



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

VIRGINIA ELECTRIC AND POWER COMPANY

DOCKET NO. 50-339

NORTH ANNA POWER STATION, UNIT NO. 2

FACILITY OPERATING LICENSE

License No. NPF-7

1. The Nuclear Regulatory Commission (the Commission) having found that:
 - A. The application for license filed by Virginia Electric and Power Company (VEPCO) complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's regulations set forth in 10 CFR Chapter I and all required notifications to other agencies or bodies have been duly made;
 - B. Construction of the North Anna Power Station, Unit No. 2 (facility) has been substantially completed in conformity with Construction Permit No. CPPR-78 and the application, as amended, the provisions of the Act and the regulations of the Commission;
 - C. The facility will operate in conformity with the application, as amended, the provisions of the Act, and the regulations of the Commission;
 - D. There is reasonable assurance: (i) that the activities authorized by this operating license can be conducted without endangering the health and safety of the public and (ii) that such activities will be conducted in compliance with the Commission's regulations set forth in 10 CFR Chapter I;
 - E. VEPCO is technically and financially qualified to engage in the activities authorized by this operating license in accordance with the Commission's regulations set forth in 10 CFR Chapter I;
 - F. VEPCO has satisfied the applicable provisions of 10 CFR Part 140, "Financial Protection Requirements and Indemnity Agreements", of the Commission's regulations;

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- G. The issuance of this operating license will not be inimical to the common defense and security or to the health and safety of the public;
 - H. After weighing the environmental, economic, technical and other benefits of the facility against environmental and other costs and considering available alternatives, the issuance of Facility Operating License NPF-7 subject to the conditions for protection of the environment set forth herein is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied; and
 - I. The receipt, possession, and use of source, byproduct and special nuclear material as authorized by this license will be in accordance with the Commission's regulations in 10 CFR Part 30, 40, and 70.
2. Pursuant to approval by the Nuclear Regulatory Commission at a meeting on August 20, 1980, The License for Fuel-Loading and Low-Power Testing issued on April 11, 1980 is superseded by Facility Operating License NPF-7 hereby issued to Virginia Electric and Power Company (VEPCO) to read as follows:
- A. This license applies to the North Anna Power Station, Unit No. 2, a pressurized water nuclear reactor and associated equipment (the facility), owned by VEPCO. The facility is located near Mineral in Louisa County, Virginia and is described in VEPCO's Final Safety Analysis Report as supplemented and amended (Amendments 17 through 69) and Environmental Report as supplemented and amended (Supplements 1 through 4).
 - B. Subject to the conditions and requirements incorporated herein, the Commission hereby licenses VEPCO:
 - (1) Pursuant to Section 103 of the Act and 10 CFR Part 50, to possess, use, and operate the facility at the designated location in Louisa County, Virginia, in accordance with the limitations set forth in this license;
 - (2) Pursuant to the Act and 10 CFR Part 70, to receive, possess and use at any time special nuclear material as reactor fuel, in accordance with the limitations for storage and amounts required for reactor operation, as described in VEPCO's Final Safety Analysis Report, as supplemented and amended;
 - (3) Pursuant to the Act and 10 CFR Parts 30, 40 and 70, to receive, possess and use at any time any byproduct, source and special nuclear material as sealed neutron sources for reactor startup, sealed sources for reactor instrumentation and radiation monitoring equipment calibration, and as fission detectors in amounts as required;

- (4) Pursuant to the Act and 10 CFR Parts 30, 40 and 70, to receive, possess and use in amounts as required any byproduct, source or special nuclear material without restriction to chemical or physical form, for sample analysis or instrument calibration or associated with radioactive apparatus or components; and
 - (5) Pursuant to the Act and 10 CFR Parts 30, 40 and 70, to possess, but not separate, such byproduct and special nuclear materials as may be produced by the operation of the facility.
- C. This license shall be deemed to contain and is subject to the conditions specified in the Commission's regulations set forth in 10 CFR Chapter I and is subject to all applicable provisions of the Act and to the rules, regulations, and orders of the Commission now or hereafter in effect; and is subject to the additional conditions specified or incorporated below:

(1) Maximum Power Level

VEPCO is authorized to operate the facility at steady state reactor core power levels not in excess of 2775 megawatts (thermal).

