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

Report Nos.: 50-280/94-21 and 50-281/94-21

Licensee: Virginia Electric and Power Company
Innsbrook Technical Center
5000 Dominion Boulevard
Glen Allen, VA 23060

Docket Nos.: 50-280 and 50-281

License Nos.: DPR-32 and DPR-37

Facility Name: Surry 1 and 2

Inspection Conducted: July 3 through August 6, 1994

Inspectors: M. W. Branch, Senior Resident Inspector — Date Signed 8/26/94

S. G. Tingen, Resident Inspector — Date Signed 8/26/94

Accompanying Personnel: L. W. Garner, Project Engineer
D. M. Tamai, Intern

Approved by: for G. A. Belisle, Chief
Reactor Projects Section 2A
Division of Reactor Projects — Date Signed 8/26/94

SUMMARY

Scope:

This routine resident inspection was conducted on site in the areas of plant status, operational safety verification, maintenance and surveillance inspections, safety assessment and quality verification, Licensee Event Report followup, and engineering technical specification review project. Inspections of backshift and weekend activities were conducted on July 13, 14, 15, and 28.

Results:

Plant Operation functional area

Housekeeping in the Unit 2 containment spray pump safeguards area was not up to the normal station standards. Housekeeping and equipment condition was good in the emergency service water pump house (paragraphs 3.1.1 and 3.1.2).

Maintenance functional area

The weekly service water flow method of determining component cooling heat exchanger heat transfer capacity was conservative and provided useful information to operations and system engineering as to when a component cooling heat exchanger needed to be cleaned. In addition the heat transfer capability was in excess of that required by Technical Specifications (TSs), (paragraph 4.1).

The maintenance and surveillance associated with replacing the train A charcoal filter media were satisfactorily accomplished. However, an unresolved item was identified in the area of required charcoal testing/sampling following a chemical release in the Unit 2 containment during steam generator chemical cleaning activities (paragraph 4.2).

Engineering functional area

The licensee's review of the TS surveillance program was thorough. The identification and correction of deficiencies significantly improved the TS surveillance program. However, three concerns identified by engineering involving monthly surveillance functional testing may not have been properly evaluated. Resolution of these three concerns was identified as an unresolved item (paragraph 7).

REPORT DETAILS

1. Persons Contacted

1.1 Licensee Employees

*B. Allen, Acting Superintendent Operations
*W. Benthall, Supervisor, Licensing
H. Blake, Jr., Superintendent of Nuclear Site Services
*R. Blount, Superintendent of Maintenance
*D. Christian, Assistant Station Manager
J. Costello, Station Coordinator, Emergency Preparedness
*J. Downs, Superintendent of Outage and Planning
*D. Erickson, Superintendent of Radiation Protection
A. Friedman, Superintendent of Nuclear Training
*B. Garber, Licensing
*L. Hartz, Manager, Nuclear Quality Assurance
B. Hayes, Supervisor, Quality Assurance
*D. Hayes, Superintendent of Administrative Services
*M. Kansler, Station Manager
*C. Luffman, Superintendent, Security
J. McCarthy, Superintendent of Operations
A. Price, Assistant Station Manager
*R. Saunders, Vice President, Nuclear Operations
*V. Shifflett, Licensing
*E. Smith, Site Quality Assurance Manager
*T. Sowers, Superintendent of Engineering
*B. Stanley, Procedures
*J. Swientoniewski, Supervisor, Station Nuclear Safety
*G. Woodzell, Nuclear Training

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

1.2 NRC Personnel

M. Branch, Senior Resident Inspector
*S. Tingen, Resident Inspector
*D. Tamai, Intern
L. Garner, Project Engineer

*Attended Exit Interview

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

2. Plant Status

Units 1 and 2 operated at power for the entire inspection period.

