



UNITED STATES
NUCLEAR REGULATORY COMMISSION

WASHINGTON, D. C. 20555-0001

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION
RELATED TO AMENDMENT NO. 180 TO FACILITY OPERATING LICENSE NO. DPR-66
AMENDMENT NO. 60 TO FACILITY OPERATING LICENSE NO. NPF-73

DUQUESNE LIGHT COMPANY
OHIO EDISON COMPANY
PENNSYLVANIA POWER COMPANY
THE CLEVELAND ELECTRIC ILLUMINATING COMPANY
THE TOLEDO EDISON COMPANY

BEAVER VALLEY POWER STATION, UNIT NOS. 1 AND 2

DOCKET NOS. 50-334 AND 50-412

1.0 INTRODUCTION

By letter dated June 14, 1990, as supplemented November 17, 1993, Duquesne Light Company requested changes to the Technical Specifications (TSs) for the AC and DC distribution requirements during shutdown conditions for Beaver Valley Power Station, Unit Nos. 1 and 2.

The November 17, 1993, letter provided clarifying information that did not change the initial proposed no significant hazards consideration determination. The NRC staff has reviewed the requested changes and finds them acceptable as discussed in the following evaluation.

2.0 DISCUSSION

Each unit has two separate 4160 volt emergency AC busses which are supplied from the normal 4160 volt busses. The two independent Class 1E 4160 volt busses, Bus 1AE (2AE) Train A (orange) and Bus 1DF (2DF) Train B (purple), are provided to supply redundant 4160 volt Class 1E loads. In the event of a loss of normal power, two independent emergency diesel generators will automatically transfer to supply the specified emergency busses thus powering all required safety loads. Each 4160 volt emergency bus feeds one 480 volt emergency bus. The 480 volt emergency busses in turn power four Class 1E vital bus uninterruptible power supply (UPS) systems.

Each vital bus UPS system has three separate power sources available consisting of one normal power source and two alternate power sources. The normal power source is from a 480 volt motor control center (MCC) via a rectifier unit which provides 125 volt DC to a 120 volt AC inverter. The alternate power sources are from a 480 volt MCC through a 120 volt regulator, and from the 125 volt batteries. Each vital bus provides 120 VAC instrumentation and control power for the engineered safety feature protection channels, and is uniquely identified by the assigned colors red, white, blue,

or yellow corresponding respectively to vital busses VITBUS-1 (*2-1), VITBUS-2 (*2-2), VITBUS-3 (*2-3) and VITBUS-4 (*2-4).

The 125 volt DC Distribution System consists of four independent busses. Each 125 volt DC bus is supplied from battery chargers or rectifier/chargers which simultaneously supply a float charge to each battery associated with a specific DC bus.

3.0 EVALUATION

The licensee has proposed the following specific changes to the Beaver Valley Unit 1 and Unit 2 TSSs:

NOTE: This evaluation applies to both Beaver Valley units, unless specified otherwise.

Change 1: The licensee proposes for existing Specifications 3.8.1.2, 3.8.2.2, and 3.8.2.4 under APPLICABILITY to revise the text "MODES 5 and 6." to "Modes (MODES) 5 and 6, AND During movement of irradiated fuel with no fuel assemblies in the vessel, and During movement of loads over irradiated fuel with no fuel assemblies in the reactor vessel."

This change is being requested to add the applicability of the subject Specifications to the two cases: 1) when moving irradiated fuel with the reactor defueled and 2) when moving any loads over irradiated fuel with the reactor defueled. The change would ensure that power would be available to systems necessary to recover from postulated events (e.g., a fuel handling accident) in the reactor defueled condition. The staff finds that the subject change enhances plant safety and is acceptable.

Change 2: Action Statement 3.8.1.2 has been revised as follows (new text underlined):

With less than the above minimum required AC electrical power sources OPERABLE, immediately suspend all operations involving CORE ALTERATIONS, positive reactivity changes, movement of irradiated fuel, and movement of loads over irradiated fuel until the minimum required AC electrical power sources are restored to OPERABLE status.

The change adds the word "immediately" to specify that the completion time for the required actions shall be performed promptly and without delay. The restoration of the required AC electrical power sources should be completed as quickly as possible in order to minimize the time during which the unit safety systems may be without sufficient power. This change is consistent with the Westinghouse Standard Technical Specifications. Therefore, the change is acceptable.

The subject change also adds the suspension of the movement of irradiated fuel and any loads over irradiated fuel to the list of required actions in the event that the subject Specification cannot be met. This change adds consistent actions given the expanded applicability of this Specification when the reactor is defueled during movement of irradiated fuel and loads over irradiated fuels (see Change 1). Therefore, the subject change is acceptable.

