

U. S. NUCLEAR REGULATORY COMMISSION

REGION III

Reports No. 50-454/92007(DRS); No. 50-455/92007(DRS)

Docket Nos. 50-454; 50-455 Licenses No. NPF-37; No. NPF-66

Licensee: Commonwealth Edison Company
Opus West III
1400 Opus Place
Downers Grove, IL 60515

Facility Name: Byron Nuclear Generating Station, Units 1 and 2

Inspection At: Byron Site, Byron, Illinois

Inspection Conducted: March 9-13, 1992

Inspector:

F. J. Jablonski
J. A. Holmes

4-7-92
Date

Approved By:

F. J. Jablonski
F. J. Jablonski, Chief
Maintenance and Outages Section

4-7-92
Date

Inspection Summary

Inspection on March 9-13, 1992 (Reports No. 50-454/92007(DRS);
No. 50-455/92007(DRS))

Areas Inspected: Routine, announced inspection to assess the implementation of the fire protection program, which included a review and evaluation of administrative procedures, completed surveillances, audits, and a fire drill. In addition, a walk down was performed to assure that isolation of safe shutdown power cables and control circuits was proper. The inspector utilized NRC inspection procedure modules 30703, 64704, and 92701.

Results: Based on the items inspected, overall performance in fire protection was considered good. Two open items were closed. One violation was identified regarding lack of adequate fire watch coverage during cutting and welding operation (Paragraph 2.8). One open item was identified regarding an engineering analysis to determine if cathodic protection is needed for the hydrogen system piping (Paragraph 2.7).

The following strengths were identified:

A new wheeled monitor 1000 gallon per minute deluge gun was located in the turbine building, which will allow brigade members to provide large amounts of cooling water to hydrogen tank and transformer fires. Also, lighting and additional barriers were provided at the hydrogen tank farm to reduce the probability of a fire due to hydrogen storage tank truck delivery accidents.

DETAILS

1.0 Principal Persons Contacted

Commonwealth Edison Company (CECo)

- *M. Burgess, Technical Superintendent
- *D. Brindle, Regulatory Assurance Supervisor
- *P. Harmon, Assistant Fire Marshal
- *P. Hart, Fire Protection Engineer
- *P. Johnson, Technical Staff Supervisor
- *B. Grundmann, Nuclear Quality Production Superintendent
- *R. Scheidecker, Fire Marshal
- *M. Snow, Operating Engineer
- *G. Schwartz, Production Superintendent
- *T. Tillman, Technical Staff

U.S. Nuclear Regulatory Commission (NRC)

- *W. J. Kropp, Senior Resident

*Denotes those attending the exit on March 13, 1992.

2.0 Licensee Action on Previous Inspection Findings

(Closed) Open Item 454/89002-01(DRS); 455/89002-01(DRS): Review and evaluation of temporary storage of lubricating oils in safety related areas when the opposite unit is at power. During this inspection, the licensee informed the inspector that Procedure BAP 1100-7, "Fire Prevention for Transient Fire Loading," Revision 6, for controlling transient combustibles had been developed to meet NRC guidelines. This procedure is applicable during all plant operating modes and assures that the fire marshal's office is aware of transient fire loads that are to be left unattended. The procedure also requires that the fire marshal review the transient loads and establish compensatory measures as necessary. Compensatory measures can consist of putting material in special storage containers, establishing backup fire suppression and establishing periodic or continuous fire watches. The fire marshal's office staff also conducts periodic tours of the plant to assess implementation of the station fire protection program, which includes transient combustible control. This item is closed.

(Closed) Open Item 454/89002-02(DRS); 455/89002-02: The licensee committed to include all sprinkler valves in the surveillance. The licensee informed the inspector that the valve previously identified has been added to the surveillance and in addition, walkdowns have been performed to assure that fire protection

control valves have been added to the surveillance. The inspector verified that the valve was added to the surveillance. This item is closed.

3.0 Fire Protection Program Review

This inspection consisted of a review of administrative procedures, completed fire protection surveillances, and fire protection audits, observation of a fire drill, and inspection of safety related equipment to assure proper isolation of safe shutdown power equipment and control circuits.

3.1 Administrative Procedures

Fire Protection Organization

Procedure BAP 1100-1, "Fire Protection Program," Revision 9, was developed to define the organization and personnel responsibilities for the fire protection program at this site. The inspector reviewed the responsibilities and qualifications for the fire marshal and the assistant fire marshal. The individuals' training and experience was commensurate with their position. No unacceptable items were observed.