3. Operational Safety Verification (71707)

The inspectors conducted frequent tours of the control room to verify proper staffing, operator attentiveness and adherence to approved procedures. The inspectors attended plant status meetings and reviewed operator logs on a daily basis to verify operational safety and compliance with TSs and to maintain overall facility operational awareness. Instrumentation and ECCS lineups were periodically reviewed from control room indications to assess operability. Frequent plant tours were conducted to observe equipment status, fire protection programs, radiological work practices, plant security programs and housekeeping. Deviation reports were reviewed to assure that potential safety concerns were properly addressed and reported.

3.1 Biweekly ESF Inspections

3.1.1 Unit 2 CS System

The inspectors walked down the Unit 2 CS components located in the safeguards building, the CS valves adjacent to the RWST and chemical addition tank and control board indications for CS pumps and valves. The inspectors noted that housekeeping in the safeguards area was not up to the normal station standards. The area was in the process of being painted. The area was not being painted on the day of the walkdown. There were rags, sand paper, and rubber gloves on the floor and CS components. The licensee was informed and took corrective action by cleaning the area.

3.1.2 ESW System

The inspectors walked down the three diesel driven ESW pumps located at the low level intake structure. Items checked were positions of diesel trip and fuel oil valves, housekeeping and general condition of equipment. Equipment appeared to be in good overall condition and housekeeping was acceptable. Trip and fuel oil valves were in the correct positions.

3.2 10 CFR 50.72 Report on Early Warning System Siren Failure

On July 26, the licensee made a non-emergency one-hour 10 CFR 50.72 report due to the Early Warning System being inoperable. While performing the Early Warning System polling functional test, the Early Warning System sirens did not respond to the polling signal. A failed transistor in the Early Warning System power supply caused the system failure. The power supply was repaired and the system was returned to service at 2:51 p.m. of the same day.

3.3 Unit 2 SG Cleaning Activities

Unit 2 was shutdown between June 4 and 24, 1994, in order to clean the secondary sides of the SGs. The final estimates, in pounds, of materials removed during the SG cleaning process were:

	Copper	Iron	Sludge
SG A	350	2600	1258
SG B	470	3050	984
SG C	500	3900	610

The inspectors discussed the sources of corrosion/erosion products with the licensee and concluded that the most likely source of copper was from the copper/nickel tubes in the main feedwater heaters. The SGs at Surry were replaced in the 1981 time frame. At that time, the main feedwater heat exchangers had copper/nickel tubes. In the 1991 timeframe, all the feedwater heaters in Unit 1 were replaced with new feedwater heaters having titanium tubes. In 1990 stages 6, 5, 4 and 3 of Unit's 2 feedwater heaters were replaced with the new design. The two remaining Unit 2 copper/nickel tube feedwater heaters are scheduled to be replaced with titanium tube heaters during the 1995 refueling outage which is currently scheduled to start in February 1995. Flow assisted corrosion/erosion of the main feedwater piping is the source of the iron in the SGs. The licensee's Flow Assisted Corrosion Program has replaced iron piping with chrome molly piping in many instances where wall thinning was identified.

Other than restricting power operations due to oscillating SG level and causing the operators to be distracted, the SG tube scaling did not appear to have an adverse effect on plant safety. The inspectors based this conclusion on the following:

The number of tubes plugged in the Surry SGs is very low.

Eddy current testing performed during refueling outages have not identified significant SG tube problems such as denting or degradation. Regional inspectors routinely review eddy current test results and have not identified any significant problems during these reviews.

The shell sides of SGs are routinely inspected during refueling outages and no significant problems have been identified. The resident inspectors accompanied Westinghouse personnel on one of these inspections and did not identify any problems.

The licensee utilized cameras to inspect the support plate regions of the SGs prior to, during and after cleaning. The

results of these inspections were recorded. With the exception of plugged tube support quatrefoil assembly openings identified before cleaning the SGs, no problems were identified. These films were reviewed by the resident inspectors and problems were not identified.

