



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

Report Nos.: 50-338/92-10 and 50-339/92-15

Licensee: Virginia Electric & Power Company  
 5000 Dominion Boulevard  
 Glen Allen, VA 23060

Docket Nos.: 50-338 and 50-339

License Nos.: NPF-4 and NPF-7

Facility Name: North Anna 1 and 2

Inspection Conducted: June 21 - July 18, 1992

Inspectors: *P.H. Lesser* 8/14/92  
 M.S. Lesser, Senior Resident Inspector Date Signed

*D.R.* *P.H. Taylor* 8/14/92  
 D.R. Taylor, Resident Inspector Date Signed

Approved by: *P.E. Fredrickson* 8/14/92  
 P.E. Fredrickson, Section Chief Date Signed  
 Division of Reactor Projects

SUMMARY

Scope:

This routine inspection by the resident inspectors involved the following areas: operations, maintenance, surveillances, minor modifications, verification of plant records, and action on previous inspection findings. Inspections of licensee backshift activities were conducted on the following days: July 15, 16 and 18, 1992.

Results:

In the area of engineering and technical support, the licensee implemented immediate compensatory measures in response to NRC Bulletin 92-01, Failure of Thermo-lag 330 Fire Barrier System to Maintain Cabling in Wide Cable Trays and Small Conduit Free from Fire. The measures appeared to be acceptable until longer term resolution to the problem is identified (para 3.a).

In the area of engineering and technical support, the licensee identified sections of emergency diesel fuel oil piping which were not missile protected as required by the UFSAR. Compensatory measures were placed into effect until corrective action can be implemented (para 3.b).

In the area of maintenance and surveillance, the licensee notified the NRC in accordance with 10 CFR 21 of defective Klockner Moeller 480 volt circuit breakers. The licensee has prioritized breakers for replacement with a different design (para 4.b).

In the area of safety assessment and quality verification the licensee's vendor audit of Klockner Moeller was timely and identified weaknesses in the quality assurance program, although not related to the defective circuit breakers (para 4.b).

In the area of maintenance, a strength was identified in plant material condition as indicated by a significant reduction in the number of radioactive leak catch containers (para 4.d).

In the area of engineering and technical support, initial design and implementation of a design change package which performed a modification to the iodine filter system heaters was deficient. The inspectors questioned the adequacy of resolution in that operation still remains inconsistent with the UFSAR (para 6).

In the area of safety assessment and quality verification, the licensee performed inspections of operator logs in response to NRC Information Notice 92-30, Falsification of Plant Records. No examples of falsification were identified, however, some weaknesses involving radiological practices and area tours were noted (para 7).

In the area of operations, a weakness was identified, involving response to degraded control room envelope conditions. A condition involving low differential pressure between the control room and an adjacent area was not considered to be an inoperable condition although the ability of the control room bottled air system to perform its safety function may have been inhibited (para 8.a).

## REPORT DETAILS

### 1. Persons Contacted

#### Licensee Employees

L. Edmonds, Superintendent, Nuclear Training  
\*R. Enfinger, Assistant Station Manager, Operations and Maintenance  
J. Hayes, Superintendent of Operations  
D. Heacock, Superintendent, Station Engineering  
\*G. Kane, Station Manager  
\*P. Kemp, Supervisor, Licensing  
W. Matthews, Superintendent, Maintenance  
\*J. O'Hanlon, Vice President, Nuclear Operations  
D. Roberts, Supervisor, Station Nuclear Safety  
R. Saunders, Assistant Vice President, Nuclear Operations  
D. Scappell, Superintendent, Site Services  
R. Sears, Superintendent, Outage and Planning  
\*J. Smith, Manager, Quality Assurance  
A. Stafford, Superintendent, Radiological Protection  
J. Stall, Assistant Station Manager, Nuclear Safety and Licensing

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

#### NRC Resident Inspectors

\*M. Lesser, Senior Resident Inspector  
\*D. Taylor, Resident Inspector

#### Accompanying Personnel

\*P. Fredrickson, Section Chief, RII, NRC

\*Attended exit interview

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

### 2. Plant Status

Both units operated at or near licensed power level during the entire inspection period.

