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Docket No. 50-334

Mr. C. N. Dunn, Vice President
Operations Division
Duquesne Light Company
435 Sixth Avenue
Pittsburgh, Pennsylvania 15219

Dear Mr. Dunn:

The Commission has issued the enclosed Amendment No. 40 to Facility Operating License No. DPR-66 for the Beaver Valley Nuclear Power Station, Unit No. 1. The amendment consists of changes to the Technical Specifications in response to your application transmitted by letter dated May 14, 1980 and supported with information from letters dated September 15 and November 11, 1976; July 22 and August 22, 1977; January 18, March 7, September 4, and October 15, 1979; January 17, February 22, and July 24, 1980.

The amendment revises the Technical Specifications to reflect installation of undervoltage relays as protection against sustained undervoltage conditions. This amendment terminates the actions that were required by our letters dated August 11, 1976 and June 3, 1977. The revisions made by Amendment Nos. 30 and 33 and editorial changes discussed between your staff and the NRC staff are also incorporated. Administrative changes to pages XVII and 3/4 7-32b have also been made to correct typographical errors and omissions.

Copies of the Safety Evaluation and the Notice of Issuance are also enclosed.

Sincerely,

Original signed by:
S. A. Varga

Steven A. Varga, Chief
Operating Reactors Branch #1
Division of Licensing



Enclosures:

- 1. Amendment No. 40 to DPR-66
- 2. Safety Evaluation
- 3. Notice of Issuance

cc: w/enclosures
See next page

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as to form, subject to F.R. correction to Page 1, second paragraph.

| | | | | | | | |
|---------|----------|------------|----------|----------|-----------|--|--|
| OFFICE | ORB#1:DL | ORB#1:DL | ORB#1:DL | AD/OR:DL | OELD | | |
| SURNAME | CParrish | DChaney:ds | SVarga | TNovak | Gutierrez | | |
| DATE | 2/23/81 | 2/23/81 | 2/23/81 | 2/24/81 | 2/26/81 | | |

Docket



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

March 3, 1981

Docket No. 50-334

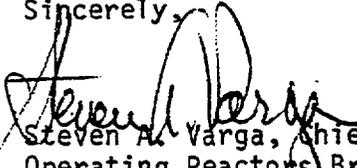
Mr. C. N. Dunn, Vice President
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435 Sixth Avenue
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Operating Reactors Branch #1
Division of Licensing

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cc: w/enclosures
See next page

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-1-

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Mr. C. N. Dunn
Duquesne Light Company

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

DUQUESNE LIGHT COMPANY

OHIO EDISON COMPANY

PENNSYLVANIA POWER COMPANY

DOCKET NO. 50-334

BEAVER VALLEY POWER STATION, UNIT NO. 1

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 40
License No. DPR-66

1. The Nuclear Regulatory Commission (the Commission) has found that:
 - A. The application for amendment by Duquesne Light Company, Ohio Edison Company, and Pennsylvania Power Company (the licensees) dated May 14, 1980, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act) and the Commission's rules and regulations set forth in 10 CFR Chapter I;
 - B. The facility will operate in conformity with the application, the provisions of the Act, and the rules and regulations of the Commission;
 - C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations;
 - D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public; and
 - E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.

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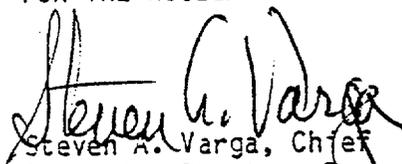
2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment, and paragraph 2.C.(2) of Facility Operating License No. DPR-66 is hereby amended to read as follows:

(2) Technical Specifications

The Technical Specifications contained in Appendices A and B, as revised through Amendment No. 40, are hereby incorporated in the license. The licensee shall operate the facility in accordance with the Technical Specifications.