(2) Technical Specifications

The Technical Specifications contained in Appendices A and B attached hereto are hereby incorporated into this license. VEPCO shall operate the facility in accordance with the Technical Specifications.

The written procedures required by Technical Specification 6.8.1 for the Technical Specifications listed below shall be implemented within 30 days after the date of this license:

4.3.2.1.3 Items 10 and 11 of Table 3.3-5

4.3.3.6

4.4.3.2.1

4.4.3.2.2

4.4.6.2.2

The required surveillance shall be completed before the end of the first surveillance interval.

(3) Initial Test Program.

VEPCO shall conduct the post-fuel-loading initial test program (set forth in Section 14 of VEPCO's Final Safety Analysis Report, as amended) without making any major modifications of this program unless modifications have been identified and have received prior Commission approval. Major modifications are defined as:

- a. Elimination of any test identified in Section 14 of VEPCO's Final Safety Analysis Report, as amended, as essential;
- b. Modification of test objectives, methods or acceptance criteria for any test identified in Section 14 of VEPCO's Final Safety Analysis Report, as amended, as essential;
- c. Performance of any test at a power level different from there described; and
- d. Failure to complete any tests included in the described program (planned or scheduled for power levels up to the authorized power level).

(4) VEPCO shall take the following remedial actions, or alternative actions, acceptable to the Commission, with regard to the environmental qualification requirements for Class IE equipment:

- (a) No later than November 1, 1980, VEPCO shall submit information to show compliance with the requirements of NUREG-0588, "Interim Staff Position on Environmental Qualification of Safety-Related Electrical Equipment," for safety-related equipment exposed to a harsh environment;
- (b) No later than June 30, 1982, VEPCO shall replace Rosemount pressure transmitters and differential pressure transmitters, and pressure transmitters and differential pressure transmitters from Barton lot I with suitably qualified devices; and
- (c) No later than June 30, 1982, the wide-range resistance temperature detectors for the reactor coolant system shall be qualified for radiation exposure for the 40-year plant life and appropriate exposure condition due to design basis accidents. Pending completion of such qualification and acceptance by the Commission, VEPCO shall replace each of these detectors at each refueling outage.

- (d) "By no later than December 1, 1980, complete and auditable records must be available and maintained at a central location which describe the environmental qualification method used for all safety-related electrical equipment in sufficient detail to document the degree of compliance with the DOR Guidelines or NUREG-0588. Thereafter, such records should be updated and maintained current as equipment is replaced, further tested, or otherwise further qualified to document complete compliance by June 30, 1982."
- (5) Prior to operating the facility at a power level above 25 percent, VEPCO shall develop a surveillance program for fiberglass spray pond piping and supports that is in compliance with the regulatory position in Revision 2 of Regulatory Guide 1.72, or an alternative position acceptable to the Commission.
- (6) Prior to operating the facility at a power level above 90 percent, VEPCO shall perform secondary flow stability tests which have been approved by the Commission. VEPCO shall provide at least 24 hours notification to Office of Inspection and Enforcement (OIE) prior to conducting such approved tests so that these tests may be witnessed by the Commission.
- The exceptions to Technical Specifications 3.3.2.1(a), 3.3.2.1(b), 3.5.2, 3.7.1.2, and 3.7.1.3, issued with Amendment No. 2 to the Fuel-Load and Low-Power Testing License dated August 1980 shall be in effect until these are completed.
- (7) Prior to operating the facility at a power level above 90 percent, VEPCO shall demonstrate to the satisfaction of the NRC that the actual in-plant measurements of transformer tap settings are in agreement with their analysis.
- (8) Prior to operating above 90 percent power, VEPCO shall complete the visual verification of operability of the 37 feedwater system hydraulic snubbers, designated in VEPCO's letter dated August 7, 1980, at operating temperature to the satisfaction of the OIE.
- (9) VEPCO is authorized to perform steam generator moisture carryover studies at the North Anna Station. These studies involve the use of an aqueous tracer solution of two (2) curies of sodium-24. The licensee personnel will be in charge of conducting these studies and be knowledgeable in the procedures. VEPCO will impose personnel exposure limits, posting, and survey requirements in conformance with those in 10 CFR Part 20 to minimize personnel exposure and contamination during the studies. Radiological controls will be established in the areas of the chemical feed, feedwater, steam,