### 3. Operational Safety Verification (71707)

The inspectors conducted frequent visits to 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 TS and to maintain awareness of the overall operation of the facility. 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. DRs were reviewed to assure that potential safety concerns were properly addressed and reported. Selected reports were followed to ensure that appropriate management attention and corrective action was applied.

a. Thermo-Lag Fire Barrier

On June 24, the NRC issued Bulletin 92-01, Failure of Thermo-Lag 330 Fire Barrier System to Maintain Cabling in Wide Cable Trays and Small Conduit Free from Fire. The Bulletin notified licensees of failures in fire endurance tests associated with Thermo-lag 330 fire barrier systems. The Bulletin required licensees to immediately, upon receipt of the Bulletin, determine areas in their plants where suspect Thermo-lag was installed, take necessary compensatory measures, and inform the NRC of actions taken.

North Anna received the Bulletin on June 25, and following a brief evaluation, issued Standing Order 194 which initiated a continuous fire watch in the auxiliary building elevations 244 and 249, and increased log taking and trending of containment temperature RTDs. The licensee had previously determined the areas of the plant which contained Thermo-lag. These areas included charging pump 1-CH-P-1C power feeder conduit, component cooling pump 2-CC-P-1A power feeder conduit, and Appendix R ventilation duct enclosure, all of which are in the auxiliary building. In addition, the following applications of Thermo-lag were identified inside containment:

- Unit 1 Elev. 291 (Fuel Bldg. Penetration Column 5)
- Unit 1 Elev. 291 (Conduit ICX933NB to PT & LT-RC-1000)
- Unit 1 Elev. 262 (R/E Shields @ PT & LT-RC-1000)
- Unit 1 Elev. 231 (Conduit ICX903WA)
- Unit 1 Elev. 231 (R/E Shield between 1-RH-P-1A & B)
- Unit 2 Elev. 291 (Fuel Bldg. Penetration Column 13)
- Unit 2 Elev. 291 (Conduit 2CX906NV to PT & LT-RC-2000)
- Unit 2 Elev. 262 (R/E Shield @ PT-RC-2000 & LT-2461)
- Unit 2 Elev. 231 (R/E Shield between 2-RH-P-1A & B)

In addition to the compensatory measures, the licensee evaluated the cumulative effects of the broad use of Thermo-lag using the 10 CFR 50.59 evaluation process which determined that no unreviewed safety question existed.

To assess licensee immediate response to the Bulletin, the inspectors reviewed licensee actions and compared the actions with the fire protection manual and administrative procedures. The inspectors noted that compensatory actions taken for equipment inside containment were not consistent with licensee requirements of ADM 16.2, Special Reports for Inoperable Appendix R Equipment. Specifically, inoperable Appendix R protection inside containment

required a continuous roving fire watch in the alternate shutdown fire areas, including the cable runs. The licensee informed the inspectors that when evaluating the Bulletin, a PAR to ADM 16.2 was issued which changed the requirement for compensatory measures when Thermo-lag is determined to be inoperable inside containment. The new requirements involved monitoring conditions inside the affected area (containment) to note significant changes in temperature. The inspectors reviewed the PAR and agreed that the actions taken would more readily detect a fire in the areas of concern. The inspectors interviewed several auxiliary building fire watches and found them attentive and knowledgeable of the areas and requirements of their watch. The licensee will notify the NRC of long term plans as required by the Bulletin.

b. EDG Fuel Oil Transfer Piping

On July 14 the licensee identified sections of 1½ inch EDG fuel oil transfer piping which were not missile protected and thus not meeting the description of the system in the UFSAR. The sections in question involved fuel oil piping going to each EDG day tank which entered the EDG rooms from under ground outside the missile shield wall. The licensee notified the NRC in accordance with 10 CFR 50.72 as a condition outside the design basis of the plant.

The licensee's immediate response was to ensure compensatory measures be established if severe weather (tornado, hurricane) was imminent. Severe Weather Conditions, O-AP-41, was revised to establish a continuous roving watch to monitor the EDG rooms to verify integrity of piping. If problems are identified, the licensee's fuel oil spill procedures are referenced and maintenance is notified for immediate repair. An emergency repair kit was assembled and identified as such. Instructions for isolating a fuel oil leak were also provided. The licensee also developed JCO 92-04 which included a formal safety evaluation and formulated the basis for the compensatory measures.