3. This license amendment is effective as of the date of its issuance.

FOR THE NUCLEAR REGULATORY COMMISSION


Steven A. Varga, Chief
Operating Reactors Branch #1
Division of Licensing

Attachment:
Changes to the Technical
Specifications

Date of Issuance: March 3, 1981

ATTACHMENT TO LICENSE AMENDMENT

AMENDMENT NO. 40 TO FACILITY OPERATING LICENSE NO. DPR-66

DOCKET NO. 50-334

Revise Appendix A as follows:

Remove Pages

XVII
3/4 3-19
3/4 3-20
3/4 3-21
3/4 3-24
3/4 3-27
3/4 3-31
3/4 7-32b

Insert Pages

XVII
3/4 3-19
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3/4 3-21
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| Meeting Frequency..... | 6-8 |
| Quorum..... | 6-9 |
| Review..... | 6-9 |
| Audits..... | 6-10 |
| Authority..... | 6-10 |
| Records..... | 6-10 |
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| <u>6.7 SAFETY LIMIT VIOLATION.....</u> | 6-12 |
| <u>6.8 PROCEDURES.....</u> | 6-12 |
| <u>6.9 REPORTING REQUIREMENTS</u> | |
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| <u>6.12 HIGH RADIATION AREA.....</u> | 6-19 |
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TABLE 3.3-3 (Continued)

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION

| <u>FUNCTIONAL UNIT</u> | <u>TOTAL NO. OF CHANNELS</u> | <u>CHANNELS TO TRIP</u> | <u>MINIMUM CHANNELS OPERABLE</u> | <u>APPLICABLE MODES</u> | <u>ACTION</u> |
|--|------------------------------|------------------------------|----------------------------------|-------------------------|---------------|
| 5. TURBINE TRIP & FEEDWATER ISOLATION | | | | | |
| a. Steam Generator Water Level-- High-High | 3/loop | 2/loop in any operating loop | 2/loop in each operating loop | 1, 2, 3 | 14 |
| 6. LOSS OF POWER | | | | | |
| a. 4.16kv Bus | 1/4.16kv Bus | 1/4.16kv Bus | 1/4kv Bus | 1, 2, 3, 4 | 33 |
| 1. Loss of Voltage (trip feeder) | | 1/4.16kv Bus | 1/4kv Bus | 1, 2, 3, 4 | |
| 2. Loss of Voltage (start diesel) | 1/4.16kv Bus | | | | |
| b. Grid Degraded Voltage (4.16kv Bus) | 2/4.16kv Bus | 2/Bus | 2/Bus | 1, 2, 3, 4 | 34 |
| c. Grid Degraded Voltage (480v Bus) | 2/480v Bus | 2/Bus | 2/Bus | 1, 2, 3, 4 | 34 |

TABLE 3.3-3 (Continued)

TABLE NOTATION

- # Trip function may be bypassed in this MODE below P-11.
- ### The channel(s) associated with the protective functions derived from the out of service Reactor Coolant Loop shall be placed in the tripped mode.

ACTION STATEMENTS

- ACTION 13 - With the number of OPERABLE Channels one less than the Total Number of Channels, be in HOT STANDBY within 6 hours and in COLD SHUTDOWN within the following 30 hours; however, one channel may be bypassed for up to 1 hour for surveillance testing per Specification 4.3.2.1.1.
- ACTION 14 - With the number of OPERABLE Channels one less than the Total Number of Channels:
- a. Below P-11 or P-12, place the inoperable channel in the tripped condition within 1 hour; restore the inoperable channel to OPERABLE status within 24 hours after exceeding P-11 or P-12; otherwise be in at least HOT STANDBY within the following 6 hours.
 - b. Above P-11 and P-12, place the inoperable channel in the tripped condition within 1 hour; operation may continue until performance of the next required CHANNEL FUNCTIONAL TEST.
- ACTION 15 - With a channel associated with an operating loop inoperable, restore the inoperable channel to OPERABLE status within 2 hours or be in HOT SHUTDOWN within the following 12 hours; however, one channel associated with an operating loop may be bypassed for up to 2 hours for surveillance testing per Specification 4.3.2.1.1.
- ACTION 16 - With the number of OPERABLE Channels one less than the Total Number of Channels:
- a. Below P-11 or P-12, place the inoperable channel in the bypass condition; restore the inoperable channel to OPERABLE status within 24 hours after exceeding P-11 or P-12; otherwise be in at least HOT SHUTDOWN within the following 12 hours.