condensate and sampling systems where the presence of the radioactive tracer is expected to warrant such controls. VEPCO will take special precautions to minimize radiation exposure and contamination during both the handling of the radioactive tracer prior to injection and the taking of system samples following injection of the tracer. VEPCO will ensure that all regulatory requirements for liquid discharge are met during disposal of all sampling effluents and when reestablishing continuous blowdown from the steam generators after completion of the studies.

- (10) No later than October 11, 1980, VEPCO shall submit a design for the backup overcurrent protection system for containment electrical penetrations for Commission review and approval. The backup system shall be installed and operational prior to resuming power operation following the first refueling outage.
- (11) No later than November 1, 1980, VEPCO shall implement the fire protection modifications as described in the Commission Safety Evaluation Report, "Fire Protection Program for North Anna Power Station, Units 1 and 2", dated February 1979 (see Amendment No. 8 to NPF-4 for the North Anna Power Station, Unit No. 1) except implementation of the modification of the alternate shutdown system shall be implemented no later than April 1, 1981.
- (12) Prior to the startup following the first outage of sufficient duration, or within six months from the date of issuance of this license, whichever comes first, VEPCO shall implement the modifications related to Bulletin 79-27 "Loss of Non-Class IE Instrumentation and Control Power System Bus During Operation," as specified in VEPCO's letters, dated May 29, 1980 and July 9, 1980.
- (13) No later than six months from the date of issuance of this license, VEPCO is required to complete to the satisfaction of the Commission its piping reanalysis which includes the seismic amplified response spectra as identified in VEPCO's letter of June 6, 1980, concerning Units 1 and 2, and submit the analysis to the Commission.
- (14) No later than six months from the date of issuance of this license, VEPCO shall supply, to the satisfaction of the NRC, the plant specific information needed to confirm the validity of the main steam line and feedwater line break analyses.

- (15) Prior to resuming power operation following the first refueling outage:
- (a) VEPCO shall submit the details of the inspection program for control rod guide thimble tube wall wear for Commission approval;
 - (b) VEPCO shall install inspection ports in the steam generators;
 - (c) VEPCO shall remove and inspect the recirculation spray pumps inside containment and replace pump bearings if necessary. A similar inspection shall be performed at least once every five years thereafter;
 - (d) VEPCO shall install leak test connections on the RHR isolation valves;
 - (e) VEPCO shall demonstrate by test the backup depressurization capability of the PORV's using the same shutdown procedure as described in VEPCO's procedure 2-OP-3.2 dated 07/23/80;
 - (f) VEPCO shall submit for Commission approval, the results of the tests applicable to North Anna Power Station, Unit 2, of a study concerning mixing of added borated water and cooldown under natural circulation conditions;
 - (g) VEPCO shall retest all engineered safety features reset control actions to verify proper reset action; and
 - (h) VEPCO shall implement the following design and procedural modifications with respect to diesel generator reliability:
 - 1) Complete a formal training program for all the mechanical and electrical maintenance and quality control personnel, including supervisors, who are responsible for the maintenance and availability of the diesel generators. The depth and quality of this training program shall be at least equivalent to that of training programs normally conducted by major diesel engine manufacturers;
 - 2) The ac prelube pump shall be modified to dc power operation and shall be installed in the system to operate in parallel with the engine driven lube pump. The prelube pumps shall be provided with manual start. In an automatic or manual start, the prelube pump shall be operated only during the engine cranking cycle or until a satisfactory lube oil pressure is established in the engine main lube oil distribution header;