The EDG's were considered operable on the basis that the fuel oil day tank could provide fuel for at least three hours prior to requiring makeup. The compensatory measures would ensure that a rupture is identified and temporarily repaired within this time. The inspectors reviewed the licensee's actions and observed good engineering support. The licensee is developing permanent resolution.

No violations or deviations were identified.

4. Maintenance Observation (62703)

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

a. Filter Replacement, 1-GW-FL-1B

On July 6, the inspectors observed the removal of charcoal for gaseous waste filter 1-GW-FL-1A per O-MCM-0617-01 and O-MCM-0618-01. The charcoal is replaced about every six months because of the need to perform laboratory analysis on the charcoal absorber. TS requires that a representative sample of charcoal be analyzed after every 720 hours of operation. Since the GW system operates continuously, samples are required about every month. There are two filter assemblies shared between both units with one in operation at all times. Sample canisters are provided with each filter bank to preclude having to remove charcoal from the filter assembly each time a sample is needed. Removing charcoal from a filter assembly requires replacement of the charcoal and in-place testing to verify bypass leakage within TS. Using sample canisters allows for laboratory analysis of three samples prior to charcoal replacement.

The inspectors observed the removal of the old charcoal for filter train A on July 6. The maintenance was performed with personnel appropriately using applicable procedures and ensuing required HP and QC hold points were accomplished prior to proceeding to the next steps. One potential problem was identified when the mechanics dumped the old charcoal out of the first charcoal assembly into a container for disposal. The charcoal was dumped too fast and a cloud of black dust appeared. No radiological hazards or concerns resulted, although the potential did exist. The second and third assemblies were dumped more slowly and a vacuum was used to ensure the dust was collected. No other problems were noted.

b. Klockner Moeller Circuit Breakers

On July 1, the licensee notified the NRC in accordance with 10 CFR 21 of defective Klockner Moeller 480 volt circuit breakers model NZM6-63. The licensee had recently experienced three similar failures of a plastic pivot arm in the latching mechanism (IFI 50-339/92-14-01) causing the breakers to trip. The cycling history of each breaker was well below the design life of 20,000 cycles. Until replacement of the breakers, the licensee has implemented increased surveillance of equipment by periodically verifying power to loads from the CR or by visual inspection of the breaker position.

The licensee developed a replacement list and prioritized the list into four categories. Level A priority has 8 unit 1 and 7 unit 2 breakers for immediate changeout and is generally associated with active ECCS components. Level B includes approximately 31 Unit 1 and 34 Unit 2 components which if power failed would jeopardize a safety function. Level C includes components which if power failed would not jeopardize a safety function but still needs

replacement. Finally Level D includes those components which will only be replaced if the existing breaker fails.

On July 14, the inspectors witnessed bench testing of a replacement breaker, a model NZMH4-40. Maintenance procedure O-ECM-0310-01 Replacement of 480 Volt Klockner Moeller Molded Case Circuit Breaker Assemblies, was used to measure insulation resistance from each phase to ground, to measure resistance across each main contact, to test the time response of the thermal overload trip at rated current, and to test the time response of the instantaneous magnetic overload trip at 300 percent rated current. The breaker was acceptable, however, replacement was not initiated due to the licensee's desire to add more precautions to the procedure during retest.

The inspectors reviewed a recent vendor audit of Klockner Moeller performed by the licensee during May 1992. The audit was performed as part of the licensee's vendor audit program and was not done in response to the circuit breaker failures. The audit concluded that Klockner Moeller had not fully implemented their quality assurance program for supplying motor control centers and replacement parts. The findings included: 1) adequate measures have not been established and implemented for the dedication of commercial grade items used in safety related applications, and 2) adequate measures have not been established and implemented for the evaluation of design changes made to replacement components to determine the effect on EQ.

The licensee's audit was timely and resulted in further efforts to ensure that the replacement circuit breakers would be dedicated by a third party to establish qualification. Until the QA findings are adequately addressed by Klockner Moeller, the licensee has placed applicable purchase orders on hold (with the exception of the circuit breakers).

c. Hydrogen Analyzer Annunciator

The inspectors followed up on DR N-92-1473 regarding the failure of the Unit 2 containment hydrogen concentration high annunciator to properly alarm during a system periodic test. The licensee determined relay CR-1 was incorrectly configured which prevented actuation of the annunciator. According to the vendor drawing, the movable contacts should be reversed such that normally open contacts would be closed and vice-versa. The licensee suspected that the problem occurred during a 1989 maintenance activity when the relay was last replaced due to lack of an adequate procedure and/or personnel error.

