Battelle
Pacific Northwest Laboratories
P.O. Box 999
Richland, Washington U.S.A. 99352
Telephone (509) 375-3759
Telex 15-2874

October 17, 1980

Mr. R. Rohrer, Team Leader
Emergency Preparedness Task Force
Nuclear Regulatory Commission
Washington, D.C. 20555

Dear Mr. Rohrer:

Review and Evaluation of the Surry Power Station Emergency Plan Dated May 1, 1980.

The subject Emergency Plan has been evaluated against the sixteen Planning Objectives and the emergency preparedness criteria in Part II of NUREG-0654. The plan is well written and addresses the planning objectives in a logical and comprehensive manner. This is evidenced by the fact that the intent of the objectives has been either completely or partially satisfied.

The deficiencies noted under the seven planning objects that were partially satisfied are not of an extreme nature and can, therefore, be easily included in the plan without major disruption.

You will also note that in several instances suggestions for improvement or enhancement of the plan have been included in the body of the narrative portions of the evaluation.

These suggestions are not considered deficiencies and have been included only as proposals for additional plan clarification.

Very truly yours,

John G. Myers
Consultant
Health Physcis Technology Section

JGM/lml

cc: M. L. Smith
A. E. Desrosiers
Site File
File/LB

X003
S. 1/1

EMERGENCY EVALUATION REPORT

SURRY POWER STATION

VIRGINIA ELECTRIC AND POWER COMPANY

The revised Emergency Plan issued by Virginia Electric and Power Company for their Surry Power Station dated June 16, 1980 was evaluated to assess if the Company has met the intent of the sixteen Emergency Planning Objectives in Part II of the Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in support of Nuclear Power Plants (NUREG-0654)

The following report lists each objective in order, followed by a summary of the planning commitments, and overall evaluation, and comments on deficiencies in the plan.

A. Assignment of Responsibility (Organization Control)

Planning Objective

To assure that primary responsibilities for emergency response in nuclear facility operator, State and local organizations within the Emergency Planning Zones have been assigned, that the emergency responsibilities of the various supporting organizations have been specifically established, and that each principal response organizatio· is staffed to respond and to augment its initial response on a continuous basis.

Emergency Plan

The shift supervisor for each nuclear power generating facility is initially designated as the Emergency Director. When an abnormal

condition arises, it is his responsibility to determine if the abnormality constitutes an emergency according to implementing procedures. If in his judgement, the abnormality falls within one of the Emergency Action Levels classes, specified in Appendix I of NUREG-0654, it is his responsibility to implement the emergency plan.

Federal, State, local and private agencies and organizations have been identified and their responsibilities defined. There is 24 hours a day communication linkage between the station and Federal, State, local and private agencies and/or organizations to insure rapid transmittal of accurate notification information and emergency assessments data is made available to them.

The plan vests responsibility for overall performance of the emergency response organization in the Station Manager who is empowered to implement company policy with regard to operation of the Surry Power Station. Qualified members of the station staff who report directly to him have been assigned specific responsibilities for major elements of emergency response.

Copies of current Agreement Letters with Federal, State, local and private organizations are included in Appendix 10.1. The letter from the State Office of Emergency and Energy Services dated April 30, 1980 refers only to the North Anna Power Station Emergency Plan. The letter should be revised to include the Surry Plant.

The pla satisfies the intent of the objective.

B. Onsite Emergency Organization

Planning Objective

To assure that on-shift facility operator responsibilities for emergency response are unambiguously defined, that adequate staffing to provide initial facility accident response in key functional areas is maintained at all times, and timely augmentation of response capabilities is available, and that the interfaces among various onsite response activities and offsite support and response activities are specified.

Emergency Plan

The shift supervisor on duty at the time of an adnormal occurrence is designated as the Emergency Director until relieved by a senior member of the plant staff. A seven-step line of succession has been established commencing with the Station Manager and decending in order by station staff members reporting directly to him. The authorities and responsibilities of the Emergency Director have been clearly specified including those that cannot be delegated. The Emergency Director can immdiately and unilaterally declare an emergency status and make offsite notifications.