- 3) The diesel generator operating procedures shall be modified to require loading the engine up to 50 to 75 percent of full load for one hour after eight hours of continuous no load operation;
 - 4) The day tank overflow line shall be rerouted to return excess fuel to the seven day fuel oil storage tank;
 - 5) Each seven day fuel oil storage tank shall be provided with a seismic Category I, tornado missile, and flood protected emergency fill line. Each fill line shall have a shut-off valve, a strainer, and a truck fill connection consisting of a hose coupling with cap and chain; and
 - 6) With respect to vibration of Instruments and Controls, VEPCO shall either provide test results and results of analyses which qualify the engine skid mounted control cubicles for the severe vibrational stress that will be encountered during engine operation, or floor mount the skid mounted panels and control equipment presently furnished with the diesel generators.
- (16) Within 90 days following issuance of the pending revision of Regulatory Guide 1.97, "Instrumentation for Light-Water-Cooled Nuclear Power Plants to Assess Plant Conditions During and Following an Accident", VEPCO shall provide a schedule acceptable to the NRC for bringing this facility in compliance with Regulatory Guide 1.97, as revised.
- (17) Prior to resuming power operation following the second refueling outage, VEPCO shall subject the low pressure turbines to an inservice inspection. The inspection shall consist of visual and volumetric examinations. The visual examination shall be applied to 100 percent of all the accessible surface of the rotors, discs and blading. The volumetric examination shall use an ultrasonic technique to fully examine the bore and keyway region of the discs in each low pressure turbine.
- The inspection results and evaluation of this inservice inspection shall be reported to the NRC and shall be accepted by the Commission prior to startup following the second refueling outage.
- The subject of the generation of turbine missiles for this facility is pending before the Atomic Safety and Licensing Appeal Board. The license condition imposed herein shall be subject to modification based on the resolution of this pending turbine missile issue.
- (18) No later than five years from the date of issuance of this license, VEPCO shall demonstrate to the satisfaction of the Commission that its examination techniques provide a reliable means of detection and

evaluation of individual reactor vessel nozzle clad cracks should they grow larger than the acceptance standards contained in Section XI of the American Society of Mechanical Engineers Boiler and Pressure Vessel Code.

- (19) No later than five years from the date of issuance of this license, VEPCO shall perform radiation-thermal testing of the encapsulated saddle material used for shielding, and within six months thereafter, VEPCO shall evaluate the testing and provide the Commission with results of the evaluation.

(20) TMI Action Plan Conditions

Each of the following conditions references the appropriate section of Supplement No. 11 to the Safety Evaluation Report (NUREG-0053) for the North Anna Power Station, Unit 2, dated August 1980.

(a) Control Room Design Review (Section 22.2 Item I.D.1)

No later than one year from the date of issuance of this license, VEPCO shall submit an evaluation of the benefits of installing data recording and logging equipment in the control room to correct deficiencies associated with the trending of important parameters on strip chart recorders in use at most nuclear power plants, as part of their one-year control room design review.

(b) Training During Low-Power Testing (Section 22.2 Item I.G.1)

No later than one year from the date of issuance of this license, VEPCO shall complete the evaluation of the results of the low power test program for incorporation into the Surry Power Station simulator. Also within one year, VEPCO shall provide a report to the NRC describing changes made to the simulator model as a result of the tests.

VEPCO shall perform a boron mixing and cooldown test using decay heat within 31 days after burnup sufficient to produce at least 10 hours of decay heat equivalent to one percent of rated thermal power.

(c) Auxiliary Feedwater System Reliability Evaluation (Section 22.2 Item II.E.1.1)

With respect to the AFW Endurance Test, VEPCO shall test the steam turbine driven pump after unit startup when steam will be available in accordance with VEPCO's letter, dated July 11, 1980.