The licensee reviewed the testing procedure and found it also to be inadequate. Placing the system in test causes the annunciator to actuate, however, the test procedure failed to require the annunciator to be reset prior to checking the hydrogen analyzer.

At the high hydrogen setpoint, the instructions merely verified the annunciator to be lighted instead of observing a reflash condition. The problem was identified when an operator questioned the adequacy of the step.

The licensee determined the event to be reportable, in that surveillance testing of the hydrogen analyzer was inadequate, and will submit a 30 day LER. The inspector reviewed EOP's and determined that a high containment hydrogen condition most likely would have been identified by observing hydrogen concentration gages. The licensee performed a test of the Unit 1 system shortly thereafter which was successful.

d. Catch Container Trending Program

The licensee has significantly reduced the number of catch containers needed for radioactive leakage in the plant through effective performance indicator monitoring and maintenance attention. Within the last year the number of catch containers has been reduced from about 30 to 8.

e. EDG Unavailability

The inspectors obtained information from the licensee to determine the unavailability times for EDGs. The information includes all times for which the EDG's were taken out-of-service for routine maintenance and testing and non-routine corrective maintenance. The data obtained will be used for further review by the NRC to assess the safety significance of EDG unavailability.

No violations or deviations were identified.

5. Surveillance Observation (61726)

The inspectors observed/reviewed TS required testing and verified that testing was performed in accordance with adequate procedures, that test instrumentation was calibrated, that LCO's were met and that any deficiencies identified were properly reviewed and resolved.

a. Turbine Valve Freedom Test

On June 26, the inspector observed the performance of 2-PT-34.3, Turbine Valve Freedom Test. The test cycles each of the throttle, governor, reheat stop and reheat intercept valves through a complete cycle. The test satisfies the monthly requirements of TS 4.7.1.7.2.a and b. During performance of the test, the two reheat left and two intercept left valves would not go shut when the test push button was depressed. After investigation the licensee determined that a limit switch for one of the valves previously tested was incorrectly aligned. The valve's logic is setup such that when testing the valves for one MSR, the other 3 MSR's reheat intercept and reheat stop valves must be open as



determined by limit switch positions. The limit switch was adjusted and the remainder of the valves were tested satisfactorily.

b. Protection Channel Test

On July 18, the inspectors observed periodic tests 2-PT-32.1.7, Steam Generator A Narrow Range Level Protection Channel III Channel Functional Test; and 2-PT-32.1.8 Steam Generator B Narrow Range Level Protection Channel III Channel Functional Test. The tests are performed to verify operability of reactor protection channel III for the respective instrumentation. During the test communications between the control room and relay room were observed to be clear and concise. No performance problems were noted.

6. Minor Modifications (37828)

The inspectors observed and reviewed installation and testing for DCP 92-108, Correct the Locations of the PDS for SAVS Charcoal Bank. The DCP removed an existing PDS which was located in the neck of the charcoal filter inlet and installed a new PDS across the charcoal filter. The purpose of the PDS is to protect installed electrical heaters from a low or no air flow condition. Operation of the heaters with less than  $\approx$ 6300 CFM will result in coil damage. The DCP was initiated because the heaters were not energizing during a 31 day PT even with maximum rated flow (36,200 CFM) through the filters. TS requires a 31 day surveillance to operate the SAVS with the heaters on through the auxiliary building HEPA and charcoal filter assembly for at least 10 hours.

The DCP installed the new PDS to allow heater energization when flow reached a setpoint corresponding to .6 inches WC which was calculated to be the highest DP expected to be seen with 6300 CFM flow through the charcoal filter. Testing to verify proper operation was performed using 1-PT-77.B, SAVS Flow Test - Train B Filter. During the test, the heaters failed to energize at flows significantly higher than 6300 CFM. Based on this, a field change was initiated to move the pressure sensing points from across the charcoal filter to the HEPA filter. Prior to the field change being implemented, System Engineering performed operational testing to verify that the DP across the HEPA filter would provide adequate range to operate the PDS. After implementing the field change, 1-PT-77.1B was re-performed satisfactorily. However, discussion with operations personnel indicated that a flow of 12,600 CFM (which corresponds to the B train SAVS fans) did not energize the heaters. A fuel building exhaust fan, which raised total flow to >30,000 CFM, was diverted through the filter to get the heaters to energize. When securing from the test, all but one SAVS fan (6300 CFM) was left running through the filter bank to determine the HEPA filter DP. The local PDI indicated  $\approx$ .7 inch WC which should have been enough for heater energization.

