U.S. NUCLEAR REGULATORY COMMISSION
REGION I

Report/License No: 50-334/95-01/NPF-66; 50-412/95-01/NPF-73

Licensee: Duquesne Light Company
Post Office Box 4
Shippingport, Pennsylvania 15077

Facility Name: Beaver Valley Power Station, Units 1&2

Inspection At: Shippingport and Coraopolis, PA; Lisbon, OH; and New Cumberland, WVA

Inspection Conducted: February 6-10, 1995

Inspectors: _____
J. Laughlin, Emergency Preparedness Specialist
D. Silk, Senior Emergency Preparedness Specialist

Approved by: _____
for R. R. Keimig, Chief
Emergency Preparedness Section
Division of Radiation Safety and Safeguards

Areas Inspected: Announced inspection of the emergency preparedness (EP) program, including program changes; emergency facilities, equipment, instrumentation and supplies; training; review of open items; and implementation of NUMARC Emergency Action Levels (EALs).

Results: The EP program was effectively implemented. No safety concerns or violations were observed. The quality of the NUMARC EAL implementation process was a strength. A weakness was noted in the training of health physics technicians to perform certain aspects of their dose assessment responsibilities.

DETAILS

1.0 INDIVIDUALS CONTACTED

The following individuals were contacted during the inspection and attended the exit meeting on February 10, 1995.

1.1 PRINCIPAL LICENSEE EMPLOYEES

* R. Brosi, Manager, Emergency Preparedness (EP)
* E. Chatfield, General Manager, Nuclear Support
* G. Farr, Supervisor, EP
  D. Fassinger, HP Technician
  L. Freeland, General Manager, Nuclear Operations
* B. Haney, Director, Technical Training
  R. Hutton, HP Technician
  M. Kretzler, HP Technician
* F. Lipchick, Senior Licensing Supervisor
  P. Logoyda, HP Technician
* J. Marietta, Nuclear Technical Instructor
* A. Mizia, Supervisor, QSU Audits
* T. Noonan, Vice President, Nuclear Operations
  K. Ostrowski, Operations Manager, Unit 1
* C. Sabol, Senior QA Specialist
* W. Skorupan, Nuclear Technical Instructor
* H. Szklinski, Supervisor, EP
* G. Thomas, Vice President, Nuclear Services
* N. Tonet, Manager, Nuclear Safety
* R. Vento, Manager, Health Physics

1.2 NRC EMPLOYEES

* L. Rossbach, Senior Resident Inspector

* Denotes attendance at the exit meeting

The inspectors also interviewed other licensee and contractor personnel.

2.0 PURPOSE OF INSPECTION

This inspection was conducted to determine the status of the emergency preparedness program at Beaver Valley Power Station and review the implementation process for the NUMARC Emergency Action Levels (EALs).

3.0 EMERGENCY PLAN AND IMPLEMENTING PROCEDURES

The inspectors reviewed changes to the Emergency Preparedness Plan (EPP) and Implementing Procedures (IPs) to determine if they reduced the effectiveness of these documents. No reduced EPP effectiveness was noted. A list of the reviewed procedures is included in an attachment to this report.

The inspector noted that EPP Table 5-1, "Typical Station Personnel Emergency Activity Assignments Availability," did not meet the minimum staffing requirements of NUREG-0654 Table B-1, "Minimum Staffing Requirements For NRC Licensees For Nuclear Power Plant Emergencies." Table 5-1 has all required on-shift positions, but required additional responders to report in either 60 or 120 minutes instead of the 30 or 60 minutes stipulated in the NUREG. For example, Table B-1 requires one senior manager for Emergency Operations Facility (EOF) Director in 60 minutes, while Table 5-1 stipulates that the Manager, Nuclear Operations and other emergency coordinators will be available in 120 minutes. However, Section 6.2.2 of the EPP does require the activation of the onsite Emergency Response Organization (ERO) at the Alert level, and the notification of the Emergency Recovery Manager (ERM, i.e. EOF Director) by the Emergency Director to remain in standby status. Section 6.2.4.5 of the plan states that "personnel to staff the EOF are notified simultaneously with the TSC emergency organization," although EOF activation is not required until the Site Area Emergency level or above. So the licensee's practice of ERM callout at the Alert level meets the intent of NUREG-0654 guidance without a commitment to Table B-1 criteria. There are other staffing positions listed in Table B-1 which the licensee does not commit to as well. However, the licensee has demonstrated adequate ERO staffing in actual events and drills/exercises.

