U.S. NUCLEAR REGULATORY COMMISSION
REGION I

Report Nos. 50-272/89-05
50-311/89-04
50-354/89-07

Docket No. 50-272
50-336
50-354

License No. DPR-70 Priority - Category C
DPR-75 Priority - Category C
NPF-50 Priority - Category C

Licensee: Public Service Electric and Gas
P.O. Box 236
Hancocks Bridge, New Jersey 08038-4800

Facility Name: Artificial Island (Hope Creek and Salem Generating Stations)

Inspection At: King of Prussia, Pennsylvania, and Lower Alloways Creek Township and Salem, New Jersey

Dates: March 13 to 16, March 22, and April 17 to 19, 1989

Inspectors: C. D. Amato — April 27 1989 (date)
C. G. Amato, Emergency Preparedness Specialist, Emergency Preparedness Section, FRSSB, DRSS

D. Allsopp, RI, Hope Creek
F. Fox, Jr., Sr. EPS, RI
C. Gordon, EPS, EPS
C. Halvey-Gibson, SRI, Salem

Approved by: W. J. Lazarus — 4/28/89 (date)
W. J. Lazarus, Chief, Emergency Preparedness Section, FRSSB, DRSS

Inspection Summary: Inspection on March 13 to 16 and March 22, 1989 (Combined Inspection Report Nos. 50-272/89-05, 50-311/89-04 and 50-354/89-07)

Areas Inspected: Routine, announced, safety inspection of the licensee's emergency preparedness program conducted on March 13 to 16 and March 22, 1989.
Results: No violations were identified.

DETAILS

1.0 Persons Contacted

The following Public Service Electric & Gas personnel, and others as indicated, were contacted.

*C. Adams, Manager, Emergency Preparedness Department
J. Austin, RN, Emergency Department, Salem Memorial Hospital
*C. Banner, Sr. Staff Engineer, Emergency Preparedness Department
P. Benini, Principal Engineer, Audits
*C. Connor, General Manager, Nuclear Services Department
*T. Di Guiseppi, Lead Engineer, Emergency Preparedness Department
C. Fenton, Lead Engineer, Quality Assurance Programs
*P. Galleshaw, Salem TSC Project Manager, Nuclear Engineering Projects
D. Hanson, Manager, Training Department
*R. Hovey, Sr. Nuclear Shift Supervisor, Hope Creek Operations
M. Ivanik, Jr., Security Regulatory Coordinator, Nuclear Security Support Services
J. Kerin, Sr. Nuclear Fire Protection Supervisor, Nuclear Site Protection
S. LaBruna, Vice President, Nuclear Operations
S. Miltenberger, Vice President and Chief Nuclear Officer, Nuclear Production Department, Electric Business Unit
*P. Moeller, Manager Site Protection
D. Mohler, Manager, Radiation Protection/Chemistry Services
D. Perkins, Manager, Station Quality Assurance, Salem
*G. Roggio, Station Licensing Engineer, Salem
L. Salamon, Manager, Nuclear Public Information
*J. Schaffer, Lead Engineer, Emergency Preparedness Department
*R. Schaffer, Principal Trainer, Training Department
M. Shewski, Project Manager, Sargent & Lundy Engineers
M. Simpson, Sr. Staff Engineer, Radiation Protection Services
*W. Weckstein, Emergency Preparedness Instructor, Training Department
*R. Yewdall, Sr. Engineer, Radiation Protection Services

*Denotes those present at the exit meeting.

The inspectors also observed the actions of, and interviewed other licensee personnel.

2.0 Licensee Action on Previously Identified Items

The following items were identified during previous inspections. Based upon observations, review of procedures and discussions with licensee personnel by the inspector, the following inspector follow up items have been resolved. Details will be found in Section 13.1 for the first four items noted below, which are closed based on licensee performance during a March 22, 1989 drill.