In the past the licensee has utilized ammonia and hydrazine for feedwater pH control. Very recently secondary chemistry controls was changed for Unit 2 and ETA is being injected into the feedwater/condensate systems to enhance pH control. Improved pH control should reduce the corrosion rate of the feedwater piping. If this is successful in Unit 2, the same method of feedwater pH control will be implemented in Unit 1.

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

4. Maintenance And Surveillance Inspections (62703, 61726)

During the reporting period, the inspectors reviewed the following maintenance/surveillance activities to assure compliance with the appropriate procedures.

4.1 Measuring Macrofouling Blockage in the CCHX

On July 14, the inspectors reviewed completed procedure 1-OSP-SW-005, Measurement of Macrofouling Blockage of CCHX 1-CC-E-1D, revision 4. The procedure had just been completed by the evening shift when the inspectors performed their review. The procedure's purpose was to provide instructions to monitor flow through the SW side of CCHX 1-CC-E-1D, and to use the flow readings obtained to determine the CCHX operability with respect to the amount of tubesheet macrofouling. All four of the CCHXs were tested each week to ensure operability.

Procedure 1-OSP-SW-005 contained instructions to measure and record DP across the SW side of the CCHX, as read on the Barton and Annubar gages. The SW discharge valve was throttled and several sets of DP measurements were recorded. The highest set of DP measurements recorded were plotted on one of six graphs in attachment 2 of the procedure. SW temperature was recorded in attachment 1 and this SW temperature determined which graph to use. The six graphs were for different SW temperatures starting at 70 degrees F and going up to 95 degrees F in 5 degree increments. Each graph had three regions titled "Inoperable", "Alert" and "Operable".

The results of the July 14 performance of procedure 1-OSP-SW-005 were that CCHX 1-CC-E-1D was in the "Alert" region but still operable. The operator used the 85 degree F graph in the procedure since the recorded SW temperature was 84.3 degrees F. Step 6.2.17 of the procedure instructed using a graph corresponding to a temperature equal to or higher than the actual

recorded temperature. The inspectors were in the control room at 10:00 p.m., and noted the following temperatures based on condenser water box inlet temperatures, which is what the operator used to measure SW temperature. The temperatures were taken from the P-250 monitor and were all in degrees F. The A CWB inlet temperature was 85.9, B was 85.4, C was 89.6 and D was 86.1. Based on the temperatures noted by the inspectors at 10:00 p.m., CCHX 1-CC-E-1D would have been inoperable based on the 90 degree F graph. The inspectors questioned both the STA and the unit SRO as to the apparent data discrepancy. The SRO indicated that CWB inlet temperature changed with the time of day as well as the tide. At the time of the test, the data that was recorded was correct. The SRO also indicated that the data would be verified.

It was not apparent from the procedure what, if any, margin was included in the graphs. As noted above, a CCHX could be operable or in alert at the time of testing but would be inoperable with an increase in SW temperature. After questioning by the inspectors the licensee reperformed the test of 1-CC-E-1D with the elevated temperature and declared the CCHX inoperable. DR S-94-1471 was written to document the unsatisfactory condition.

The inspectors discussed this issue with the system engineer. Additional information as to the margin contained in the acceptance criteria used in procedure 1-OSP-SW-005 was provided. Technical Reports ME-0047, revision 0, and ME-0076, revision 0, CCHX Performance Testing, contained an accurate comparison of between the SW flow measurement heat transfer determination and the CC heat transfer determination. Periodically more accurate test equipment including RTDs and ultrasonic flow meters were temporarily connected to the CCHX's CC side and measurements were taken. This CC side heat transfer information was compared to that obtained from the weekly SW Annubar flow instrument measurement to determine margin in the weekly measurement. The comparative measurements indicated that the Annubar flow determination was conservative by approximately 30%. The actual heat transfer would be approximately 50 million Btu/hr verses 38.5 million Btu/hr.

The inspectors determined that the weekly SW flow method for determining CCHX heat transfer capacity was conservative and provided useful information to operations and system engineering as to when a CCHX should be cleaned. In addition, the heat transfer capability was in excess of that required by TSs. After reviewing the additional information provided by the licensee the inspectors had no concerns with the test observed on July 14.