Control of Flammable and Combustible Materials, Welding and Cutting Permits

Procedure BAP 1100-7, "Fire Prevention for Transient Fire Loading," Revision 6, was developed to provide controls for the storage, use, and handling of transient combustibles.

Procedure BAP 1100-9, "Control, Use, and Storage of Flammable and Combustible Liquids and Aerosols," Revision 4, provided instructions for the use, control and storage of flammable/combustible liquids.

Procedure BAP 1100-20, "Fire Prevention When Welding, Cutting and Grinding," Revision 6, provided fire prevention instructions for welding, cutting, and grinding operations.

Procedure BAP 1100-21, "Compressed Gas Cylinders," Revision 2, provided instructions in the handling, use, and storage of compressed gas cylinders.

The inspector reviewed the procedures for unacceptable storage and welding practices that would pose a significant threat to redundant safe shutdown equipment as required by 10 CFR 50 Appendix R. No unacceptable items were identified in the procedures.

3.2 Fire Protection Surveillance

The fire protection program required fire suppression equipment to be maintained and operable. The inspector reviewed and evaluated a sample of completed surveillance procedures as listed below.

1BHS 7.10.3.2.b.1-1, "Diesel Generator Room 1A and Day Tank Room Low Pressure CO2 System Actuation 18 Month Surveillance," dated December 1988 (Revision 2) and August 1990 (Revision 5).

1BHS 7.10.3.2.b.1-3, "Diesel Driven Auxiliary Feed Pump Room and Day Tank Room Low Pressure CO2 System Automatic Actuation 18 Month Surveillance," dated November 1988 (Revision 2).

1BHS 7.10.3.2.b.1-4, "Lower Cable Spreading Room Area 121 Low Pressure CO2 System Automatic Actuation 18 Month Surveillance," dated May 22, 1987 (Revision 1), June 9, 1987 (Revision 1), December 7, 1988 (Revision 2), December 15, 1988 (Revision 2) and September 22, 1990 (Revision 3).

1BHS 7.10.4.c-1, "Upper Cable Spreading Room Area 1EE1 Halon System Activation 18 Month Surveillance," dated July 1987 (Revision 4), February 1989 (Revision 4), and December 1990 (Revision 6).

1BHS 7.10.4.c-2, "Upper Cable Spreading Room Area 1EE2 Halon System Activation 18 Month Surveillance," dated February 1989 (Revision 3) and December 1990 (Revision 4).

1BHS 7.10.4.c-3, "Upper Cable Spreading Room Area 1EE3 Halon System Actuation 18 Month Surveillance," dated July 1987 (Revision 2), March 1989 (Revision 3), January 21, 1991 (Revision 5) and March 15, 1991 (Revision 5).

1BVS FP-11, "18 Month Indoor Foam System Flush Procedure," dated May 30, 1990 (Revision 1) and January 14, 1992.

OBOS 7.10.1.1.e-1, "Fire Protection Testable Valves Yearly Cycle," dated August 27, 1990 (Revision 6), September 19, 1990, August 29, 1991 (Revision 6), and January 22, 1992.

Deficiencies identified during the surveillance tests were corrected or scheduled to be corrected. No unacceptable items were observed.

3.3 Fire Protection Audits

Technical Specification 6.5.b.9. required an independent fire protection and loss prevention inspection and audit to be performed annually utilizing either qualified off-site licensee personnel or an outside fire protection firm. The audit dated

June 4, 1989, identified findings and open items that were brought to management's attention, and were resolved. No unacceptable resolutions were noted. In addition, Technical Specification 6.5.b.9 required an inspection and audit of the fire protection and loss prevention program to be performed by a qualified outside independent fire protection consultant at least every third year. The triennial audit dated April 2, 1990, identified findings and open items that were brought to management's attention, and were resolved. No unacceptable resolutions were noted.

3.4 Redundant Safety Related Cable

The inspector observed the power cables for charging pumps 1A and 1B from the respective pump to the motor control centers, and verified that the cables were separated as required by 10 CFR 50 Appendix R. No unacceptable items were observed.

3.5 Fire Drill

On March 12, 1992, a fire drill was initiated, which simulated a fire at the Unit 1 hydrogen seal oil unit. The drill postulated a phase to ground fault in the bus duct, which caused an explosion that ruptured hydrogen pipes and pressurized oil pipes.