(CLOSED) (50-272/86-22-02 and 50-311/86-22-02) There was a lengthy search to locate a missing person. A search and rescue team was formed in nine minutes and the missing person was found 16 minutes later.

(CLOSED) (50-272/86-22-04 and 50-311/86-22-04) Fuel damage data was not sent to other emergency response facilities. A degraded core was identified and this fact with details was transmitted to other emergency response facilities.

(CLOSED) (50-272/86-22-06 and 50-311/86-22-06) The OSC failed to report the status of in plant teams to the control room. Status of in plant teams was reported to the control room.

(CLOSED) (50-272/88-23-02, 50-311/88-26-02 and 50-354/88-26-01) The Emergency Response Manager (ERM) failed to communicate to the Emergency Operations Facility (EOF) staff core and containment status toward exercise end. The ERM advised the EOF staff core and containment status were such that recovery could be considered.

(CLOSED) (50-272/88-05-01) Call-in test results indicated a consistently low response to pager messages. A review of pager call-in results for 1988 indicated an acceptable response level.

3.0 The Emergency Preparedness Program (EPP) Organization

The EPP organizational structure was studied, personnel were interviewed and EPP activities were identified to determine if the licensee has developed, maintains and implements an emergency preparedness program (EPP) required by 10 CFR 50.54(t) which meets the standards of 10 CFR 50.47(b) and Section IV of Appendix E to 10 CFR 50.

The licensee, PSE&G, during January 1988 was reorganized into six Business Units, one of which is the Nuclear Production Department (NPD) headed by a Vice President-Chief Nuclear Officer. He is supported by a Vice President Nuclear Operations and six General Managers (GM). The Chief Nuclear Officer spends about a week a year on emergency preparedness matters. He is a qualified Public Spokesperson and a formerly qualified Emergency Response Manager. The Vice President for Nuclear Operations expends about a month a year on EPP matters and is a qualified Emergency Response Manager.

The NPD was reorganized during October 1988. Three GMs report to the Vice President for Nuclear Operations, one of whom is the GM for Nuclear Services (NS). He was a senior reactor operator for Hope Creek and Salem, an Emergency Director, and a currently qualified Emergency Response Manager. The EPP and Training Department managers report to him. He maintains contact with the EPP through weekly staff meetings and discussions with the EPP manager.

The EPP is headed by a fourth level manager. Ten persons are assigned to the EPP plus four contractor personnel two of whom are responsible for siren repair and maintenance. The staff includes reactor operators and Health Physicists. The reactor operator rotational program is on going whereby a Hope Creek/Salem operator is assigned to the EPP for a year.

During 1988, the licensee performed a management review of all NPD functions and positions. The EPP and emergency preparedness training activities were impacted. The off site planner function was eliminated and two Radiation Protection personnel were added to the EPP staff. The reduction in weekly training drill frequency is discussed in Section 4.4 below. In spite of the changes and re-organization, emergency preparedness effectiveness is currently being maintained.

Based on the above findings, this portion of the licensee's emergency plan is acceptable.

4.0 Emergency Preparedness Training (EPT)

EPT activities, training records, lesson plans, Emergency Response Organization (ERO) qualification roster, and the training matrix were studied, and Training Department (TD) staff interviewed in order to verify that emergency preparedness training is in compliance with 10 CFR 50.47(b)(15) and Section IV.F of Appendix E to 10 CFR 50.

A 53 by 12 training matrix was developed identifying Emergency Response Organization (ERO) positions and one or more of the courses required for each position. There are 1,244 personnel qualified for one or more ERO positions with at least three persons qualified for each position. Training is provided by a number of modalities. Training was given by a Health Physicist and a Nuclear Engineer supported by the Emergency Preparedness Department (drills and exercise, and Lesson Plan review). County, local government and special district employees are trained by the State governments (see Section 11 below).