Based on the test results, the inspectors concluded that the DCP with field changes did not function as designed or fully correct the original deficient condition. In addition, section 6.2 of the UFSAR indicated the following function of the heaters: "Water will exist only as a vapor in the air stream during non-accident modes of operation. Under these conditions automatically controlled electric heaters powered from normal bus sources are utilized to prevent moisture accumulation on these main filtration units by limiting the relative humidity to below 70 percent." During accident conditions, the heaters are not needed since heat produced by emergency pumps is sufficient to keep humidity to acceptable values. The inspectors were concerned that during non-accident conditions, such as during fuel movement with the fuel building exhaust lined up through the filter assembly, the heaters would not function as described in the UFSAR because of a low flow sensed by the PDS.

The inspectors discussed this matter with engineering and were informed that the heaters were originally designed not to energize until >26,000 CFM flow through the filter was achieved. However, this is inconsistent with the FSAR description of the function of the heaters. Based on the inspectors question, the licensee is evaluating the need for the heaters to automatically energize during non-accident high humidity conditions. Pending resolution, this is identified as IFI 50-338/92-15-01: Iodine Filter Heater Automatic Function.

#### 7. Verification of Plant Records (TI 2515/115)

This inspection was performed to determine if practices of individuals performing surveillance and log entries are such that there is a potential for record falsification to occur. In response to NRC Information Notice 92-30: Falsification of Plant Records, the licensee requested the QA department to initiate a review of vital area entry records against operator logs for April 1992. Entry and exit times for vital areas were assessed to determine if local logs were properly being taken. The inspectors followed and reviewed licensee actions as a result of the QA findings.

On May 19, DR 92-1333 was written, following review of the security logs, when several entries were identified which appeared to be too short in duration to adequately complete logs and perform whole body frisking. The DR identified 11 entries of duration less than one minute. The licensee's immediate response was to determine if any of these examples represented falsification of records.

Detailed review by the licensee on May 21 concluded that in each case the minimum surveillance requirements were met by either an additional entry into the area of longer duration or because surveillance requirements for that area were minimal. The inspectors reviewed the licensee's assessment and discussed the issue with licensee personnel.

The licensee then initiated a broader scope review of security records by randomly selecting four separate two week time intervals and

analyzing the data. The four time intervals between October 1991 and February 1992 included both outage and non-outage periods and periods in which each of five operations shifts were on duty. On June 11 the licensee completed its evaluation and again concluded that no surveillance lapses were missed and that no examples of record falsification occurred.

The review identified two areas of concern however. The first concern involved adequacy of radiological control practices when leaving an RCA. It was identified that whole body frisking was not being properly performed by many personnel at the station in all departments. As an example, a 2-3 minute whole body frisk is required upon leaving the safeguards building; however, some entries were considerably shorter. Many people incorrectly considered a hand and foot frisk to be acceptable. The second concern involved the adequacy of general area tours by operators. Operators are generally required to enter areas twice per shift. The first time is to take logs and the second time is for a general area tour. Several examples were identified where time duration in areas was not adequate to conduct a thorough tour of equipment material condition, housekeeping, etc. The licensee is adequately addressing these concerns through personnel training and coaching. The licensee also indicated that a programmatic requirement would be implemented to periodically conduct similar reviews.

The inspections considered the QA initiative and the licensee response to be a strength.