The inspector also noted that the licensee does not commit to the 60-minute activation time goal for the Emergency Response Facility (ERF) established by NUREG-0654. Section 6.2.4 of the EPP states "It has been demonstrated in previous BVPS drills and exercises that the Emergency Response Organization can be staffed and facilities activated within an average of 30 minutes following notification with the longest time being approximately one hour." The licensee has demonstrated adequate ERF activation in actual events and drills/exercises.

The inspector noted that the licensee's Final Safety Analysis Report stated that the EPP "is responsive to the individual acceptance criteria of NUREG-0654." The inspector concluded that although the EPP does not conform to NUREG-0654 guidance the licensee follows it in practice. Therefore, no safety concern exists. However, if the licensee were to deviate from this guidance in the future, he could justify such actions with present commitments. The licensee's EP Manager agreed with this assessment and is pursuing research of past EPP revisions and NRC correspondence concerning these issues, as well as discussion with NRC staff, for resolution (IFI 50-334,412/95-01-01).

3.1 EMERGENCY BEEPER NOTIFICATION TEST

The inspectors observed the licensee's surveillance test (ST), *Emergency Beeper Notification System*, on February 6, 1995 at 9:00 p.m. This test is performed to verify the operability of beepers used to call out the Emergency Response Organization (ERO) in the event of an actual emergency and "to demonstrate that the minimum staffing suggested in Table B-1 of NUREG-0654 and EPP/IP 1.4 can be satisfied." The nuclear

operator performing the ST had never done it before, was not familiar with the ERO callout list, and had extreme difficulty checking answering machine tapes (3) which recorded ERO personnel call-ins, to verify that minimum staffing had been achieved. The operator is required to call additional people by commercial telephone to complete minimum staffing if positions are unfilled after listening to the three tapes.

The ERFs must be staffed about 60 minutes after event declaration. During this test, all minimum staffing positions were filled in less than 60 minutes, but the operator was not cognizant of that fact due to slowness in playing back the answering machine tapes. He did verify minimum staffing right at 60 minutes after event declaration. However, this would not have allowed sufficient time to call in additional people had they been needed.

The inspectors concluded that, from an EP standpoint, there were procedural weaknesses in the ST, since inadequate ERO staffing could not have been identified in sufficient time to effect timely ERF activation. Additionally, the ST had no mechanism to check personnel call-in time nor their estimated travel time to the site, to confirm timely arrival for ERF activation. The inspectors discussed this with the licensee's EP Manager who agreed that the ST was weak in accomplishing its stated purpose, and stated that it would be evaluated for necessary changes.

3.2 NUMARC EMERGENCY ACTION LEVEL (EAL) IMPLEMENTATION

The inspector evaluated the licensee's efforts to implement the NUMARC EAL scheme by interviewing the EP Manager and by reviewing procedures, lesson plans, and training records.

The interview with the EP manager revealed a long term effort was coordinated with many individuals, departments and agencies. Senior reactor operators were assigned to review the new EALs and provide comments and recommendations regarding necessary changes. The licensee then published the comments and resolutions, and distributed copies of the document for licensed operator evaluation. The inspector reviewed this document and considered it to be a good effort by the licensee to solicit constructive feedback regarding the EALs.

The inspector reviewed other documentation which indicated a multi-disciplinary effort to implement the new EALs. EP, operations, radiation control, training, security, and licensing had input into their development. The inspector verified the EP manager's statement that offsite agencies had been informed as early as 1992 about the NUMARC EALs. A review of offsite training meeting agendas and attendance records indicated that the licensee had been providing training on the EALs since 1992, and that the scope and depth of the training increased with each subsequent year. The licensee has also been proactive by informing the offsite agencies about shutdown mode EALs that are not currently implemented but are under consideration for industry-wide use.