EPT is now a function assigned to Technical and Engineering Training. The EPT Supervisor position has been eliminated; the former incumbent is still tasked with this responsibility. The Nuclear Engineer assigned to EPT has been transferred to another training unit. The TD policy aim is to broaden the training base, adopt a modular approach and reduce dependence on a single instructor. This will be done following the requirements of the Instructor Development Manual which requires demonstration of trainer subject and technique mastery, and use of training material based on Job Task Analysis (JTA).

Operator instructors will give EPT training. These instructors are formerly licensed senior operators or currently simulator licensed and, as such, have been EPT trained and examined. In addition, an operator JTA was completed which identified 433 emergency response activities involving the Event Classification Guide (ECG). Operators and Shift Technical Advisors receive eight classroom hours of EPT and simulator training through use of the ECG. EPT training will be given to Radiation Protection (Rad Pro) personnel by Rad Pro instructors. An EPT Task list has been developed but a JTA which is a prerequisite to implementation does not exist. The licensee in Section 12.5 of the Hope Creek Final Safety Analysis Report committed Rad Pro personnel training to the requirements of ANSI 3.1 which associates instructor qualification and training modules with JTA.

The weekly training drill frequency for on shift personnel at each station has been cut back to every other week on a trial basis. These drills are based on mini scenarios requiring use of the ECG including Protective Action Recommendations and of off site notifications. When questioned about the value of this program, operators praised it stating it maintained their emergency response capability current.

Quarterly training drills are a form of training; eight are scheduled for 1989. Support hospital personnel are trained by a contractor. Site engineers attend a 900 hour Systems Engineering course which includes simulator training but not accident analysis. An internal audit of EPT and the TD recommended EPT responsibility should be transferred to the EPP. The TD Director stated in a March 1988 memo that this recommendation merits review and will be considered.

Based on the above findings, this portion of the licensee's emergency plan is acceptable.

5.0 Audits/Reviews

An independent review/audit is required at least every twelve months by 10 CFR 50.54(t) which includes determination for adequacy of the licensee State/local government interface and the availability of the results of this study to State/local governments. The licensee's Technical Specifications (TS) also require an audit of the EPP and EPT. The audit/review reports were reviewed to verify that these requirements were met.

Two staff members of the Quality Assurance Program and Audits conducted the audit and review. Two reports were issued. The TS based audit addressed 30 items relating to Criteria 1 to 17 of Appendix B to 10 CFR 50; Quality Assurance Procedures were followed. The review addressed the requirements of 10 CFR 50.54(t).

The review covered 14 interface areas including the annual exercise and an NRC inspection report. No review deficiencies were identified. On January 27, 1989, the States of Delaware and New Jersey were sent copies of this report.

Based on the above findings, this portion of the licensee's emergency plan is acceptable.

6.0 Emergency Action Levels (EALs)

EALs were reviewed and discussed with reactor operators and Emergency Preparedness Department staff. This was done to determine if the EALs meet the standard of 10 CFR 50.47(b)(4), the requirements of Section IV.B of Appendix E to 10 CFR 50, the guidance of NRC Office of Inspection and Enforcement Information Notice No. 28 of 1983 (I&E IN 83-28), and Planning Standard D and Appendix 1 to NUREG-0654.

EALs are presented in graphic-logic form in the Sections of the Event Classification Guide (ECG). They are based on events, symptoms, breached barriers and I&E IN 83-28. Logic tree ends refer the user to Attachments which contains notification procedure and forms. Referrals to ECG containing EALs are given in the Integrated Operating Procedures, Abnormal Operating Procedures, Emergency Operating Procedures and some Implementing Procedures. On May 3, 1988, the licensee sent the Event classification Guide containing the EALs to Delaware and New Jersey asking the States to review the Guide and concur with the EALs. Each State concurred with the EALs.

Based on the above findings, this portion of the licensee's emergency plan is acceptable.

7.0 Protective Action Recommendations (PARs)

The standards and requirements for PARs are given in 10 CFR 50.47(b)(10) and Section IV.B of Appendix E to 10 CFR 50. Applicable guidance is found in I&E IN 83-28. PARs were reviewed and discussed with licensee staff in order to verify that the standard and requirement are met and PARs are consistent with federal guidance.