Station staff emergency assignments have been made and the relationship between the emergency organization and normal staff complement are shown in the plan. Positions and/or titles and qualifications of shift and plant staff personnel, both onsite and offsite who are assigned specific emergency duties, are listed and conform to assignments shown in Table B-1, NUREG-0654. The staffing level with the exception of the deficiencies noted below is adequate to perform anticipated corrective actions during an emergency. The augmentation time is one hour with two exceptions.

Augmentation time for the Manager, Nuclear Operations and Maintenance and the Director, Health Physics and Chemistry is 90 minutes.

Corporate management personnel who will augment the plant staff and their duties and responsibilities have been established. A long term emergency frame work is in place headed by the Executive Vice President-Power. Interfaces between and among the Company Corporate staff, station staff, governmental and private sector organizations and technical and/or engineering contractor groups have been specified along with services to be provided.

The plan partially satisfies the intent of the objective.

Deficiencies

1. The plant minimum shift shown in Table 5.1 does not provide for a Chemistry/Radiochemistry Technician on shift as required by Table B-1, NUREG-0654. In case of emergency, radiochemical analyses may be required before a technician can arrive from off site.

2. Table 5.1 indicates mechanical and electrical maintenance personnel are onsite for only 17 out of 24 hours (i.e., there is no coverage between 3:30 p.m. to 7:00 p.m. and 3:30 a.m. to 7:00 a.m.) In case of emergency during uncovered periods immediate mechanical or electrical maintenance could be vital for accomplishing safe plant shutdown or mitigation of the emergency.

C. Emergency Response and Resources

Planning Objective

To assure that arrangements for requesting and effectively using assistance resources have been made, that arrangements for State and local

staffing of the operators near-site Emergency Operations Facility have been made, and that other organizations capable of augmenting the planned response have been identified.

Emergency Plan

The plan identifies in a general way the resources available through the RAP program, although "the company does not place major reliance in this support". The persons with whom the RAP team maintains contact is not specifically identified although it is inferred to be either the Emergency Director or Recovery Manager.

Backup radiological laboratories are identified along with their response times, but no letters of agreement documenting capabilities and response times are provided. Thorough documentation of backup assistance from other offsite organizations is provided.

The plan partially satisfies the intent of the objective.

Deficiencies

1. There is no provision in the plan to dispatch a licensee representative to the principal governmental Emergency Operation Centers. This is necessary in order to provide technical expertise and assistance to offsite response organizations.

D. Emergency Classification System

Planning Objective

To assure that a standard emergency classification and action level scheme is in use by the nuclear facility operator, including facility system and effluent parameters; and to assure that State and local response organizations, will rely on information provided by facility operators for determinations of initial offsite response measures.

Emergency Plan

Example initiating conditions for each Emergency Action Level Class form the basis for establishment of specific instrument readings which, if exceeded initiate the appropriate emergency class. The current Virginia Radiological Response Plan and the local counties emergency classification system recognize only two Emergency Action Levels, "Yellow" (Site Emergency) and "Red" (General Emergency). When the state office of Emergency and Energy Services is notified by the Emergency Director of either a "Yellow" (Site Emergency) or "Red" (General Emergency) they will notify the Virginia Department of Health who will implement the State response procedures.

The initiating conditions for the Emergency Action Level Classes shown in Appendix 1, NUREG-0654 have been addressed in the plan with one exception.

The plan partially satisfies the intent of the objective.

Omissions

1. Example initiating condition 10, "Loss of Function Needed for Plant Cold Shutdown," in the Alert Classification has not been addressed.