Because entries into various procedures are criteria for event classifications, the inspector sampled the emergency and abnormal operating procedures (EOPs and AOPs) for BVPS Unit 1 to check for statements that refer operators to the Implementing Procedures (IPs). The inspector found that the applicable EOPs and AOPs did direct the operators to refer to the IPs to ensure that events are evaluated for proper classification.

The inspector interviewed the licensed operator requalification training (LORT) simulator instructors to assess if scenarios have been updated to incorporate the new EALs. There were 30 scenarios for each unit. For Unit 1, eight have been changed and the remainder have been pen-and-ink changed and are ready for final word processing. No scenarios have been changed yet for Unit 2 because no simulator training has been recently conducted. The Unit 2 LORT simulator instructor stated that applicable scenarios will be updated prior to the training cycles in which they will be used to incorporate both EAL and EOP changes simultaneously. Overall, the inspector considered the licensee's efforts to incorporate the NUMARC EALs into LORT simulator training to be satisfactory.

The inspector reviewed the lesson plans used to train individuals who would use the EALs. The training was assessed by the inspector to be sufficient in scope and depth. The training included an examination which required the trainees to use the EALs to classify various events. The inspector verified that individuals required to use the EALs had received training as well as their assistants or support personnel. The following positions received EAL training: emergency directors (EDs), ED assistants, emergency/recovery managers (ERMs), ERM assistants, nuclear shift supervisors (NSSs), NSS assistants, shift technical advisors, and operations communicators. The inspector determined that the licensee's efforts to train assistants and support personnel was a strength. The inspector verified that all positions were trained prior to the EAL implementation date except one group of individuals that was trained on the day of implementation.

Overall, NUMARC EAL implementation was assessed as a strength and program implementation in the area of emergency plan and implementing procedures was good.

4.0 EMERGENCY FACILITIES, EQUIPMENT, INSTRUMENTATION, AND SUPPLIES

The inspector toured the Control Room, Operational Support Center (OSC), Technical Support Center (TSC), Emergency Operations Facility (EOF), and the Alternate EOF (AEOF) to assess their operational readiness.

These facilities conformed to their descriptions in the EPP. The inspector spot-checked controlled copies of the EPP and IPs to see if they contained the most recent revisions, and found no discrepancies. Emergency equipment lockers were checked for proper inventory and no deficiencies were noted. The inspector selected random radiation monitoring equipment for calibration and battery checks and found all to be properly maintained.

The inspector reviewed the testing and maintenance program for the licensee's alert notification (siren) system. Review of the quarterly surveillance tests showed adequate system operability of 93.4%, with 90% being the minimum allowed. The inspector noted that there was no documented supervisory review of these tests. The licensee stated that the tests received supervisory review, though not documented, and that they would be documented in the future.

4.1 COMMUNICATIONS SYSTEMS

The inspector evaluated the communications systems at BVPS to assess the licensee's capability to transmit and receive information during a severe natural disaster. The licensee had redundant and diverse systems, consisting of two commercial telephone systems, dedicated hot lines to state and local authorities, and a direct line to the Duquesne Light Company System Operator in Pittsburgh. These are backed up by an industrial radio system and cellular telephones. The NRC FTS 2000 (Federal Telecommunications System), which is parallel to but isolated from the commercial Bell system, could also be used. The inspector concluded that these communications systems were redundant and diverse, with sufficient differing vulnerabilities to minimize the consequences of a severe natural disaster.

The inspector concluded that this area was effectively implemented.

5.0 TRAINING

Training and EP personnel met monthly for the EP Training Committee Meeting. During these meetings issues such as training schedules, procedure revisions, ERO status, call list revisions, drill or exercise issues, and NRC-identified issues were discussed. This forum provided good communication between Training and EP so that key changes could be incorporated into the training program. The inspector assessed this initiative to be a program strength.

The inspector checked random training records of personnel assigned to various ERO positions to determine if these individuals had been trained and were currently qualified for their positions. This check indicated that all personnel had received the appropriate training and that their qualifications were current.