PAR development is given in Section 4 of the Hope Creek ECG and Section 5 of the Salem ECG. PARs follow declaration of a General Emergency and are based on plant conditions, I&E IN 83-28, projected doses and security events. PARs were called to the attention of the States (see Section 6.1 above).

Based on the above findings, this portion of the licensee's emergency plan is acceptable.

8.0 Plans and Procedures

The Emergency Plan (EP), Event Classification Guide (ECG) and Emergency Plan Implementing Procedures (EPIPs) were reviewed to determine if they meet the requirements of 10 CFR 50.47(b)(16) and 50.54(q), and the requirements of Section IV.G of Appendix E to 10 CFR 50.

A review of these documents indicates the EP, ECG and EPIPs have been appropriately reviewed and are current. Availability of these documents in each Emergency Response Facility (ERF) was checked on a sampling basis with particular attention given to procedures for classification, PAR development and notification. Current and approved copies of these documents were available in each ERF.

Based on the above findings, this portion of the licensee's emergency plan is acceptable.

9.0 Emergency Response Facilities (ERFs)

ERFs are designed to meet the requirements of 10 CFR 50.47(b)(8) and (b)(9), Section IV of Appendix E to 10 CFR 50, Supplement 1 to NUREG-0737 and Regulatory Guide 1.97. Equipment, status boards, communications systems, plans, procedures, habitability and access control provisions were checked for the three control rooms (CRs), Technical Support Centers (TSCs), Operations Support Centers (OSCs), Health Physics Control Points (CPs) and the Emergency Operations Center (EOF).

Status boards, maps, facility diagrams, plans, procedures, drawings, and equipment were in place and maintained, equipment was within the prescribed calibration period and functional and communication equipment operative at all ERFs. Portable computers to calculate projected doses were properly stored and functional.

A non-dedicated EOF is located in Salem, New Jersey about 7.5 miles from the site. The protection factor for this facility is 13. The ventilation system is equipped with HEPA filters for particulate removal. Filtration media for iodine removal is not provided. A natural gas fired emergency generator provides back up power. Survey and air monitoring equipment is available. This facility was approved by the Commission without requiring an Alternate EOF (AEOF). The licensee will explore means to provide iodine filtration.

The Salem TSC is an interim Emergency Response Facility located on the third level of B Building (also called the Clean Facilities Building). The interim classification is based on Salem Unit No. 2

license condition 2.C.(25)(p). Following an NRC Safety Parameter Display System inspection, the licensee evaluated the TSC against the requirements of Supplement 1 to NUREG-0737, Section 8.2 and the evaluation criteria of I&E Inspection Procedure 82412, "ERF Appraisal", and concluded the TSC as built did not meet 59 NRC criteria. Licensee management recognized the problem, approved a correction project and appropriated funds. This project is slated for completion during October 1989. Upon completion, the Salem TSC will be reevaluated.

As the interim Salem TSC does not meet habitability requirements, in the event of an incident at Salem requiring TSC evacuation, the Salem TSC staff would go to the Hope Creek TSC in accordance with Procedure 302S. The EP, Salem ECG and EPIPs are available in the Hope Creek TSC. Plant, and radiological data would be hard copied to the Hope Creek TSC from the Salem Control Room. Additional plans and drawings are on file at the Nuclear Training Center library adjacent to the EOF. A procedure was developed during the early 1980's for Salem TSC staff relocation and has been satisfactorily tested during a drill.

Based on the above findings, this portion of the licensee emergency plan is acceptable.

10.0 Notification and Communication

Communication systems were evaluated to ascertain if the requirements of 10 CFR 50.47(b)(5) and (b)(6), Sections IV.D.1 and E.9 of Appendix E to 10 CFR 50, and I&E IN 86-97 were met.