TABLE 3.3-3 (Continued)

- b. Above P-11 or P-12, demonstrate that the Minimum Channels OPERABLE requirement is met within 1 hour; operation may continue with the inoperable channel bypassed and one additional channel may be bypassed for up to 2 hours for surveillance testing per Specification 4.3.2.1.
- ACTION 17 - With less than the Minimum Channels OPERABLE, operation may continue provided the containment purge and exhaust valves are maintained closed.
- ACTION 18 - With the number of OPERABLE Channels one less than the Total Number of Channels, restore the inoperable channel to OPERABLE status within 48 hours or be in at least HOT STANDBY within the next 6 hours and COLD SHUTDOWN within the following 30 hours.
- ACTION 33 - With the number of OPERABLE Channels one less than the Total Number of Channels, the Emergency Diesel Generator associated with the 4kv Bus shall be declared inoperable and the ACTION Statements for Specifications 3.8.1.1 or 3.8.1.2, as appropriate shall apply.
- ACTION 34 - With the number of OPERABLE Channels one less than the Total Number of Channels, STARTUP and/or POWER OPERATION may proceed until the performance of the next required Channel Functional Test provided the inoperable channel is placed in the tripped condition within 1 hour.

ENGINEERED SAFETY FEATURES INTERLOCKS

| <u>DESIGNATION</u> | <u>CONDITION AND SETPOINT</u> | <u>FUNCTION</u> |
|--------------------|--|---|
| P-11 | With 2 of 3 pressurizer pressure channels > 2010 psig. | P-11 prevents or defeats the manual block of safety injection actuation on low pressurizer pressure coincident with low pressurizer water level and on low steam line pressure. Block steam line isolation on high pressure rate. |
| P-12 | With 2 of 3 T _{avg} channels < 54°F. | Affects steam dump blocks. |

TABLE 3.3-4 (Continued)

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION TRIP SETPOINTS

| <u>FUNCTIONAL UNIT</u> | <u>TRIP SETPOINT</u> | <u>ALLOWABLE VALUES</u> |
|---|---|---|
| 4. STEAM LINE ISOLATION | | |
| a. Manual | Not Applicable | Not Applicable |
| b. Automatic Actuation Logic | Not Applicable | Not Applicable |
| c. Containment Pressure-- Intermediate-High-High | ≤ 5.0 psig | ≤ 5.5 psig |
| d. Steamline Pressure-Low | > 500 psig steam line pressure | > 480 psig steam line pressure |
| e. high Steam Pressure Rate | 100 psi/sec | 110 psi/sec |
| 5. TURBINE TRIP AND FEEDWATER ISOLATION | | |
| a. Steam Generator Water Level-- High-High | $< 75\%$ of narrow range instrument span each steam generator | $< 76\%$ of narrow range instrument span each steam generator |
| 6. LOSS OF POWER | | |
| a. 1. 4.16kv Emergency Bus Undervoltage (Loss of Voltage) (Trip Feed) | $\geq 75\%$ of nominal bus voltage with a 1 ± 0.1 second time delay | $\geq 74\%$ of nominal bus voltage with a 1 ± 0.1 second time delay |
| 2. 4.16kv Emergency Bus (Start Diesel) | $\geq 83\% - 12$ cycles + 3% | |
| b. 4.16kv Emergency Bus Undervoltage (Degraded Voltage) | 90% - 0% of nominal bus voltage with a 90 ± 5 second time delay | $\geq 89\%$ of nominal bus voltage with a 90 ± 5 second time delay |
| c. 480v Emergency Bus Undervoltage (Degraded Voltage) | + 3% 90% - 0% of nominal bus voltage with a 90 ± 5 second time delay | $\geq 89\%$ of nominal bus voltage with a 90 ± 5 second time delay |

TABLE 3.3-5 (Continued)

ENGINEERED SAFETY FEATURES RESPONSE TIMES

| <u>INITIATING SIGNAL AND FUNCTION</u> | <u>RESPONSE TIME IN SECONDS</u> |
|---|---------------------------------|
| 4. <u>Steam Line Pressure-Low</u> | |
| a. Safety Injection (ECCS) | ≤ 13.0#/23.0## |
| b. Reactor Trip (from SI) | ≤ 3.0 |
| c. Feedwater Isolation | ≤ 75.0(1) |
| d. Containment Isolation-Phase "A" | ≤ 22.0#/33.0## |
| e. Auxiliary Feedwater Pumps | Not Applicable |
| f. Rx Plant River Water System | ≤ 77.0#/110.0## |
| g. Steam Line Isolation | ≤ 8.0 |
| 5. <u>Containment Pressure--High-High</u> | |
| a. Containment Quench Spray | ≤ 77.0 |
| b. Containment Isolation-Phase "B" | Not Applicable |
| c. Control Room Ventilation Isolation | ≤ 22.0#/77.0## |
| 6. <u>Steam Generator Water Level--High-High</u> | |
| a. Turbine Trip-Reactor Trip | ≤ 2.5 |
| b. Feedwater Isolation | ≤ 78.0(1) |
| 7. <u>Containment Presssure--Intermediate High-High</u> | |
| a. Steam Line Isolation | ≤ 8.0 |
| 8. <u>Steamline Pressure Rate--High Negative</u> | |
| a. Steamline Isolation | ≤ 8.0 |
| 9. <u>Loss of Power</u> | |
| a. 4.16kv Emergency Bus Undervoltage (Loss of Voltage) | ≤ 1.3 |
| b. 4.16kv and 480v Emergency Bus Under- voltage (Degraded Voltage) | ≤ 95 |