4.2 Train A Charcoal Filter Replacement/Testing

On June 16, 1994, a hydrazine concentration of 6 ppm and an ammonia concentration of 30 ppm were detected in the Unit 2 containment. These fumes were identified after the manways were

removed from SGs that had just completed chemical cleaning. In order to decrease the concentrations of hydrazine and ammonia in containment, ventilation flow rate was increased. The train A and train B AVEF systems were operated to increase the containment flow rate. The emergency ventilation system charcoal supplier was contacted and informed the licensee that exposing charcoal to these fumes was not detrimental to the charcoal.

On June 28, 1994, charcoal samples were obtained for the train A AVER system and sent to a contractor for analysis. This sample was obtained to meet the requirement of TS 4.12.A.8.d. TS 4.12.A.8.d requires that laboratory analysis on charcoal samples be performed following painting, fire, or chemical release in a ventilation zone communicating with the system during system operation. On July 15 the licensee was notified that analysis results for the methyl iodide removal rate was 93.43%. The minimum methyl iodine removal rate specified in TS 4.12.B.4 was 96%. The AVEF system train A was declared inoperable.

On July 19 through 22, the inspectors witnessed the licensee replacing and testing the AVEF system train A charcoal filter media. The maintenance was accomplished in accordance with WO 292920 01 and procedure 0-MCM-0620-02, Ventilation System Pre-Filter, HEPA and Carbon Cell Removal, Inspection and Installation, revision 0. The inspectors verified that station procedures were adequate and were adhered to, supervision and maintenance engineering support was sufficient and appropriate radiological controls were implemented. The inspectors concluded that this maintenance was efficiently accomplished. No significant problems were identified and the job progressed smoothly.

After replacement, the train A filter media was tested in accordance with 0-MPT-0620-01, Auxiliary And Control Room Ventilation System HEPA And Charcoal Filter Test Criteria Documentation And Verification, revision 1. In order to accomplish this testing a flow rate of approximately 35,000 CFM was established and an in-place DOP test was performed. Results of the DOP test indicated that the HEPA filters were 99.99% efficient which was acceptable. After completing the DOP test, a halogenated hydrocarbon leakage test was performed. The test results indicated that the filter media tray seals were 100% efficient. The DOP and halogenated hydrocarbon leakage testing was accomplished by a contractor. The inspectors concluded that the new filter media was properly tested in accordance with TSs and licensee oversight of the contractor performing the testing was adequate.

On July 28 the AVEF train B charcoal filter media was sampled. On August 4, the licensee was notified that results of the analysis was 90.7% methyl iodide removal rate which was below minimum TS requirements. The AVEF system train B was declared inoperable. The charcoal was replaced and DOP and halogenated hydrocarbon

leakage tests were performed prior to returning the system to service. On August 5 Train B was successfully returned to service.

At the end of the inspection period, the inspectors were reviewing the time constraints associated with TSs 4.12.A.6.c, 4.12.A.7.c and 4.12.A.8.d for sampling/testing the emergency ventilation filters following exposure to chemical fumes. This issue was identified as URI 50-280, 281/94-21-01, Time Constraints For Sampling/Testing Emergency Ventilation Filters Following Exposure To Chemicals, pending further review by the inspectors.

Within the areas inspected, one URI was identified.

5. Safety Assessment and Quality Verification (40500)

The inspectors met with management level personnel at the corporate Innsbrook office to discuss recent self assessments and ongoing projects. The Manager of QA described the results of recent self assessments and provided insight as to focus changes planned by QA to provide better support to the operating units. The Vice President of Engineering shared information and details for several projects his organization was involved with, including DBD efforts and changes to the design control process to better control calculation results and ensure timely incorporation into station design. Additionally, timeliness of processing internal PPRs was discussed. The licensee indicated that their program meets the intent of GL 91-18 as to evaluating indeterminate or questionable design concerns. The inspectors will continue to evaluate design issue resolution as part of the licensee's corrective action program review.