Twelve independent, redundant and diverse communications systems were identified. These include a fiber optics line, microwave systems, Delaware and New Jersey State emergency radios, and facsimile and data transmission capability. NRC Health Physics Network phones worked at all locations.

A commercial pager system calls in personnel. This system is activated by the licensee's "HELP" desk located at their Newark headquarters. The pager company's office in suburban Philadelphia is called and the pagers activated from that location. A pager company antenna is located on the site.

Results of call-in tests were reviewed and it was determined that response was above the 70% level specified as acceptable by the licensee. Improvement was noted above this level following introduction of the three team system.

Based on the above findings, this portion of the licensee's emergency plan is acceptable.

11.0 Off Site Activities

The lead-off site emergency planner was interviewed and appropriate records reviewed to determine if the standards of 10 CFR 50.47(b)(5) and (b)(12) and the requirements of Section IV.D.3 and IV.F of Appendix E to 10 CFR 50 are met.

County and local government personnel are trained by the State Governments. Letters certifying training completion were sent by the States to FEMA. A special drill was conducted with Lower Alloways Creek to evaluate their response capability. A Special Needs data base for hearing and mobility impaired has been updated. All Letters of Agreement are current. The licensee developed and distributed a Fire Company response manual, and participated in an Emergency Preparedness Program for schools.

A VHS training film was developed by the licensee which shows radiological, self protection techniques. The film was used to instruct County and local government personnel. FEMA reviewed the film and gave a positive evaluation. Table top exercises were conducted once in each of the four Counties. Delaware River surface water clearances procedures have been developed.

A letter certifying 1988 siren availability as 98.5% was sent to the States which will forward this data to FEMA. Tone alert radios and route alerting back up sirens. A route alerting map has been developed for each siren coverage area. Fire vehicles have been equipped with light bars containing a loud speaker which broadcasts a prerecorded voice message as the vehicle completes the route. Results indicated the output could be heard over the siren coverage area route.

The room dedicated to treating injured/contaminated persons at the Memorial Hospital of Salem County was maintained in a state of readiness with one exception. A delay was encountered in locating a copy of this facility's procedures. The licensee agreed to take appropriate steps to prevent a recurrence.

Based on the above findings, this portion of the licensee's emergency plan is acceptable.

12.0 Public Information

The Public Information Department manager was interviewed and publicly distributed material reviewed to determine if the requirements of 10 CFR 50.47(b)(7) and Section IV.D.2 of Appendix E to 10 CFR 50 are met.

The public is advised of emergency procedures by brochures formatted around a calendar, inserts in six phone directories and newspaper advertisements. Calendars were mailed to Emergency Planning Zone

residents. Others were available at drops where the licensee's gazette is distributed on and off site. Information brochures for farmers have been mailed.

If the Emergency News Center (ENC) in Salem were to become uninhabitable, operations would be transferred to an alternate ENC. Steps are being taken to consolidate rumor control centers in each State and combine 800 numbers.

Transient Warning Signs have been erected at 51 locations in both States. These signs are located at points on the roads which are 5 or 10 miles from the site. Each sign location is an Access Control Point. Transient stickers have been distributed to public facilities and are stuck to visible walls of these facilities. Each sticker contains a brief message telling the reader what to do in the event a siren is heard for three to five minutes.

Based on the above findings, this portion of the licensee's emergency plan is acceptable.

13.0 Emergency Drill

To determine if the requirements of 10 CFR 50.47(b)(15) and Section V of Appendix E to 10 CFR 50 were met, the inspector observed a drill on March 22, 1989.

The drill protocol was modified to duplicate that of an annual exercise. The scenario was written to require declaration of all four Emergency Action Levels and included conditions resembling those classified as weaknesses in past exercises. Satisfactory response was shown and inspector follow up items were closed.

Based on the above findings, this portion of the licensee's emergency plan is acceptable.