8. Action on Previous Inspection Items (92701, 92702)
  - a. (Open) IFI 50-338/92-14-01: Klockner Moeller Breaker Failures  
See paragraph 4.b.
  - b. (Open) IFI 50-338,339/92-14-02: Control Room Habitability Test Criteria

During the last inspection period, the inspectors evaluated the CR habitability system. Based on the evaluation, outstanding questions were identified. One of the questions dealt with the ability of the CR envelope to maintain a .05 inch WG positive pressure with respect to the outside environment. During this inspection period, observation of CR activities on several occasions indicated DP readings for the CR to Unit 2 cable vault to be below the .05 inch WG minimum. These readings were pointed out to the assistant shift supervisor. Further review identified log readings on July 10, 11, and 12 were all below specification. The lowest reading logged was .029 inch WG. For the out-of-specification condition, the logs required engineering be informed. For this particular case, normal ventilation to the cable vault area was not working so a temporary unit was used to blow cool air into the cable vault area which drove up pressure in the area. No immediate action was taken to correct the deficient

log condition. Based on the log readings, and observation by the inspectors on July 14, the inspectors questioned the operability of the CR bottled air system. An 18 month TS surveillance requires the bottled air system to be able to maintain the CR at a positive pressure of  $\geq 0.05$  inch. Discussion with the licensee indicated that when performing the test the DPs do not change much from what they are at the start of the test. This is because the net positive flow of air into the CR remains relatively constant.

Based on the inspectors questions, the licensee determined that the bottled air system should be declared inoperable and a 7 day action statement entered for out-of-specification readings. Operator logs were changed to reflect the above condition and increased log taking was initiated. In addition the licensee initiated DR 1555. Based on the above actions, the inspectors had no further concerns. The IFI is remaining open because of other questions with CR habitability test criteria.

c. (Closed) Allegation RII-92-A-0042

The subject allegation involved concerns with the method of proctoring and handling examinations by NPS to certify QC inspectors used at North Anna. The licensee was requested by the NRC, Region II, to initiate a review of this matter and forward the results to the NRC. The licensee's review was sent to the NRC on April 23, 1992, concluding that the concern does not pose a threat to the health and safety of the public.

The inspectors initially discussed the matter with the licensee. The allegation was that the examination proctor allegedly left the room on occasion and that the completed exams were delivered for grading by the parties being examined to the proctor. The licensee's review of the matter determined that there was no evidence of compromise and that the examinations were delivered to the grader by mail in a sealed envelope. However a weakness was identified regarding a lack of procedural guidance for handling examinations which resulted in concerns regarding handling of examination and proctoring.

After receipt of the licensee's April 1992 response, the inspectors reviewed an audit of NPS performed by the licensee in March 1992 to verify that the NPS quality assurance program is effectively implemented and meets the requirements of 10 CFR 50, Appendix B and Part 21. No findings were identified. As part of the audit the licensee specifically reviewed the NPS QC inspector certification process. The program was found to meet or exceed the requirements of ANSI N45.2.6-1978; however, no administrative procedures governed the process for handling

examinations. The licensee recommended that administrative procedures be developed.

9. Exit (30703)

The inspection scope and findings were summarized on July 21, 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.

<u>Item Number</u>	<u>Description and Reference</u>
IFI 50-338/92-15-01	Iodine Filter Heater Automatic Function (paragraph 6)

10. Acronyms and Initialisms

ANSI	American National Standards Institute
CFM	Cubic Feet per Minute
CFR	Code of Federal Regulations
CR	Control Room
DCP	Design Change Package
DP	Differential Pressure
DR	Deviation Report
ECCS	Emergency Core Cooling System
EDG	Emergency Diesel Generator
EOP	Emergency Operating Procedure
EQ	Environmental Qualification
FL	Filter
FSAR	Final Safety Analysis Report
GW	Gaseous Waste
HEPA	High Efficiency Particulate Absorption
HP	Health Physics
IFI	Inspector Followup Item
JCO	Justification for Continued Operation
LCO	Limiting Condition for Operation
LER	Licensee Event Report
LT	Level Transmitter
MSR	Moisture Separator Reheater
NPS	Nuclear Power Services
NRC	Nuclear Regulatory Commission
PAR	Procedure Action Request
PDI	Pressure Differential Indicator
PDS	Pressure Differential Sensor
PT	Pressure Transmitter or Periodic Test
QA	Quality Assurance
QC	Quality Control

R/E	Radiant Energy
RCA	Radiological Controlled Area
RTD	Resistance Temperature Detector
SAVS	Safeguards Area Ventilation System
TI	Temporary Instruction
TS	Technical Specifications
UFSAR	Updated Final Safety Analysis Report
WC	Water Column
WG	Water Gauge