Change 3: Specification 3.8.2.2 has been revised from a description of 1- 4 KV emergency bus, 1- 480 V emergency bus and 2- 120 V AC vital buses as the minimum collection of equipment to be operable and energized from sources other than a diesel generator but aligned to an OPERABLE diesel generator to the following text:

As a minimum, one of the following trains of AC Busses shall be OPERABLE and energized in the specified manner:

a. Train "A" AC Emergency Busses consisting of:

1. 4160-Volt Emergency Bus #1AE,
2. 480-Volt Emergency Bus #8N,
3. 120-Volt AC Vital Bus #I energized from its associated inverter connected to DC Bus #1-1, and
4. 120-Volt AC Vital Bus #III energized from its associated inverter connected to DC Bus #1-3.

b. Train "B" AC Emergency Busses consisting of:

1. 4160-Volt Emergency Bus #1DF,
2. 480-Volt Emergency Bus #9P,
3. 120-Volt AC Vital Bus #II energized from its associated inverter connected to DC Bus #1-2, and
4. 120-Volt AC Vital Bus #IV energized from its associated inverter connected to DC Bus #1-4.

The above change revises the existing TS to designate the specific busses and equipment to require, as a minimum, one complete train (A or B) of the AC power sources to be operable. The existing Specification allows the minimum configuration required to be operable for AC power sources to be selected from different trains of equipment. This change is more conservative than the existing Specification because it reduces through the protected train concept the probability and consequences of accidents in Modes 5 and 6. The protected train concept permits administrative controls to be implemented easier since all of the components associated with the subject train can be controlled as a single unit for outage work scheduling purposes. The statement of the number and type of components described by the change meets the intent of the existing Specification. In addition, the proposed change would also require that the vital busses be powered from the associated inverter which

is connected to the DC busses. This operability requirement for the inverters is consistent with the Standard Technical Specifications (STS). Further, this change is consistent with the existing Specification 3.8.2.1, AC Distribution-Operating. Given the above reasons, we find the subject change is acceptable.

Change 4: The requirement in Action Statement 3.8.2.2 to establish CONTAINMENT INTEGRITY within 8 hours with less than the above complement of AC busses have been replaced with the following text:

With the above required train of AC Emergency Busses not fully energized in the required manner, immediately suspend all operations involving CORE ALTERATIONS, positive reactivity changes, movement of irradiated fuel, and movement of loads over irradiated fuel. Initiate corrective action to energize the required electrical busses in the specified manner as soon as possible.

The above change deletes the requirement to establish Containment Integrity if less than the specified minimum AC equipment is operable and replaces it with the statements to suspend immediately safety significant work activities (e.g., positive reactivity changes) and to initiate corrective action to restore the minimum required equipment. This change is consistent with the Westinghouse STS and existing TS 3.8.1.2, Limiting Condition for Operation (LCO) for Electrical Power Systems-Shutdown. Therefore, the subject change is acceptable.

Change 5: The proposed change deletes "A.C.," replaces "OPERABLE and energized from A.C. sources other than the diesel generator" with "energized in the required manner" and replaces "power availability" with "voltage on the busses" in Specification 4.8.2.2.

The proposed change restates the existing Specification to limit various electrical alignments to those consistent to the required train configuration stated in the LCO Specification 3.8.2.2. The existing Specification is ambiguous since it implies that as long as the emergency diesel generators are not used as sources of power that the requirement is met when there may be many undesirable ways to energize the subject busses. Occasions did arise in which plant personnel used an interruptible and therefore not desirable source of power to energize vital bus number 3 at Unit 1. The change also deletes AC to clarify that both AC and DC busses are applicable to the subject Surveillance requirement in order to be consistent with the syntax associated with Change 3. Finally, the change replaces power availability with voltage indication as a more appropriate measurement of the operability status for the subject busses. This change is consistent with the existing Surveillance Requirements 4.8.2.1 for AC Distribution-Operating. Therefore, this change is acceptable.

Change 6: Specification 3.8.2.4 has been revised from a description of 2- 125 V DC bus systems and 2- 125 V battery bank and chargers associated with the above DC bus systems as the minimum collection of equipment to be operable and energized to the following text:

As a minimum, one of the following trains of DC electrical equipment and busses shall be OPERABLE and energized in the specified manner:

- a. Train "A" (orange) consisting of the following:
 1. 125-volt DC Busses No. 1-1 & 1-3, and
 2. 125-volt DC Battery Banks 1-1 & 1-3 and Chargers 1-1 & 1-3 (Unit 2 specification adds *).

- b. Train "B" (purple) consisting of the following:
 1. 125-volt DC Busses No. 1-2 & 1-4, and
 2. 125-volt DC Battery Banks 1-2 & 1-4 and Chargers 1-2 & 1-4 (Unit 2 specification adds *).