TABLE 4.3-2 (Continued)

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION
SURVEILLANCE REQUIREMENTS

| FUNCTIONAL UNIT | CHANNEL CHECK | CHANNEL CALIBRATION | CHANNEL FUNCTIONAL TEST | MODES IN WHICH SURVEILLANCE REQUIRED |
|--|---------------|---------------------|-------------------------|--------------------------------------|
| 4. STEAM LINE ISOLATION | | | | |
| a. Manual | N.A. | N.A. | M(1) | 1, 2, 3, 4 |
| b. Automatic Actuation Logic | N.A. | N.A. | M(2) | 1, 2, 3, 4 |
| c. Containment Pressure-- Intermediate-High-High | S | R | M | 1, 2, 3 |
| d. Steam Line Pressure--Low | S | R | M | 1, 2, 3 |
| e. Steamline Pressure Rate-High | S | R | M | 1, 2, 3 |
| 5. TURBINE TRIP AND FEEDWATER ISOLATION | | | | |
| a. Steam Generator Water Level--High-High | S | R | M | 1, 2, 3 |
| 6. LOSS OF POWER | | | | |
| a. 4.16kv Emergency Bus Undervoltage (Loss of Voltage) Trip Feed & Start Diesel | N. A. | R | M | 1, 2, 3, 4 |
| b. 4.16kv and 480v Emergency Bus Undervoltage (Degraded Voltage) | N. A. | R | M | 1, 2, 3, 4 |

BEAVER VALLEY - UNIT 1

3/4 3-31

Amendment No. 40

TABLE 3.7-4 (Continued)

SAFETY RELATED HYDRAULIC SNUBBERS*

| <u>SNUBBER NO.</u> | <u>SYSTEM SNUBBER INSTALLED ON, LOCATION AND ELEVATION</u> | | | | <u>ACCESSIBLE OR INACCESSIBLE</u> | <u>HIGH RADIATION ZONE</u> | <u>ESPECIALLY DIFFICULT TO REMOVE</u> | |
|--------------------|--|-------|------|-------|-----------------------------------|----------------------------|---------------------------------------|-----|
| RC-HSS-119 | RC | Reac. | Cnt. | Bldg. | 734' | A | Yes | No |
| SI-HSS-337 | SI | " | " | | 728' | " | No | " |
| SI-HSS-409 | SI | " | " | | 729' | " | No | " |
| SI-HSS-410 | " | " | " | | 731' | " | " | " |
| SI-HSS-411 | " | " | " | | 731' | " | " | " |
| RS-HSS-201 | RS | " | " | | 731' | " | Yes | " |
| RS-HSS-202 | " | " | " | | 731' | " | " | " |
| RS-HSS-237 | " | " | " | | 731' | " | No | " |
| RS-HSS-238 | " | " | " | | 731' | " | " | " |
| RS-HSS-229 | " | " | " | | 731' | " | " | " |
| RS-HSS-236 | " | " | " | | 731' | " | " | " |
| RS-HSS-234 | " | " | " | | 726' | " | " | " |
| CC-HSS-405A | " | " | " | | 707' | I | Yes | Yes |
| CC-HSS-405B | " | " | " | | 707' | " | " | " |
| CC-HSS-407A | " | " | " | | 711' | " | " | " |
| CC-HSS-407B | " | " | " | | 711' | " | " | " |
| RS-HSS-205 | RS | " | " | | 702' | A | No | No |
| RS-HSS-206 | " | " | " | | 702' | " | " | " |
| RS-HSS-219 | " | " | " | | 702' | " | " | " |
| RS-HSS-220 | " | " | " | | 702' | " | " | " |
| RS-HSS-207 | " | " | " | | 702' | " | " | " |
| RS-HSS-208 | " | " | " | | 702' | " | " | " |
| RS-HSS-209 | " | " | " | | 710' | " | " | " |
| RS-HSS-215 | " | " | " | | 715' | " | " | " |
| RS-HSS-216 | " | " | " | | 715' | " | " | " |
| RH-HSS-105 | RH | " | " | | 704' | I | Yes | Yes |
| RH-HSS-107 | " | " | " | | 704' | " | " | " |
| RH-HSS-108 | " | " | " | | 704' | " | " | " |
| RH-HSS-111 | " | " | " | | 704' | " | " | " |

