PCM 137-190, Containment Rosemount Transmitter Mounting Details

The above waste gas PCMs were reviewed to assess plant impact. The licensee had determined that the system had not worked as well as anticipated since construction and had selected the system for special upgrading emphasis. The above PCMs were a part of this effort. Review of the PCMs showed that the modifications improved system reliability in that: (1) waste gas could subsequently be processed on a part time basis

without needing the gas compressors and (2) oxygen analyzer reliability had been improved.

The Rosemount mounting detail PCM corrected a long-standing Unit 1 condition where safety-related or seismic instrumentation mounting details for changes or replacements remained a construction sketch vice being converted to a plant drawing. Years later, plant staff members were not always able to find these details. The inspector found Unit 1 instruments FT-07-3 and LT-07-6 mis-mounted compared to PCM 061-190D and found a number of transmitters that had fewer nuts than required. Analysis showed a high confidence level that the installations, while not completely correct, would function. The engineering department and the I&C shop collaborated to produce a PCM to show all the authorized mounting configurations and to detail essential element equivalents such as lock washers, lock nuts, etc. The PCM also listed which plant drawings will contain the information when issued. Records show that the shop then quickly restored the instrumentation to plan prior to Unit 1 startup from the 1A1 RCP outage.

Failure to install seismic, quality related instrumentation in accordance with installation details is a violation of 10 CFR 50, Appendix B, Criterion V; Instructions, Procedures, and Drawings; and is identified as NCV 335/90-18-01. This NRC-identified violation is not being cited because criteria specified in Section V.A of the NRC Enforcement Policy were satisfied.

As demonstrated above, the inspectors found that the plant management had taken steps to improve overall plant reliability.

7. Onsite Followup of Events (Units 1 and 2)(93702)

Nonroutine plant events were reviewed to determine the need for further or continued NRC response, to determine whether corrective actions appeared appropriate, and to determine that TS were being met and that the public health and safety received primary consideration. Potential generic impact and trend detection were also considered.

During this inspection period, Unit 2 conducted two orderly shutdowns to repair the exciter end of the main turbine generator. No requirements were observed to be violated during these well controlled evolutions.

8. Followup of Post-TMI Action Items (92701)

(Closed - Unit 1) TMI Item II.K.3.5.b, B&O Task Force - Auto Trip of RCPs, Modifications.

This subject was discussed in detail in IR 335,389/90-16 dated August 16, 1990. The discussion applied to both Unit 1 and Unit 2 but characterized the subject as being closed for Unit 2. The subject is also closed for Unit 1.

9. Followup of Corrective Actions for Violations and Deviations (Units 1 and 2)(92702)

(Closed - Unit 1) VIO 335/90-14-01, Failure to Follow a Test Procedure.

FPL letter L-90-291, dated August 9, 1990, responded to this Notice of Violation. The violation involved performing a test in a manner not described in the approved test procedure. Licensee evaluation concluded that the violation resulted from a personnel error in not initiating a procedure change to incorporate desired changes. The personnel error was addressed by counseling and reminders to the staff to follow procedures. The test procedure involved, OP 1-0120051, Rev 10, RCS Flow Determination by Calorimetric Procedure, was revised on August 8, 1990, to correct the data collection instructions. The inspector found Rev 11 adequate for its purpose though further human factors revision opportunities were pointed out to the licensee's staff for consideration. This item is closed.

10. Exit Interview (30703)

The inspection scope and findings were summarized on August 24, 1990, with those persons indicated in paragraph 1 above. The inspector described the areas inspected and discussed in detail the inspection findings listed below. Proprietary material is not contained in this report. Dissenting comments were not received from the licensee.

Item Number	Status	Description and Reference
335/90-14-01	Closed	VIO - Failure to Follow a Test Procedure, paragraph 9.
335/89-18-01	Open	NCV - Failure to Install Instrumentation In Accordance With Design Mounting Details, paragraph 6.