(d) Upgrade Emergency Preparedness (Section 22.2 Item III.A.1.1)

VEPCO shall maintain in effect an emergency plan that meets:

- (i) Regulatory requirement of 10 CFR Part 50, Appendix E, and
- (ii) The operator Planning Objectives of NUREG-0654, "Criteria for Preparation and Evaluation of Radiological Preparedness in Support of Nuclear Power Plants," January 1980.

This plan shall provide an emergency operations facility as a base for coordinating onsite activities and interface with State, local, and Federal agencies.

No later than 90 days from the date of issuance of this license, VEPCO shall report to the NRC the status of any items related to emergency preparedness identified by FEMA or the NRC as requiring further action.

(21) TMI Action Plan Dated Conditions

Each of the following conditions references the appropriate section of Supplement No. 11 to the Safety Evaluation Report (NUREG-0053) for the North Anna Power Station, dated August 1980, and shall be completed to the satisfaction of the NRC.

(a) Shift Technical Advisor (Section 22.3 Item I.A.1.1)

During 1980, at least one Senior Reactor Operator (SRO) or an experienced degreed engineer who is a member of the Site Safety Engineering Staff shall be designated as the Shift Technical Advisor (STA).

All STA's shall be fully trained no later than by January 1, 1981. During 1980, all SRO's designated as STA's shall complete eight weeks of mathematics, physics, thermodynamics, fluid flow, heat transfer, instrumentation and control, chemistry, materials and structural analysis. Following this, STA's shall receive two weeks of design review and five weeks of systems dynamic behavior including transient analysis and techniques for transient identification. The training program for engineers designated as STA's shall consist of 3 portions: academic training in thermodynamics, fluid flow, heat transfer and reactor theory; specific instruction in plant systems and Technical Specifications; and finally, simulator training.

The training shall be taught at the college level and equivalent to about 60 semester hours.

(b) Administration of Training Programs for License Operators (Section 22.3 Item I.A.2.3)

All license personnel and nuclear training coordinators at the facility are required to participate in the Requalification Program as specified in VEPCO's letter dated March 28, 1980.

(c) Reactor Coolant System Vents (Section 22.2 Item II.B.1)

VEPCO shall submit procedural guidelines and analytical bases for the reactor coolant system vents. The reactor coolant system vents shall be installed no later than December 31, 1981.

(d) Plant Shielding (Section 22.3 Item II.B.2)

VEPCO shall complete modifications to assure adequate access to vital areas and protection of safety equipment following an accident resulting in a degraded core no later than January 1, 1981.

(e) Post-Accident Sampling (Section 22.3 Item II.B.3)

VEPCO shall complete corrective actions needed to provide the capability to promptly obtain and perform radioisotopic and chemical analysis of reactor coolant and containment atmosphere samples under degraded core conditions without excessive exposure no later than April 1, 1981.

(f) Relief and Safety Valve Test Requirements (Section 22.3 Item II.D.1)

VEPCO shall complete tests to qualify the reactor coolant system relief and safety valves under expected operating conditions for design basis transients and accidents no later than July 1, 1981.

(g) Auxiliary Feedwater Initiation and Indication (Section 22.3 Item II.E.1.2)

VEPCO shall implement the modification to upgrade the safety-grade indications of AFW flow from semi-vital bus power to vital bus power no later than January 1, 1981.

(h) Containment Dedicated Penetrations (Section 22.3 Item II.E.4.1)

VEPCO shall install redundant remote manual actuated valves in series to isolate the containment vacuum pumps from the combustible gas control system. VEPCO shall also convert the manual valves in the hydrogen recombiner piping to remote manual actuation no later than January 1, 1981.

(i) Additional Accident Monitoring Instrumentation (Section 22.3 Item II.F.1.)