BEAVER VALLEY - UNIT 1

3/4 7-32b

Amendment No. 40



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION
RELATED TO AMENDMENT NO. 40 TO FACILITY OPERATING LICENSE NO. DPR-66

DUQUESNE LIGHT COMPANY

OHIO EDISON COMPANY

PENNSYLVANIA POWER COMPANY

BEAVER VALLEY POWER STATION, UNIT NO. 1

DOCKET NO. 50-334

Introduction and Summary

The criteria and staff positions pertaining to degraded grid voltage protection were transmitted to Duquesne Light Company (DLC) by NRC generic letter dated June 3, 1977. In response to this, by letters dated October 15, 1979, May 14, 1980 and July 24, 1980, the licensee proposed certain design modifications and changes to the Technical Specifications. A detailed review and technical evaluation of these proposed modifications and changes to the technical specifications was performed by EG&G, under contract to the NRC, and with general supervision by NRC staff. This work is reported by EG&G in a draft report, "Technical Evaluation Report on Degraded Grid Voltage Protection for Class 1E Power Systems" (Attachment 1). We have reviewed this technical evaluation report and concur in its conclusion that the proposed design modifications and Technical Specification changes are acceptable.

Proposed Changes and Evaluation Criteria

The following design modifications and Technical Specification changes were proposed by DLC.

- a. Installation of second level undervoltage relays, two on each 4160 V Class 1E bus and two on the secondary side of one of the two, parallel 4160/480 V load center transformers with a drop out setting at approximately 90% of nominal bus voltage and a maximum of 95 second time delay. These relays on each of the two voltage levels are arranged in a two-out-of-two logic scheme. A similar protective scheme is provided on the redundant train. The existing loss of voltage relays setpoint is changed from 80% to 75% of nominal bus voltage.
- b. Installation of circuitry to block the undervoltage trip load shedding feature on the 4160 V Class 1E buses when the diesel generators are supplying these buses, and automatically reinstating this feature when the diesel generator breakers are tripped.

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- c. Addition of trip setpoint, limiting conditions for operation and surveillance requirements in the Technical Specifications associated with the design modifications cited above.

The criteria used by EG&G in its technical evaluation of the above proposed changes include GDC-17, "Electric Power Systems," of Appendix A to 10 CFR 50; IEEE Standard 279-1971, "Criteria for Protection Systems for Nuclear Power Generating Stations," IEEE Standard 308-1974, "Class 1E Power Systems for Nuclear Power Generating Stations," and the staff positions defined in NRC generic letter to DLC dated June 3, 1977.

Conclusions

We have reviewed the EG&G Technical Evaluation Report and concur in its findings that (1) the proposed modifications will protect the Class 1E equipment and systems from a sustained degraded voltage of the offsite power source, and (2) the proposed changes to the Technical Specifications meet the criteria for periodic testing of protection systems and equipment. Therefore, we conclude that DLC's proposed design modifications and changes to the Technical Specifications are acceptable.

Environmental Consideration.

We have determined that the amendment does not authorize a change in effluent types or total amounts nor an increase in power level and will not result in any significant environmental impact. Having made this determination, we have further concluded that the amendment involves an action which is insignificant from the standpoint of environmental impact and, pursuant to 10 CFR §51.5(d)(4), that an environmental impact statement or negative declaration and environmental impact appraisal need not be prepared in connection with the issuance of this amendment.

Conclusion

We have concluded, based on the considerations discussed above, that: (1) because the amendment does not involve a significant increase in the probability or consequences of accidents previously considered and does not involve a significant decrease in a safety margin, the amendment does not involve a significant hazards consideration, (2) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, and (3) such activities will be conducted in compliance with the Commission's regulations and the issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public.