11. Abbreviations, Acronyms, and Initialisms

A	Ampere(s)
AB	Auxiliary Building
ABB	ASEA Brown Boveri (company)
AC	Alternating Current
ACTM	Automatic CEA Timing Module
ADV	Atmospheric Dump Valve
A/E	Architect/Engineer
AFAS	Auxiliary Feedwater Actuation System
AFW	Auxiliary Feedwater (system)
ALARA	As Low as Reasonably Achievable (radiation exposure)
ANPO	Auxiliary Nuclear Plant [unlicensed] Operator
ANPS	Assistant Nuclear Plant Supervisor
ANSI	American National Standards Institute
AP	Administrative Procedure

ASME Code	American Society of Mechanical Engineers Boiler and Pressure Vessel Code
ATI	Automatic Test Instrument (in the ESF cabinets)
ATWS	Anticipated Transient Without Scram
B&O	[NRC] Bulletins and Orders (Task Force)
BCS	Backfit Construction Sketch
BQAP	Backfit Quality Assurance Procedure (EBASCO Services Inc.)
CAR	Corrective Action Request
CCW	Component Cooling Water
CE	Combustion Engineering (company)
CEA	Control Element Assembly
CEDM	Control Element Drive Mechanism
CEDMCS	Control Element Drive Mechanism Control System
CET	Core Exit Thermocouple
CFR	Code of Federal Regulations
CIAS	Containment Isolation Actuation Signal
CIS	Containment Isolation System
CRAC	Control Room Auxiliary Control (panel)
CRT	Cathode Ray Tube
CS	Containment Spray (system)
CST	Condensate Storage Tank
CT	Current Transformer
CVCS	Chemical & Volume Control System
CWD	Control Wiring Diagram
CWO	Construction Work Order
DC	Direct Current
DCN	Design Change Notice
DCRDR	Detailed Control Room Design Review
DDPS	Digital Data Processing System
DEH	Digital Electro-Hydraulic (turbine control system)
DEV	Deviation (from Codes, Standards, Commitments, etc.)
DPR	Demonstration Power Reactor (A type of operating license)
ECC	Estimated Critical Position
ECCS	Emergency Core Cooling System
EDG	Emergency Diesel Generator
ENS	Emergency Notification System
EOP	Emergency Operating Procedure
EPA	Environmental Protection Agency
EPRI	Electric Power Research Institute
ERDADS	Emergency Response Data Acquisition Display System
ESF	Engineered Safety Feature
ESFAS	Engineered Safety Feature Actuation System
F	Fahrenheit
FCV	Flow Control Valve
FI	Flow Indicator
FIS	Flow Indicator/Switch
FPL	The Florida Power & Light Company
FRG	Facility Review Group
FSAR	Final Safety Analysis Report
FT	Flow Transmitter

GDC	General Design Criteria (from 10 CFR 50, Appendix A)
GE	General Electric Company
GL	[NRC] Generic Letter
GMP	General Maintenance Procedure
gpm	Gallon(s) Per Minute (flow rate)
HCV	Hydraulic Control Valve
HFA	A GE relay designation
HJTC	Heated Junction Thermocouple
HP	Health Physics
HPSI	High Pressure Safety Injection (system)
HVE	Heating and Ventilating Exhaust (fan, system, etc.)
HVS	Heating and Ventilating Supply (fan, system, etc.)
HX	Heat Exchanger
HZ	Hertz (a unit of frequency equal to one cycle per second)
I&C	Instrumentation and Control
ICW	Intake Cooling Water
IFI	[NRC] Inspector Followup Item
ILRT	Integrated Leak Rate Test(ing)
IN	[NRC] Information Notice
INPO	Institute for Nuclear Power Operations
IR	[NRC] Inspection Report
ISI	InService Inspection (program)
IX	Ion Exchanger
JPE	(Juno Beach) Power Plant Engineering
JPN	(Juno Beach) Nuclear Engineering
KV	KiloVolt(s)
KW	KiloWatt(s)
LC	Load Center (electrical distribution)
LCO	TS Limiting Condition for Operation
LER	Licensee Event Report
LIV	Licensee Identified Violation
LOCA	Loss of Coolant Accident
LOI	Letter of Instruction
LPSI	Low Pressure Safety Injection (system)
LT	Level Transmitter
LTOP	Low Temperature Overpressure Protection (system)
M&TE	Measuring & Test Equipment
MCC	Motor Control Center (electrical distribution)
MFIV	Main Feed Isolation Valve
MFP	Main Feed Pump
MFW	Main Feed Water
MG	Motor Generator
min	minute
MOV	Motor Operated Valve
MOVATS	Motor Operated Valve Test System
mrem	millirem
MP	Maintenance Procedure
MSIS	Main Steam Isolation Signal
MSIV	Main Steam Isolation Valve
MSR	Moisture Separator/Reheater