The purpose of this example initiating condition is to provide attention to failed equipment needed to obtain cold shut down status and make necessary repairs while the reactor is operating. If the reactor trips or if the reactor must be shut down when equipment needed for cold shutdown is out of service a Site Emergency declaration is required.

E. Notification Methods and Procedures

Planning Objective

To assure that procedures have been established for notification, by the facility, of State and local response organization and for notification of emergency personnel by all response organizations; to assure that the content of initial and followup messages to response organizations and the public have been established; nd to assure that means to provide early warning and clear instruction to the populace within the plume exposure pathway Emergency Planning Zone have been established.

Emergency Plan

The plan satisfactorily provides for the notification of offsite authorities and for verification of notification. It is assumed that the NRC can be notified within 1 hour, but more explicit documentation would be useful. The plan provides a standard form for message content that is straightforward and complete. The plan identifies the specific organization responsible for notifying the affected population, and discusses the ability of the local authorities to notify the public within 15 minutes. A 24 hour/day capability to warn the public is assumed but not spectifically addressed. Prewritten messages to be communicated in the event of the different types of emergencies are provided, it would be useful to identify the specific radio station over which these messages would be broadcast. The plan acknowledges the requirement for the annual statistical sample of plume EPZ population exposure.

The plan satisfies the intent of the objective.

F. Emergency Communications

Planning Objective

To assure that provisions exist for prompt communications among principal response organizations, to emergency personnel and to the public.

Emergency Plan

The plan has paid careful attention to specifying communication links. Based on the letters of agreement it is clear who will notify the FAA, the railroad and the Coast Guard, although such notifications could be more explicitly identified in the text. It is not clear who notifies the National Weather Service. The plan identifies organizational titles and alternates, the major communication systems, reliable primary and alternate means of communication, and the testing of the communication links.

The plan satisfies the intent of the objective.

G. Public Information

Planning Objective

To assure that accurate and timely information is provided to the public on how they will be notified and what their initial actions should be; to assure that the principal points of contact with the new media for dissemination of information (including physical location or locations) are established in advance, and to establish procedures for coordinated dissemination of information to the public.

Emergency Plan

The plan describes provisions for the periodic dissemination of information to the public. The plan identifies the location of a public

news center, and discusses the annual program to brief news media. The spokesperson is designated in the plan and arrangements are identified for the timely exchange of information among the various parties.

The plan satisfies the intent of the objective.

H. Emergency Facilities and Equipment

Planning Objective

To assure that adequate emergency facilities and equipment to support the emergency response are provided.

Emergency Plan

Emergency facilities needed to support an emergency response have been provided including a Technical Support Center, near site Emerency Operations Facility and onsite Operations Support Center. Each will be activated for an alert or higher classification. The onsite Technical Support Center is established in the Control Room Annex. The Center contains a complete controlled set of drawings, technical manuals and other records. Communication systems link the Center with other plant emergency facilities, and governmental and support agencies.

The nearsite Emergency Operations Facility is located on Company property. The precise location in not given in the plan. Corporate, and governmental officials will assemble at this facility to evaluate and coordinate reentry/recovery operations on a continuing basis. The facility will also be the Center for the receipt and analysis of field monitoring information. A communication system links the facility with other plant emergency facilities and as well as governmental and support agencies. An alternate Emergency Operations Facility has been established

in the Lebanon Elementary School in town of Surry. The distance from the plant site is not given in the plan.

The onsite Emergency Support Center (Assembly Area) is located in the station's switch gear room and will be the assembly point for unassigned personnel. The plan does not indicate the adequacy of capacity, shielding or ventilation. Protective equipment is normally stored in the Health Physics Office and warehouse and will be transferred to the operations Support Center as needed. No reference is made about the location of the Health Physics Office and warehouse relative to the Operations Support Center.