Date: March 3, 1981

TECHNICAL EVALUATION REPORT
DEGRADED GRID PROTECTION FOR CLASS 1E POWER SYSTEMS

BEAVER VALLEY POWER STATION, UNIT NO. 1

1.0 INTRODUCTION

On June 3, 1977, the NRC requested the Duquesne Light Company (DLC) to assess the susceptibility of the safety-related electrical equipment at the Beaver Valley Power Station, Unit No. 1 (BVPS-1) to a sustained voltage degradation of the offsite source and interaction of the offsite and onsite emergency power systems.¹ The letter contained three positions with which the current design of the plant was to be compared. After comparing the current design to the staff positions, DLC was required to either propose modifications to satisfy the positions and criteria or furnish an analysis to substantiate that the existing facility design has equivalent capabilities.

By letter dated October 15, 1979, DLC proposed certain design modifications and committed to furnishing technical specification changes in the future to satisfy the criteria and staff positions². By letters dated May 14, 1980³, and July 24, 1980⁴, DLC did submit technical specification changes to comply with the staff positions. The modifications consist of the installation of a second-level undervoltage protection system for the class 1E equipment and blocking of the load-shedding feature when the diesel generator is supplying power to the emergency buses. The NRC required that the setpoint, surveillance requirements, test requirements, and allowable limits were to be included by DLC in the plant technical specifications.

2.0 DESIGN BASE CRITERIA

The design base criteria that were applied in determining the acceptability of the system modifications to protect the safety-related equipment from a sustained degradation of the offsite grid are:

1. General Design Criterion 17 (GDC 17), "Electrical Power Systems," of Appendix A, "General Design Criteria for Nuclear Power Plants," of 10 CFR 50⁵
2. IEEE Standard 279-1971, "Class 1E Power Systems for Nuclear Power Generating Stations"⁶
3. IEEE Standard 308-1974, "Class 1E Power Systems for Nuclear Power Generating Stations"⁷
4. Staff positions as detailed in a letter sent to the licensee, dated June 3, 1977¹
5. ANSI Standard C84.1-1977, "Voltage Ratings for Electrical Power Systems and Equipment (60 Hz)."⁸

3.0 EVALUATION

This section provides; in Subsection 3.1, a brief description of the existing undervoltage protection at the BVPS-1; in Subsection 3.2, a description of the licensee's proposed modifications for the second-level undervoltage protection; and in Subsection 3.3, a discussion of how the proposed modifications meet the design base criteria.

3.1 Existing Undervoltage Protection. The present scheme at BVPS-1 consists of six undervoltage (UV) relays on each load group. (The station distribution system consists of two load groups.)

1. Two UV relays on each 4160V nonclass 1E bus. One relay is called out as the primary relay and the other as the secondary relay with setpoints of 80% voltage and 32-cycle time delay and that of 0 volts and three-second time delay, respectively. Either of these relays will trip the supply and feeder breakers to the associated 4160V class 1E bus and load shed the 4160V nonclass 1E bus.
2. Two UV relays on each 4160V class 1E bus. One set at 83% voltage with a 12-cycle time delay that starts the associated diesel generator. The other relay is set at 80% voltage with a three-second time delay. This relay sheds all 480 and 4160V bus loads except the 4160/480V transformers feeding the emergency buses.
3. Two UV relays, one each on the two 480V class 1E buses, set at 83% of 480V and a 41-second time delay. These relays shed all the loads on their associated 480V class 1E bus.

3.2 Modifications. The existing UV relay functions and/or setpoints included in Section 3.1 will be itemwise modified as follows:

1. The relays on the 4160V nonclass 1E bus will not trip the supply and feeder breakers to the bus.
2. The load-shedding relay on the 4160V class 1E bus will have its setpoint changed to 75% of 4160V with a one-second time delay. This relay will trip the supply and feeder breakers to the bus and be used to sense a loss-of-offsite power.
3. The load-shedding relays on the 480V class 1E buses will have their voltage setpoints changed to 75% of 480V.

For second-level undervoltage protection, the licensee has proposed adding two relays to each 4160V emergency bus and two relays to the secondary of the 4160/480V transformer feeding one of the 480V, class 1E buses. These relays will have a setpoint of 90% (+3, -0) of bus voltage. Each

pair of these relays will have their contacts wired in series to a timing relay set for 90 ± 5 seconds time delay on pickup. The timing relay will initiate the trip of the incoming line and feeder breakers to the 4160V, class 1E bus.

Load-shedding, once the diesel generator is supplying the class 1E buses, will be disabled. The load-shed feature will be reinstated when the buses are supplied from the offsite source.