14.0 Dose Assessment

The standards, requirements, and guidance for dose assessment are given in 10 CFR 50.47(b)(9), Sections IV.B and IV.E. of Appendix E to 10 CFR 50, Section II.f.1(2) of NUREG 0737 (Supplement 1), Regulatory Guides 1.23 and 1.97, and NUREG-0654, Rev. 1, Appendix 2. Facilities were inspected, records were checked and personnel interviewed to verify that these requirements were met.

There are two on site meteorological towers located close to each other. Record checks indicated the sensors and electronics were in calibration. The tower and supporting base facility are surrounded by a fence with a

locked gate. There is no intrusion alarm. Site Protection Officers observe the facility during routine patrols. Batteries provide back up power.

Channel calibration (system) records for the containment high range monitors and effluent monitors providing read out during emergencies were reviewed. These monitors were in calibration and calibration was done using approved procedures.

Kits for aerial and terrestrial field teams were checked against the inventory list and also for operability and calibration currency. Kit content matched inventory, equipment was functional and within calibration.

A thirty foot cubic sample required for iodine analysis is collected by field teams. The licensee could not produce a basis document or justify the sample volume. A basis document will be developed and the needed volume reviewed to determine if it can be lowered to reduce collection time and minimize mission dose. If release duration and iodine to noble gas ratios (I/NG) are unknown, default values acceptable to the States will be used. The licensee is researching the basis for the values in use.

Based on the above findings, this portion of the licensee's emergency plan is acceptable.

15.0 Security-Emergency Preparedness Interface

To determine if an acceptable Security-Emergency Preparedness interface is in place, Section II.D.59 of Appendix B to 10 CFR 73 and NUREG/CR-3251 were consulted, and security personnel were interviewed.

Site protection is provided by a licensee Fire Department (FD) and a contractor security force. Security officers and Firemen are radiation worker qualified, Emergency Plan trained and vital area access cleared. The firehouse is located within the protected area. Firemen are respirator fitted and trained; Security Officers are not. When this fact was called to the licensee's attention, the licensee stated they will now as matter of policy respirator train and fit Security Officers.

All firemen are N.J. licensed Emergency Medical Technicians (EMTs) who take a 70 hour course once every three years and must pass a practical and written examination in order to maintain their EMT license. A FD officer and a Fireman are members of the Operational Support Center staff. The FD participates in drills and exercises, EPP-FD interface meetings, drills with off site fire companies, and scenario development.

The Security force coordinates emergency response activities with the control room (CR), provides the CR with 10 CFR 73.71 notification information, participates in drills, exercises, scenario development and EPP-Security interface meetings. The Security Officer assigned to the Technical Support Center staff would transmit an Emergency Director's order to evacuate the Guard House and provide Radiation Protection support for the Guard house staff. There are no area monitors or survey equipment located at the Guard House.

Based on the above findings, this portion of the licensee's emergency plan is acceptable.

16.0 Actual Unusual Events

Unusual Events (UEs) documentation was reviewed on a sampling basis to determine if the licensee complied with 10 CFR 50.47(b)(4) and (b)(5), and the requirements of Sections IV.B and F of Appendix E to 10 CFR 50.

Sixteen UEs were declared during the 12 month period ending January 1989. Six were declared at Salem 1, three at Salem 2, and seven at Hope Creek. A check of records indicated the Event Classification Guide (ECG) was used correctly. Operators recognized events and symptoms, referred to the correct Section and Attachment of the ECG, filled out the forms accurately and made notifications within the prescribed time.

Based on the above findings, this portion of the licensee's emergency plan is acceptable.

17.0 Exit Meeting

An exit meeting was held with the licensee personnel identified in Section 1 of this report. The licensee was advised no violations, deviations or unresolved items were identified.The Inspector also discussed some areas for improvement. Licensee management acknowledged these findings and indicated they would evaluate them and take appropriate corrective action regarding the items identified.

At no time during the course of the inspection did the inspector provide any written material to the licensee.