Onsite monitoring systems and instrumentation used to initiate emergency measures and/or provide continuing assessment are identified. They are a meteorology system with wind speed and direction and temperature capability; seismic instrumentation to monitor acceleration levels of ground movement; installed process radiation monitors to measure deviations in radiation levels in process lines that contain or potentially contain radioactive effluents; installed area radiation monitors that measure deviations in radiation levels at specific locations in the station; fire and smoke detection instruments placed at strategic locations in the plant; portable dose rate and radiation detection instruments and laboratory counting and analysis facilities.

Provisions for offsite monitoring equipment have been made. Meteorological and/or seismic data, respiratory equipment, portable radiation detection instrumentation and laboratory facilities can be obtained from the VEPCO North Anna Power Station. The Virginia State Department of Health is also equipping a mobile laboratory with

radiological assay equipment to respond to radiation emergencies. There are no offsite meteorological facilities close to the Surry Power Station. However, data can be obtained from nine locations ranging from 6 to 55 miles from the plant. Stored equipment is inspected and inventoried each quarter and replaced if in need of calibration or repair and sufficient equipment exists to ensure a minimum inventory in case of replacement delay. Portable survey instruments and counting room equipment is calibrated at least bi-annually. Appendix 10.5 lists the contents of emergency kits. The appendix does not state the number of kits available or where they are located.

The plan partially satisfies the intent of the objective

Deficiencies

1. There is no provision for an onsite back up meteorological system.

2. Installed process monitors and radiation monitoring instruments are not listed by type of instrument, detection range, (i.e., cpm, mR/hr, pressure, temperature, etc.) or function.

3. The adequacy of inplant iodine, reactor core cooling and in-containment radiation levels were not clearly or specifically discussed.

4. The location of the primary near site Emergency Operations Facility (i.e., distance from plant and name of building where housed) was not identified. The distance from the plant to the alternate EOF was not stated.

I. Accident Assessment

Planning Objective

To assure the adequacy of methods, systems and equipment for assessing and monitoring actual or potential offsite consequences of a radiological emergency conditions.

Emergency Plan

The plan divides assessment actions into eight discrete areas of interest as opposed to being grouped under specific emergency classsifications, since certain assessment actions will be required prior to the classification of an emergency. The areas of interest are: Natural Phenomena, Personnel Hazards, Stations Conditions, Offsite Conditions, Onsite Radiological, Offsite Radiological, Post Accident Sampling and Offsite Monitoring Teams. This listing does not imply that each action would be taken for every situation but only that actions have been considered on a broad enough basis to cover the entire classification system.

The Emergency Plan Implementing Procedures contain radiological effluent parameter values characteric of a spectrum of off-normal conditions. The parameter values and other information are tabulated for each Emergency Class. Specific set points and alarms both audio and visual in the control room alert the operator. The EPIP's provide three methods for determining the magnitude of a release:

1. Use of measurements and samples continuously obtained by the onsite radiation monitoring systems,

2. Using known inventory data from systems affected,

3. A obtaining offsite data from air samplers, dosimeters and survey results and using these data to calculate release.

The plan partially satisfies the intent of the objective.

Deficiencies

1. The plan does not address the mechanism used to determine the offsite dose based on actual or potential release of large quantities of radioactive gases or halogens from the containment structure.

2. The plan does not give or refer to detailed procedures to be used by station personnel in responding to abnormal conditions or in assessing the actual or potential magnitude of a release.

J. Protective Response

Planning Objective

To assure that a range of protective actions is available for the plume exposure pathway for emergency workers and the public, guidelines for the choice of protective actions during an emergency, consistent with Federal guidance, are developed and in use, and that protective actions for the ingestion exposure pathway appropriate to the locale have been developed.

Emergency Plan

The Emergency Director will recommend or initiate evacuation and will take appropriate measures in cooporation with local and state agencies for evacuation of persons in the Exclusion Area (i.e. outside the fenced area but inside VEPCO owned property) and members of the public who may be in or passing through the exclusion area. Evacuation of employees within the exclusion and protected areas who are considered non-radiation workers

"may occur" if projected doses to the majority of the affected workers will exceed a dose of 1.0 rem whole body or 5.0 rem thyroid due to inhalation. In any event members of the public considered as "transients" on VEPCO owned property will be evacuated by security personnel in case of an alert or higher classification emergency.