Proposed changes to the plant's technical specifications (adding the surveillance requirements, allowable limits for the setpoint and time delay, and limiting conditions for operation for the second-level undervoltage protection) were also furnished by the licensee.

3.3 Discussion. The first position of the NRC staff letter¹ required that a second level of undervoltage protection for the onsite power system be provided. The letter stipulates other criteria that the undervoltage protection must meet. Each criterion is restated below followed by a discussion regarding the licensee's compliance with that criterion.

1. "The selection of voltage and time setpoints shall be determined from an analysis of the voltage requirements of the safety-related loads at all onsite system distribution levels."

The licensee's proposed setpoint of 3744V at the 4160V bus is 90% of the motor-rated voltage of 4160V. This setpoint, reflected down to the 480V buses, will be greater than 90% of the motor-rated voltage. As the motors are the most limiting equipment in the system, this setpoint is acceptable.

2. "The voltage protection shall include coincidence logic to preclude spurious trips of the offsite power sources."

The proposed modification incorporates a two-out-of-two logic scheme, thereby satisfying this criterion.

3. "The time delay selected shall be based on the following conditions:

- a. The allowable time delay, including margin, shall not exceed the maximum time delay that is assumed in the FSAR accident analysis."

The proposed maximum time delay of 95 seconds does not exceed this maximum time delay. This is substantiated by the licensee in his proposal.

The proposed time delay will not be the cause of any thermal damage to the safety-related equipment. The setpoint is within voltage ranges recommended by ANSI C84.1-1977 for sustained operation.

- b. "The time delay shall minimize the effect of short-duration disturbances from reducing the unavailability of the offsite power source(s)."

The licensee's proposed minimum time delay of 85 seconds is long enough to override any short, inconsequential grid disturbances. Further, I have reviewed the licensee's analysis and agree with the licensee's finding that any voltage dips caused from the starting of large motors will not trip the offsite source.

- c. "The allowable time duration of a degraded voltage condition at all distribution system levels shall not result in failure of safety systems or components."

A review of the licensee's voltage analysis^{2,10,11} indicates that the time delay will not cause any failures of the safety-related equipment since the voltage setpoint is within the allowable tolerance of the equipment-rated voltage.

4. "The voltage monitors shall automatically initiate the disconnection of offsite power sources whenever the voltage setpoint and time-delay limits have been exceeded."

A review of the licensee's proposal substantiates that this criterion is met.

5. The voltage monitors shall be designed to satisfy the requirements of IEEE Standard 279-1971."

The licensee has stated in his proposal that the modifications are designed to meet or exceed IEEE Standard 279.

6. "The technical specifications shall include limiting conditions for operations, surveillance requirements, trip setpoints with minimum and maximum limits, and allowable values for the second-level voltage protection monitors."

The licensee's proposal for technical specification changes includes all the required items. The setpoint of 3744V (+125, -0) does not infringe into the expected operating envelope and will not compromise the life of

the motors. Spurious trips are, thereby, not foreseen. The limiting conditions for operation, calibration checks, and surveillance requirements meet the criteria of the staff's positions.

The second NRC staff position requires that the system design automatically prevent load-shedding of the emergency buses once the onsite sources are supplying power to all sequenced loads. The load-shedding must also be reinstated if the onsite breakers are tripped.

The licensee has stated in his proposal that this position will be met in the new undervoltage protection scheme.

The third NRC staff position requires that certain test requirements be added to the technical specifications. These tests were to demonstrate the full-functional operability and independence of the onsite power sources, and are to be performed at least once per 18 months during shutdown. The tests are to simulate loss of offsite power in conjunction with a safety-injection actuation signal, and to simulate interruption and subsequent reconnection of onsite power sources. These tests verify the proper operation of the load-shed system, the load-shed bypass when the emergency diesel generators are supplying power to their respective buses, and that there is no adverse interaction between the onsite and offsite power sources.

The existing test procedures used by the licensee comply with the full intent of this procedure. Load-shedding on offsite power trip is tested. Load-sequencing, once the diesel generator is supplying the safety buses, is tested. The time durations of the tests (5 minutes with full safety loads) will verify that the time delay is sufficient to avoid spurious trips and that the load-shed bypass circuit is functioning properly.

4.0 CONCLUSIONS

Based on the information provided by DLC, it has been determined that the proposed changes comply with NRC staff position 1. All of the staff's requirements and design base criteria have been met. The setpoint and time delay will protect the class 1E equipment from a sustained degraded voltage condition of the offsite power source.