The fire brigade responded within ten minutes with protective equipment (including self contained breathing apparatus), and established a command post. Communications were good between the control room and the brigade members. The fire chief called for offsite assistance after evaluating the fire. The hydrogen fire was stopped by shutting off the hydrogen supply to the turbine electrical generator. The ground oil fire was controlled by use of foam. The nearby equipment was cooled down by fire brigade personnel.

The fire marshall, fire brigade members, and observers discussed strong and weak points of the fire drill in detail during the critique. For example, points were made about the large amounts of smoke that could make visibility almost impossible, and heat buildup may severely weaken structural steel resulting in the collapse of the turbine hall roof. The performance of the fire brigade and the critique was good.

3.6 Fire Reports

The inspector reviewed fire reports for the last three years. In 1989, there were two reported fires. One was apparently caused by a bolt from the motor cooling fan, which made contact with the motor winding and caused a condensate pump motor to short out. The fire brigade responded in full turnout gear. The brigade leader ordered power removed from the pump motor, which resulted in control, and later extinguished the fire with manual carbon

dioxide and halon extinguishers. The actions taken by the fire brigade leader were appropriate. The other fire in 1989, and fires in 1990 and 1991, were small. These fires were caused by cutting and welding operations, an improperly disposed cigarette, and oil soaked insulation on an over heated pipe. In all cases, the fires were quickly detected and extinguished, and corrective actions were implemented where applicable. No unacceptable items were identified.

3.7 Hydrogen Storage Tank Farm

The licensee improved fire safety in the hydrogen tank storage area by installing barriers and additional lights that reduced the probability of a severe hydrogen tank truck delivery accident.

During a previous inspection, the inspector discussed with the licensee that the underground Class D carbon steel piping was provided with a protective coating for corrosive resistance. Although the inspector did not observe underground piping, faults and discontinuities in the coating could develop and lead to corrosion of the pipe. The corrosion may result from electric current leaking from metal piping to the ground and could be accelerated by stray currents or the presence of electric fields. The licensee agreed to consider whether cathodic protection is needed for the underground hydrogen tank piping. This is considered an Open Item (454/92007-01(DRS); 455/92007-01(DRS)) pending review of licensee's actions.

3.8 Fire Fighting Equipment

The licensee purchased a 1000 gallon per minute, at 150 pounds per square inch wheeled monitor, which is located in the turbine building. The portable device allows fire brigade members to provide a large amount of cooling water to protect nearby structures or equipment in the event of a transformer fire or provide critical cooling water to hydrogen storage tanks in the event of an impingement fire on the tanks. The monitor should significantly enhance fire fighting involving large exposure type fires.

3.9 Plant Observations

The inspector observed several hose stations, extinguishers, sprinkler valves, emergency lights, fire doors, fire penetration seals, and housekeeping in several areas of the reactor and turbine buildings. The inspector concluded that the equipment was well maintained. In general, housekeeping in these areas was good, however, in a few cases as discussed with licensee staff, housekeeping, although acceptable, could be improved. The licensee's staff concurred with the inspector and indicated that housekeeping will be improved in those areas.

On March 10, 1992, the inspector observed two cutting/welding operations in the turbine building on elevation 380' near column H-31 that utilized only one fire watch. The inspector determined that the fire watch was located beyond a reasonable distance to provide adequate coverage for both cutting/welding operations. The licensee concurred with the inspector and immediately stopped the cutting operation and did not start the operation until another fire watch was posted. The licensee's actions of utilizing one fire watch that did not provide adequate fire watch coverage for two welding operations is contrary to Procedure 1100-20, "Fire Prevention When Welding, Cutting and Grinding," as required by Technical Specification 6.8.1.h. Procedure 1100-20 requires that one or more individuals in each welding, cutting and grinding area shall be designated to watch for potential fire or smoldering and shall not leave the area while welding, cutting and grinding operation is being performed. In addition, the individuals shall notify the work supervisor of any hazards for correction. The licensee's failure to provide sufficient fire watch coverage for the cutting and welding operation is considered a violation (454/92007-02(DRS); 455/92007-02(DRS)).

4.0 Open Items

Open Items are matters that have been discussed with the licensee, which will be reviewed by the inspector and involve some action on the part of the NRC or the licensee or both. An Open Item discussed during the inspection is discussed in Paragraph 3.7.

5.0 Exit Interview

The inspector met with licensee representatives (denoted in Paragraph 1) at the conclusion of the inspection on March 13, 1992, and summarized the scope and findings of the inspection. The likely informational content of the inspection report was discussed with regard to documents reviewed during the inspection. The licensee did not identify any of the documents as proprietary.