Emergency Plan Implementing Procedure 9 addresses personnel accountability with or without an evacuation. Form EPIP 9.1 "Personnel Accountability" is used by station management and supervision to determine the location and/or status of onsite personnel. Onsite personnel who are being evacuated will monitor themselves for contamination prior to entering the Restricted Clean Area. They will then leave the site on route 650 and go to to route 617, the assembly area.

The recommended actions (i.e., sheltering or evacuation) made to the State for a "Yellow" (Site Emergency) or "Red" (General Emergency) will be based on current meteorological data and projected whole body and/or thyroid dose, factored against the protection afforded by dwellings in the plume exposure pathway and evacuation times. Shielding factors for representative housing within the 10 mile EPZ for both a gamma cloud source and surface deposited radionuclide and evacuation time estimates are included in the plan. Warning methods to inform the public are stated in the plan. It is estimated that the primary sector and two buffer sectors can be alerted and given instructions within two hours of the declaration of an emergency. This will be reduced to 15 minutes when the early warning system is completed by about July 1, 1981.

The plan partially satisfies the objective

Deficiencies

1. The plan fails to state if the licensee will have the capability to decontaminate personnel at relocation centers.

2. The accountability procedure outlined in Section 6.4.1 fails to indicate if the procedure can be completed within the 30 minutes after declaration of an emergency as required in NUREG-0654.

K. Radiological Exposure Control

Planning Objective

To assure that means for controlling radiological exposures, in an emergency, are established for emergency workers and the affected population.

Emergency Plan

The plan has established onsite exposure guidelines consistent with EPA Emergency Worker and Life Saving Activity Protective Action guides for removal of injured persons, corrective and protective actions, first aid, personnel decontamination and ambulance and medical service. Emergency response personnel may receive radiation exposure in excess of 10 CFR 20 limits when authorized by the Emergency Director.

The licensee has made provisions for 24 hours a day capability to distribute both self reading and accummulative type dosimeters to emergency workers regardless of company affiliation, deter ine radiation doses received and maintain dose records through out the emergency.

An action level for determining the need for radiological decontamination of personnel and equipment has been established at 1000 dpm/100 cm^2 of removable contamination.

Onsite contamination control including area access, potable water and food supplies have been established. The criteria for return of areas and items to normal use and contamination levels in designated eating and drinking locations within the station beyond which decontamination or access control is required are not given.

The station will supply clothing and decontamination materials to onsite personnel required to relocate and who routinely leave the plant site.

The plan partially satisfies the intent of the objective.

Deficiencies

1. Contamination levels beyond which decontamination or radiation storage is required and the radiation/contamination level(s) beyond which area access is required is not clearly stated. Release levels for personnel, equipment, materials, access control and in plant food and water supplies (e.g , lunch room, canteens etc.) should be clearly specified preferrably in tabular form.

L. Medical and Public Health Support

Planning Objective

To assure that arrangements are made for medical services for contaminted individuals.

Emergency Plan

Medical services will be provided by the Medical College of Virginia (MCV) for personnel injured or exposed to radiation and/or radioactive material. A letter of agreement with the college defines the services to be provided. The plan refers to the MCV-VEPCO Radiation Emergency Plan,

Appendix 10.7. The plan is not in the appendix. The location of the MCV medical facilities in relation to the plant site is not given.

The station has a first aid facility containing the normal compliment of first aid supplies and equipment necessary to treat injuries not involving hospitalization or medical services. Arrangements have been made through letters of agreement with volunteer rescue squads in Surry and Smithfield, VA. to provide ambulance service when needed.

The plan satisfies the intent of the objective.