5.1 ERO MANAGEMENT INTERVIEWS

The inspectors interviewed three Emergency/Recovery Managers (ERMs) and one Emergency Director (ED) to assess the quality of emergency manager training. These individuals were asked questions concerning their emergency response duties. All demonstrated good familiarity with their duties and with EPP Implementing Procedures to respond to emergency events. The inspectors were satisfied with their level of knowledge.

5.2 HEALTH PHYSICS TECHNICIAN WALKTHROUGHS

The inspector observed four health physics technicians (HP Techs) perform dose assessment (DA) calculations in walkthrough scenarios to assess the quality of their emergency response training. These individuals were trained to provide DA information to the ED in an actual emergency. Each HP Tech performed one DA calculation by computer and one by hand calculation method.

All HP Techs observed could adequately perform DA calculations by computer and hand calculation methods. However, three of the four could not use that information to advise the ED/ERM on necessary emergency classification and protective action recommendation (PAR) decisions. Section 19 of EPP/IP 2.6.3, *Dose Projection - AREAS/MIDAS With Real-Time Inputs*, requires the person performing DA calculations to compare the dose projections to the protective action guides (PAGs) and alert the ED if a PAR is necessary. Section 20 of that IP requires the technician to compare the results to emergency action level criteria and make necessary classification change recommendations to the ED/ERM.

Section 19.1 specifies the PAGs of 1.0 Rem Total Effective Dose Equivalent, and 5.0 Rem Committed Dose Equivalent, Child Thyroid, yet three of the four HP Techs, although familiar with the 1R and 5R values, were not sure of their application. Also, these three individuals did not use approved procedures when doing their calculations and did not know where to look for their classification/PAR recommendation responsibilities when questioned by the inspector.

The inspector concluded that, although the four HP Techs had received training concerning their emergency response duties and could perform adequate dose calculations, they were not familiar with the dose calculation procedures and their additional responsibilities of providing emergency classification/PAR recommendations to emergency managers. This was assessed as a training weakness, which the licensee acknowledged, and will be further evaluated in future inspections (IFI 50-334,412/95-01-02).

Notwithstanding the noted training weakness, this area was adequately implemented.

6.0 LICENSEE ACTION ON PREVIOUSLY IDENTIFIED ITEMS

6.1 (CLOSED) URI 50-334,412/93-20-01

The last program inspection revealed discrepancies between EPP requirements and their implementation for Sections 2.1.3 and 2.1.4, i.e., pertaining to information provided to the transient population, information concerning annual advertisements, and the currency of letters of agreement. The licensee revised the EPP, effective January

1, 1994, and updated these sections to accurately reflect the plan's implementation. The inspector reviewed these changes, determined they were adequate corrective actions to address the discrepancies, and this item was closed.

6.2 (CLOSED) IFI 50-334,412/93-20-02

During the last inspection, interviews with ERO managers revealed training deficiencies concerning the incorporation of the NRC Site Response Team into the event response and issuance of evacuation PARs for severe core damage accident sequences. The licensee incorporated training on the NRC Site Response Team into the ERO manager lesson plans and trained all affected personnel by August, 1994. The licensee also updated its PAR procedure and flowchart to incorporate NRC guidance on evacuation PARs for severe core damage. Managers received training on this as well. The inspector found no deficiencies on these topics during manager interviews in the course of this inspection and this item was closed.

7.0 EXIT MEETING

The inspectors met with the licensee personnel identified in Detail 1.1 on February 10, 1995, to discuss the inspection findings. The licensee was informed of the two new inspector followup items and that two open items from the last inspection were closed. The licensee acknowledged the findings and stated that they would be evaluated for appropriate corrective actions.