The modified load-shed circuitry complies with staff position 2 and will prevent adverse interaction of the offsite and onsite emergency power systems.

The proposed changes to the technical specifications adequately test the system modifications and comply with staff position 3. The surveillance requirements, limiting conditions for operation, minimum and maximum limits for the trip setpoint, and allowable values meet the intent of staff position 1.

It is therefore concluded that DLC's proposed modifications and technical specification changes are acceptable.

5.0 REFERENCES

1. NRC letter (R. W. Reid) to DLC (C. N. Dunn), dated June 3, 1977.
2. DLC letter (C. N. Dunn) to NRC (A. Schwencer), dated October 15, 1979.
3. DLC letter (C. N. Dunn) to NRC (S. A. Varga), dated May 14, 1980.
4. DLC letter (C. N. Dunn) to NRC (S. A. Varga), dated July 24, 1980.
5. General Design Criterion 17, "Electric Power Systems," of Appendix A, "General Design Criteria for Nuclear Power Plants," to 10 CFR Part 50, "Domestic Licensing of Production and Utilization Facilities."
6. IEEE Standard 279-1971, "Criteria for Protection Systems for Nuclear Power Generating Stations."
7. IEEE Standard 308-1974, "Standard Criteria for Class 1E Power Systems for Nuclear Power Generating Stations."
8. ANSI C84.1-1977, "Voltage Ratings for Electric Power Systems and Equipment (60 Hz)."
9. DLC letter (C. N. Dunn) to NRC (R. W. Reid), dated July 22, 1977.
10. DLC letter (C. N. Dunn) to NRC (R. W. Reid), dated November 11, 1976.
11. DLC letter (C. N. Dunn) to NRC (A. Schwencer), dated February 22, 1980.
12. Final Safety Analysis Report (FSAR) for the Beaver Valley Power Station, Unit 1.

UNITED STATES NUCLEAR REGULATORY COMMISSIONDOCKET NO. 50-334DUQUESNE LIGHT COMPANYOHIO EDISON COMPANYPENNSYLVANIA POWER COMPANYNOTICE OF ISSUANCE OF AMENDMENT TO FACILITY
OPERATING LICENSE

The U. S. Nuclear Regulatory Commission (the Commission) has issued Amendment No. 40 to Facility Operating License No. DPR-66 issued to Duquesne Light Company, Ohio Edison Company, and Pennsylvania Power Company (the licensees), which revised Technical Specifications for operation of the Beaver Valley Power Station, Unit No. 1 (the facility) located in Beaver County, Pennsylvania. The amendment is effective as of the date of issuance.

The amendment revises the Technical Specifications to reflect installation of undervoltage relays as protection against a sustained undervoltage condition.

The application for the amendment complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations. The Commission has made appropriate findings as required by the Act and the Commission's rules and regulations in 10 CFR Chapter I, which are set forth in the license amendment. Prior public notice of this amendment was not required since this amendment does not involve a significant hazards consideration.

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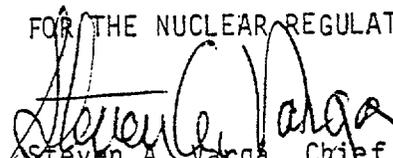
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The Commission has determined that the issuance of this amendment will not result in any significant environmental impact and that pursuant to 10 CFR §51.5(d)(4) an environmental impact statement or negative declaration and environmental impact appraisal need not be prepared in connection with issuance of this amendment.

For further details with respect to this action, see (1) the application for amendment dated May 14, 1980 (supported with information from letters September 15 and November 11, 1976; July 22 and August 22, 1977; January 18, March 7, September 4, and October 15, 1979; January 17, February 22 and July 24, 1980), (2) Amendment No. to License No. DPR-66 and (3) the Commission's related Safety Evaluation. All of these items are available for public inspection at the Commission's Public Document Room, 1717 H Street, N.W., Washington D.C. and at the B. F. Jones Memorial Library, 663 Franklin Avenue, Aliquippa, Pennsylvania 15001. A copy of items (2) and (3) may be obtained upon request addressed to the U. S. Nuclear Regulatory Commission, Washington, D.C. 20555, Attention: Director, Division of Licensing.

Dated at Bethesda, Maryland this 3rd day of March, 1981..

FOR THE NUCLEAR REGULATORY COMMISSION


Steven A. Varga, Chief
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