M. Recovery and Reentry Planning and Post Accident Operations

Planning Objective

To assure tht general plans for recovery and reentry are developed.

Emergency Plan

The plan satisfactorily identifies and defines the general plans and procedures to be used by VEPCO management in implementing the recovery, reentry and post accident phase of an emergency.

Personnel comprising the Company recovery team have been identified along with their alternates (Figure 9.1). The team headed by the Executive Vice President-Power is comprised of supervisory personnel who have the authority to assure the best available use of company resources to assist in a rapid recovery.

The decision on the Company's part to relax protective measures in based on a comprehensive review of identified station system parameters by both the Emergency Director and Recovery Manager. Conditions considered appropriate for consideration of relaxation of protective measures have

been identified in the plan. A procedure for notification of Federal, State, local and private support organizations of the decision to initiate recovery operations and any resulting changes in Station organization has been stated. The plan reviews and discusses the procedures and methods that will be used to periodically estimate the population dose in the affected sectors and zones.

The plan satisfies the intent of the objective.

N. Exercises and Drills

Planning Objective

To assure that periodic exercises are conducted to evaluate major portions of emergency response capabilities, that the results of exercises form the basis for corrective action for identified deficiencies and that periodic drills are conducted to develop and maintain key skills.

Emergency Plan

The plan satisfactorily addresses the frequency of exercises and drills. A combined States, local and station exercise will be held annually and drills will be scheduled on an annual basis so that all major elements of the Emergency Plan are tested over a 5 year period. The plan also provides for scheduling an annual drill once each 6 years for the periods between 6:00 p.m. and midnight and midnight and 6:00 a.m. Communication, fire, medical, radiological monitoring and Health Physics drills have been addressed and scheduled in accordance with Section N2 of NUREG-0654.

The content of exercise scenarios and arrangements for a critique of exercises and drills have been appropriately addressed. A statement in the plan regarding capability(s) of "qualified" observers would be helpful.

The plan satisfies the intent of the objective.

O. Radiological Emergency Response Training

Planning Objective

To assure that radiological emergency response training is provided to those who may be called upon to assist in an emergency.

Emergency Plan

The plan satisfactorily addresses preparedness training for Company personnel involved in emergency response, Figure 8.1. Training will be appropriate to their functions, authority and role during an emergency and will be conducted in a formal fashion with individual tests at the end of the training period to determine each persons competence. After initial training, each person will be retested annually. Although not specifically required a statement concerning the minimum level of competence that must be achieved by each person in an emergency role would be helpful.

The plan satisfies the intent of the objective.

P. Responsibility for the Planning Effort: Development, Periodic Review and Distribution of Emergency Plans

Planning Objective

To assure that responsibilities for plan development, review and distribution of emergency plans are established and that planners are properly trained.

Emergency Plan

The plan provides for training of personnel responsible for emergency plan development including the Emergency Plan Coordinators at both the station and corporate levels and the Executive Manager - Licensing and Quality Assurance who has overall authority and responsibility for emergency respose planning.

An annual review of the plan and its associated emergency plan implementing procedures by the Station Nuclear Safety and Operating Comittee (SNSOC) for adequacy and applicability has been established. Changes and/or revisions to the plan and/or EPIP's must be approved by SNSCO prior to distribution. Selected personnel from offsite agencies likely to respond to emergency situation are invited to attend meetings to discuss emergency planning and response activities. Provision for bi-annual re-negotiation of letters of agreement has been established in the plan.

If results of exercises, drills, critiques require it, or changes in Federal, State or local requirements occur, revisions will be issued to the plan. Revisions will be numbered, pages dated and forwarded to those on the Controlled Distribution list with an acknowledgement receipt request. Quality Assurance personnel will audit those on the distribution list to ensure the plans are kept updated, and will also conduct bi-annual audits to assess the completeness of procedures and the adequacy of training.

The plan satisfies the intent of the objective.