The above change rewrites the existing TS to designate the specific busses and equipment to require, as a minimum, one complete train (A or B) of the DC power sources to be operable. The existing Specification allows the minimum configuration required to be operable for DC power sources to be selected from different trains of equipment. This change is more conservative than the existing Specification because it reduces through the protected train concept the probability and consequences of accidents in Modes 5 and 6. The protected train concept permits administrative controls to be implemented easier since all of the components associated with the protected can be controlled as a single unit for outage work scheduling purposes. The statement of the number and type of components described by the change meets the intent of the existing Specification. Further, this change is consistent with the existing Specification 3.8.2.3, DC Distribution-Operating. Therefore, we find the subject change is acceptable.

Change 7: The action requirement in Action Statement 3.8.2.4 to establish CONTAINMENT INTEGRITY within 8 hours with less than the above complement of DC equipment and busses has been replaced with the following text:

With the above required train of DC electrical equipment and busses not fully OPERABLE, immediately suspend all operations involving CORE ALTERATIONS, positive reactivity changes, movement of irradiated fuel, and movement of loads over irradiated fuel. Initiate corrective action to restore the required train of DC electrical equipment and busses to OPERABLE status as soon as possible.

The above change deletes the requirement to establish Containment Integrity if less than the specified minimum DC equipment is operable and replaces it with the statements to suspend immediately safety significant work activities (e.g., positive reactivity changes) and to initiate corrective action to restore the minimum required equipment. This change is consistent with the Westinghouse STS and existing TS 3.8.1.2, LCO for Electrical Power Systems-Shutdown. Therefore, the subject change is acceptable.

The proposed change also adds for Unit 2 only, a footnote denoted by * to indicate that Spare Charger 2-7 may be substituted for any single charger or rectifier. The licensee asserts that the Unit 2 spare mobile battery charger 2-7 and its associated connecting receptacles are qualified for Class 1E use in the event of a Class 1E battery charger failure. The existing LCO 3.8.2.3.b DC Distribution-Operating allows the use of this spare charger if one of the chargers or rectifiers is inoperable. The staff finds the use of the spare charger as a substitute charger during refueling and shutdown conditions is an appropriate and prudent application. Therefore, the change is acceptable.

Change 8: The proposed change replaces "system" with "train" in Specification 4.8.2.4.1.

The above change is editorial in nature to change the text to be consistent with the syntax associated with Change 7. Therefore, the staff finds the change acceptable.

Change 9: The following paragraph was added to page B 3/4 8-1:

The ACTION requirements specified in Modes 5 and 6 address the condition where sufficient power is unavailable to recover from postulated events (i.e., fuel handling accident). Implementation of the ACTION requirements shall not preclude completion of actions to establish a safe conservative plant condition. Completion of the requirements will prevent the occurrence of postulated events for which mitigating actions would be required.

The proposed change also adds the following text ", and 3) sufficient power is available for systems (i.e., Supplemental Leak Collection and Release System) necessary to recover from postulated events in these MODES, e.g., a fuel handling accident" to the end of the existing paragraph which discusses the operability of AC and DC power sources during shutdown and refueling.

The above change reflects in the BASES Section of the TSs the requested changes to Specifications 3.8.2.1, 3.8.2.2 and 3.8.2.4. Specifically, the change states that the intent of Action requirements in Modes 5 and 6 for power availability and the operability requirements associated with the minimum AC and DC

equipment are required in order to mitigate postulated events (i.e., a fuel handling accident). The staff finds the explicit clarification of electrical power requirements during shutdown and refueling to be a necessary and an appropriate action. Therefore, this change is acceptable.

During the staff review of the subject changes, we noted that Beaver Valley Unit 1 Updated Safety Analyses Report (USAR) Figure 8.1-1 and Unit 2 USAR Figure 8.3-3 utilized different nomenclature for vital bus equipment and bus representations were incorrectly labelled respectively. The licensee committed during a telephone conference call on November 4, 1993, to examine and revise as necessary the subject drawings to be consistent with the TS nomenclature.

3.0 STATE CONSULTATION

In accordance with the Commission's regulations, the Pennsylvania State official was notified of the proposed issuance of the amendments. The State official had no comments.

4.0 ENVIRONMENTAL CONSIDERATION

The amendments change a requirement with respect to installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20 and changes surveillance requirements. The NRC staff has determined that the amendments involve no significant increase in the amounts, and no significant change in the types, of any effluents that may be released offsite, and that there is no significant increase in individual or cumulative occupational radiation exposure. The Commission has previously issued a proposed finding that the amendments involve no significant hazards consideration, and there has been no public comment on such finding (55 FR 38601). Accordingly, the amendments meet the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Pursuant to 10 CFR 51.22(b) no environmental impact statement or environmental assessment need be prepared in connection with the issuance of the amendments.

5.0 CONCLUSION

The Commission has concluded, based on the considerations discussed above, that: (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, (2) such activities will be conducted in compliance with the Commission's regulations, and (3) the issuance of the amendments will not be inimical to the common defense and security or to the health and safety of the public.

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