Attachment 1

List of the Emergency Plan and Implementing Procedures Reviewed

Procedure Number	Procedure title	Revision(s) Reviewed
EPP/I-1	Recognition and Classification of Emergency Conditions	5, 6
EPP/I-2	Unusual Event	5, 6
EPP/I-3	Alert	5, 6
EPP/I-4	Site Area Emergency	5, 6
EPP/I-5	General Emergency	5, 6
EPP/IP 1.1	Notifications	5, 6, 7, 8
EPP/IP 1.2	Communications	5, 6
EPP/IP 1.3	Turnover Status Checklist	5
EPP/IP 1.4	TSC Activation	5, 6
EPP/IP 1.5	OSC & ROC Activation, Operation and Deactivation	5, 6
EPP/IP 1.6	EOF Activation, Operation and Deactivation	5, 6
EPP/IP 2.1	Emergency Rad. Monitoring	5, 6
EPP/IP 2.2	Onsite Monitoring for Airborne Release	5, 6
EPP/IP 2.3	Offsite Monitoring for Airborne Release	5, 6
EPP/IP 2.4	Offsite Monitoring for Liquid Release	5
EPP/IP 2.5	Emergency Environmental Monitoring	5
EPP/IP 2.6	Environmental Assessment and Dose Projection	5, 6
EPP/IP 2.6.1	Dose Projection-Backup Methods	5
EPP/IP 2.6.2	Dose Projection-ARERAS/MIDAS With FSAR Defaults	5, 6
EPP/IP 2.6.3	Dose Projection-ARERAS/MIDAS	5, 6
EPP/IP 2.6.4	Dose Projection-ARERAS/MIDAS With Manual Inputs	5, 6
EPP/IP 2.6.5	Alternate Meteorological Parameters	5, 6, 7
EPP/IP 2.6.6	Dose Projection by Hand Calculation Known Isotopic Release	5
EPP/IP 2.6.7	Release Source Term Determination Based on Field Measurements	5
EPP/IP 2.6.8	Dose Assessment Based on Environmental Measurements And Samples	5

Procedure Number	Procedure title	Revision(s) Reviewed
EPP/IP 2.6.9	Integrated Dose Assessment	5
EPP/IP 2.6.10	Ground Contamination Assessment and Protective Action	5
EPP/IP 2.6.11	Dose Projection-Miscellaneous Data	5, 6
EPP/IP 2.6.12	Dose Projection-ARERAS/MIDAS With Severe Accident Assessment	5
EPP/IP 2.7	Liquid Release Estimate	5, 6
EPP/IP 2.7.1	Liquid Release Estimate-Computer Method	5, 6
EPP/IP 3.1	Evacuation	5, 6
EPP/IP 3.2	Site Assembly and Personnel Accountability	5, 6
EPP/IP 3.3	Emergency Contamination Control	5, 6
EPP/IP 3.4	Emergency Respiratory Protection	5, 6
EPP/IP 3.5	Traffic and Access Control	5, 6
EPP/IP 4.1	Recommendation of Offsite Protective Actions	5, 6
EPP/IP 5.1	Search and Rescue	5
EPP/IP 5.3	Emergency Radiation Exposure Criteria and Control	5, 6
EPP/IP 5.4	Emergency Personnel Monitoring	5
EPP/IP 6.1	Re-entry to Affected Areas-Criteria and Guidance	5, 6
EPP/IP 6.2	Termination of the Emergency and Recovery	5
EPP/IP 7.1	Emergency Equipment Checklist and Maintenance Procedure	5, 6
EPP/IP 7.2	Administration of Emergency Preparedness Plan Drills and Exercises	5
EPP/IP 8.1	Fires in Radiologically Controlled Areas	5, 6
EPP/IP 9.1	Nuclear Communications	5, 6
EPP/IP 9.2	Emergency Response Organization Corporate Support	5
EPP/IP Annex A	Emergency Response Plan, Water Reactor Division Westinghouse Electric Corp.	5, 6

Procedure Number	Procedure title	Revision(s) Reviewed
EPP/IP Annex B	Radioactive Contamination Control for Injury Cases-Aliquippa Hospital	5, 6
EPP/IP Annex C	Major Injury Involving Radioactive Contamination-The Medical Center, Beaver	5, 6
EPP/IP Annex D	Procedure for Transferring Radiation Casualties to the Department of Radiation Health-Presbyterian Hospital	5, 6
EPP/IP Annex E	Nuclear Communications Emergency Response Plan	5, 6
EPP-All Sections	Various	6