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

6. Licensee Event Report Followup (92700)

The inspectors reviewed the LERs listed below to evaluate adequacy of the corrective action. The inspectors' review also included followup of the licensee's corrective action implementation.

6.1 (Closed) LER 50-280/92-003-01, Incomplete Engineered Safety Features Testing Due to Procedure Deficiency. This issue involved calibrating the Units 1 and 2 PRZR PORV channels. The licensee identified that the main control room alarm that occurs when a PORV opens was not being tested during performance of the channel function test as required by TS 4.1.B.1.b. Once this condition was identified the PORV alarm was satisfactorily tested for both units. The inspectors reviewed procedures 1/2-OPT-ZZ-005, Verification of Local and MCB Valve Position Indication for the PRZR PORVs, revision 1, and verified that the upgraded procedures contained instructions to routinely test the alarm. Also as corrective action, the licensee performed a review of the TS

surveillance program. Results of this review are discussed in paragraph 7.

6.2 (Closed) LER 50-280, 281/92-003-02, Incomplete Engineered Safety Features Testing Due to Procedure Deficiency. This issue involved calibration of the Units 1 and 2 RMT channels. The licensee identified that portions of the RMT channels were not being tested during the performance of the monthly channel functional test as required by TS Table 4.1-1, Item 15, in that not all test switch contacts and interconnecting wiring were being tested. Once this condition was identified the test switch contacts and wiring were satisfactory tested. The inspectors reviewed procedures 1/2-PT-2.19, Refueling Water Storage Tank Level, revision 6, and verified that the procedures contained instructions to test the switch contacts and wiring that were previously not tested. Also as corrective action, the licensee performed a review of the TS surveillance program. Results of this review are discussed in paragraph 7.

6.3 (Closed) LER 50-281/92-002, Two Charging Pumps And One Charging Pump Service Water Pump Removed From Service Simultaneously Due To Personnel Error. With one charging pump and one charging pump SW pump removed from service for preventive maintenance, an SRO authorized a surveillance test that rendered each of the remaining charging pumps inoperable at different times. With a 24-hour LCO in effect for the charging pump service water pump being out of service, a 24-hour LCO was entered each time the two charging pumps were rendered inoperable. However, the SRO failed to recognize that these two simultaneous conditions were a condition not allowed by TS 3.3 and thus should have required entry into a six-hour LCO per TS 3.0.1. In all cases, while not recognized, the six-hour limitation was not exceeded.

The inspectors verified that the three actions listed in the LER to prevent recurrence were completed as committed. Two of the three actions, the committed test procedure changes and the station directive requiring specific TS LCO references to be incorporated into procedures, were no longer in effect. A philosophy change in the procedure upgrade project resulted in a different approach to addressing LCOs in procedures than that reflected by the above two items. References to specific TSs were replaced by notifications that certain steps would involve the potential for or actual entry into a TS LCO. Identification of the specific TS LCO to be entered was then based upon existing plant conditions and the SRO's knowledge of TS requirements.

The inspectors verified that the latest revisions to the six upgraded procedures, 1(2)-OPT-CH-001(2 or 3), Charging Pump Operability and Performance Test For 1(2)-CH-P-1A(B or C), that replaced 1(2)-PT-18.7, Charging Pump Operability and Performance Test, were written in accordance with the latest guidance. The inspectors also verified that training was conducted and was

planned for future training sessions to reinforce that simultaneous TS 3.3 LCO conditions require entry into the TS 3.0.1 LCO. Specifically, in 1992, classroom training was provided on LER 50-281/92-002 per requalification lesson plan RQ-92.4-TS-7, TS 3.3 Safety Injection System. The simulator lesson plan RQ-6.SE-1 (Loss Of Operating CP, Inleakage To SI Accumulator, Loss Of MFW, Failure Of Pressurizer Safety Valve) used this year and next scheduled for 1996 had licensed operators demonstrate proper entry into TS 3.0.1 LCO for simultaneous TS 3.3 equipment failures. In addition, the inspectors confirmed that the initial licensed training program lesson plan ND 80.3 LP-10, Operation of CVCS, provided training on the event discussed in LER 281/92-002. The inspectors concluded that the upgraded procedures and the training provided sufficiently complement one another to ensure a reasonable level of confidence that a similar event will be precluded.