VEPCO shall install and demonstrate the operability of instruments for continuous indication in the control room of the following variables. Each item shall be completed by the specified date in the condition:

- (i) Containment pressure from 0 psia to three times the design pressure of the containment no later than January 1, 1981;
- (ii) Containment water level from (1) the bottom of the top of the containment sump, and (2) the bottom of the containment to a level equivalent to 600,000 gallons of water no later than January 1, 1981;
- (iii) Containment atmosphere hydrogen concentration from 0 to 10 volume percent shall be installed no later than April 1, 1981; and the hydrogen sampling system to be used in the interim will be installed no later than January 1, 1981;
- (iv) Containment radiation up to 10^7 rad/hr. no later than January 1, 1981; and
- (v) Noble gas effluent from each potential release point from normal concentrations to 10^5 μ Ci/cc (Xe-133) no later than July 31, 1981.

VEPCO shall also provide capability for continuous sampling and for onsite analysis of the radioactive and particulate effluent samples no later than July 31, 1981.

Until the above installation is completed, VEPCO shall use interim monitoring procedures and equipment.

(j) Inadequate Core Cooling Instruments (Section 22.3 Items II.F.2)

VEPCO shall install and demonstrate the operability of additional instruments or controls needed to supplement installed equipment in order to provide unambiguous, easy-to-interpret indication of inadequate core cooling no later than December 31, 1981.

- D. An exemption from certain requirements of Appendix J to 10 CFR Part 50 is described in the Office of Nuclear Reactor Regulation's Safety Evaluation Report, Supplement No. 10. This exemption is authorized by law and will not endanger life or property or the common defense and security and is otherwise in the public interest. The exemption is, therefore, hereby granted. The granting of the exemption was authorized with the issuance of the License for Fuel-Loading and Low-Power Testing, dated April 11, 1980. The facility will operate, to the extent authorized herein, in conformity with the application, as amended, the provisions of the Act, and the regulations of the Commission.

- E. VEPCO shall maintain in effect and implement all provisions of the NRC approved Safeguards Contingency Plan identified as Chapter 8 of the North Anna Power Station, Units 1 and 2 Security Plan, as amended, dated May 1, 1980, submitted pursuant to 10 CFR 73.40 including amendments and changes made under the authority of 10 CFR 50.54(p).

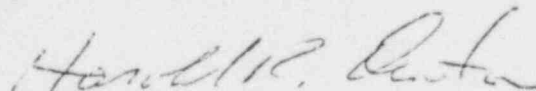
Pursuant to 10 CFR Section 2.790(d), this plan is being withheld from public disclosure because it is deemed to be commercial or financial information within the meaning of 10 CFR Section 9.5(a)(4) and subject to disclosure only in accordance with 10 CFR Section 9.12.

- F. This license is subject to the following additional conditions for the protection of the environment:

Before engaging in additional construction or operational activities which may result in an environmental impact that was not evaluated by the Commission, VEPCO shall prepare and record an environmental evaluation of such activity. When the evaluation indicates that such activity may result in a significant adverse environmental impact that was not evaluated, or that is significantly greater than that evaluated in the Final Environmental Statement or any addendum thereto, VEPCO shall provide a written evaluation of such activities and obtain approval from the NRC prior to engaging in the activities.

- G. If VEPCO plans to remove or to make significant changes in the normal operation of equipment that controls the amount of radioactivity in effluents from the North Anna Power Station, the NRC shall be notified in writing regardless of whether the change affects the amount of radioactivity in the effluents.
- H. VEPCO shall report any violations of the requirements contained in Section 2, Items C.(3) through C.(21), E, F and G of this license within 24 hours by telephone and confirmed by telegram, mailgram, or facsimile transmission to the Director of the Regional Office, or his designate, no later than the first working day following the violation, with a written followup report within 14 days.
- I. This license is effective as of the date of issuance and shall expire February 19, 2011.

FOR THE NUCLEAR REGULATORY COMMISSION



Harold R. Denton, Director
Office of Nuclear Reactor Regulation

Attachment:
Appendices A & B

Date of Issuance: AUG 21 1980