MTI	Maintenance Team Inspection
MV	Motorized Valve
MW	Megawatt(s)
NCR	Non Conformance Report
NCV	NonCited Violation (of NRC requirements)
NDE	Non Destructive Examination
NPF	Nuclear Production Facility (a type of operating license)
NPO	Nuclear Plant Operator
NPS	Nuclear Plant Supervisor
NPWO	Nuclear Plant Work Order
NRC	Nuclear Regulatory Commission
NSSS	Nuclear Steam Supply System
NUREG	Nuclear Regulatory (NRC Headquarters Publication)
OI	Operating Instruction
ONOP	Off Normal Operating Procedure
OP	Operating Procedure
PAP	Post Accident Panel
PBT	Performance Based Training
PCM	Plant Change/Modification
PCV	Pressure Control Valve
P&ID	Piping & Instrumentation Diagram
PI	Pressure Indicator
PIC	Pressure Indicator/Controller
PIS	Pressure Indicator/Switch
PM	Preventive Maintenance
PORV	Power Operated Relief Valve
PSB	Plant Systems Branch (of NRC Headquarters)
psig	Pounds per square inch (gage)
ppm	Part(s) per Million
PT	Pressure Transmitter
PWO	Plant Work Order
PWR	Pressurized Water Reactor
QA	Quality Assurance
QC	Quality Control
QI	Quality Instruction
QSPDS	Qualified Safety Parameter Display System
RAB	Reactor Auxiliary Building
RCB	Reactor Containment Building
RCFC	Reactor Compartment Fan Cooler
RCO	Reactor Control Operator
RCP	Reactor Coolant Pump
RCPB	Reactor Coolant Pressure Boundary
RCS	Reactor Coolant System
RDT	Reactor Drain Tank
Rev	Revision
RG	[NRC] Regulatory Guide
RNWO	Relay Nuclear Work Order
RO	Reactor [licensed] Operator
RPS	Reactor Protection System
RTGB	Reactor Turbine Generator Board

RVLMS	Reactor Vessel Level Monitoring System
RWT	Refueling Water Tank
SAL	Service Advice Letter
SALP	Systematic Assessment of Licensee Performance
SAS	Safety Assessment System
SDC	Shut Down Cooling
SDCHX	Shut Down Cooling Heat Exchanger
SDCS	Shut Down Cooling System
SER	Safety Evaluation Report
SFP	Spent Fuel Pool
SG	Steam Generator
SI	Safety Injection (system)
SIT	Safety Injection Tank
SNOW	Short Notice Outage Work
SNPO	Senior Nuclear Plant [unlicensed] Operator
SPDS	Safety Parameter Display System
SRO	Senior Reactor [licensed] Operator
SSER	Supplemental Safety Evaluation Report
STA	Shift Technical Advisor
Tavg	Reactor average temperature
TC	Temporary Change
TCB	Trip Circuit Breaker
TCW	Turbine Cooling Water
TDI	Training Department Instruction
TE	Temperature Element
TEDB	Total Equipment Data Base
TI	[NRC] Temporary Instruction
TMI	Three Mile Island
TR	Temperature Recorder
TS	Technical Specification(s)
URI	[NRC] Unresolved Item
V	Volt(s)
VCT	Volume Control Tank
VIO	Violation (of NRC requirements)