6.4 (Closed) LER 50-281/92-007, Auxiliary Feedwater System Recirculation Piping Missile Shielding Removed Due To Personnel Error. The licensee determined that failure to follow administrative procedures resulted in not recognizing that removal of soil above the full flow AFW recirculation line to the ECST created the potential for a missile to damage the line and partially drain the ECST. The inspectors verified via documentation reviews that the event was reviewed with the involved individuals and organization as committed in the LER. These actions were considered appropriate.

6.5 (Closed) LER 50-281/92-008, Reactor Coolant System Leak Rate Greater Than 10 GPM Due To Failure Of A Swagelok Fitting On A Flow Transmitter. The LER indicated that a RCE would identify actions to prevent recurrence. The inspectors reviewed RCE Report No. 92-009. The event was caused by a failure to correctly assemble the flow transmitter Swagelok fitting and an improper method for repairing leaks on Swagelok fittings. The inspectors verified that VPAP-2002, Work Requests And Work Order Tasks, revision 3, was revised as recommended by the RCE to delete tightening instrument tubing from Attachment 13 as an example of work that can be performed as minor maintenance. On February 11, 1994, the licensee identified that the October 1993 edition of The Accident Prevention Manual was not revised to include the warning not to tighten pressurized fittings. The RCE recommended warnings are now planned to be incorporate in the manual's next revision. In addition, the licensee identified that Gyrolok and Swagelok fittings are not interchangeable. The licensee indicated that Gyrolok fittings had been removed from the stock room. The inspectors reviewed documentation that 13 other similar fittings were inspected and found to be properly assembled. The actions taken should be sufficient to preclude recurrence.

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

7. Engineering TS Review Project (37551)

All TS surveillance and implementing procedures were reviewed by the licensee in order to verify that the required surveillances were being properly performed. The inspectors reviewed the results of the licensee's TS review Project. The following issues were identified as a result of this review:

Three surveillances were identified as not being properly performed and LERs were issued as a result.

It was identified that the charging pump low pressure auto start, accumulator discharge MOV auto open at 2000 psi RCS pressure, loop stop valve interlock to reactor protection and RHR inlet MOV interlock circuits were not being functionally tested. The licensee concluded that TSs did not require these circuits to be tested. The inspectors reviewed TSs and verified that these circuits were not required to be tested.

Three surveillance procedures were identified as not providing adequate instructions for entry into LCOs. It was concluded that LCO time constraints were not exceeded but procedures were changed to provide guidance for entry into the applicable LCO.

Three surveillances were identified where reactor protection/ESF circuits were not being fully tested on a monthly basis with the unit at power because testing required the use of jumpers or disconnecting wires. These circuits were the auto start of TDAFWP on lo-lo SG level and RCP UV and opening the reactor trip breakers on low RCS flow. The licensee concluded that the circuits were not designed to test at power and therefore not required to be tested monthly. This issue is further discussed below.

The inspectors concluded that the licensee's review of TS surveillance and implementing procedures was thorough and significantly improved the quality of the TS surveillance program. At the end of the inspection period the inspectors were reviewing the licensee's justification for not completing monthly TS tests on circuits where jumpers or disconnected leads were required. This was identified as URI 50-280, 281/94-21-02, TS Monthly Testing That Requires Jumpers or Leads Disconnected to Complete.

Within the areas inspected, one URI was identified.

8. Exit Interview

The inspection scope and findings were summarized on August 10 , with those persons indicated in paragraph 1. The inspectors described the areas inspected and discussed in detail the inspection results addressed in the Summary section and those listed below.

Item Number	Status	Description/(Paragraph No.)
URI 50-280, 281/94-21-01	Open	Time Constraints for Sampling/ Testing Emergency Ventilation Filters Following Exposure to Chemicals (Paragraph 4.2).
URI 50-280, 281/94-21-02	Open	TS Monthly Testing That Requires Jumpers or Leads Disconnected to Complete (Paragraph 7).
LER 50-280/92-003-01	Closed	Incomplete Engineered Safety Features Testing Due to Procedure Deficiency (Paragraph 6.1).
LER 50-280, 281/92-003-02	Closed	Incomplete Engineered Safety Features Testing Due to Procedure Deficiency (Paragraph 6.2).
LER 50-281/92-002	Closed	Two Charging Pumps and One Charging Pump Service Water Pump Removed from Service Simultaneously Due to Personnel Error (Paragraph 6.3).
LER 50-281/92-007	Closed	Auxiliary Feedwater System Recirculation Piping Missile Shielding Removed Due to Personnel Error (Paragraph 6.4).
LER 50-281/92-008	Closed	Reactor Coolant System Leak Rate Greater Than 10 GPM Due to Failure of a Swagelok Fitting On a Flow Transmitter (Paragraph 6.5).

Proprietary information is not contained in this report. Dissenting comments were not received from the licensee.

9. Index of Acronyms and Initialisms

AFW	AUXILIARY FEEDWATER
AVEF	AUXILIARY VENTILATION EXHAUST FILTER
BTU/HR	BRITISH THERMAL UNITS/HOUR
CC	COMPONENT COOLING
CCHX	COMPONENT COOLING HEAT EXCHANGER
CFM	CUBIC FEET PER MINUTE
CFR	CODE OF FEDERAL REGULATIONS
CP	CHARGING PUMP
CS	CONTAINMENT SPRAY
CVCS	CHEMICAL VOLUME CONTROL SYSTEM
CWB	CONDENSER WATER BOX
DBD	DESIGN BASIS DOCUMENT
DOP	PENETRATION OF DIOCTYL PHTHALATE
DP	DIFFERENTIAL PRESSURE
DR	DEVIATION REPORT
ECCS	EMERGENCY CORE COOLING SYSTEM
ECST	EMERGENCY CONDENSATE STORAGE TANK
ESF	ENGINEERED SAFETY FEATURE
ESW	EMERGENCY SERVICE WATER
ETA	ETHANOLAMINE
F	FAHRENHEIT
GL	GENERIC LETTER
GPM	GALLONS PER MINUTE
HEPA	HIGH EFFICIENCY PARTICULATE AIR
LER	LICENSEE EVENT REPORT
LCO	LIMITING CONDITIONS OF OPERATION
MOV	MOTOR OPERATED VALVE
MFW	MAIN FEEDWATER
NRC	NUCLEAR REGULATORY COMMISSION
PORV	POWER OPERATED RELIEF VALVE
PPM	PARTS PER MILLION
PPR	POTENTIAL PROBLEM REPORT
QA	QUALITY ASSURANCE
RCE	ROOT CAUSE EVALUATION
RCP	REACTOR COOLANT PUMP
RCS	REACTOR COOLANT SYSTEM
RHR	RESIDUAL HEAT REMOVAL
RMT	RECIRCULATION MODE TRANSFER
RTD	RESISTANCE TEMPERATURE DETECTOR
RWST	REFUELING WATER STORAGE TANK
SG	STEAM GENERATOR
SI	SAFETY INJECTION
SRO	SENIOR REACTOR OPERATOR
STA	SHIFT TECHNICAL ADVISOR
SW	SERVICE WATER
TDAFWP	TURBINE DRIVEN AUXILIARY FEEDWATER PUMP
TS	TECHNICAL SPECIFICATION
URI	UNRESOLVED ITEM
UV	UNDER VOLTAGE
WO	WORK ORDER