

Docket File



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

October 19, 1992

Docket Nos. 50-237, 50-249
and 50-254, 50-265

Mr. Thomas J. Kovach
Nuclear Licensing Manager
Commonwealth Edison Company-Suite 300
OPUS West III
1400 OPUS Place
Downers Grove, Illinois 60515

Dear Mr. Kovach:

SUBJECT: ISSUANCE OF AMENDMENTS (TAC NOS. M84021, M84022, M84023, AND M84024)

The Commission has issued the enclosed Amendment No. 119 to Facility Operating License No. DPR-19 for Dresden, Unit 2, Amendment No. 115 to Facility Operating License No. DPR-25 for Dresden, Unit 3, Amendment No. 138 to Facility Operating License No. DPR-29 for Quad Cities, Unit 1, and Amendment No. 134 to Facility Operating License No. DPR-30 for Quad Cities, Unit 2. The amendments are in response to your application dated June 29, 1992, as supplemented August 28, 1992.

The amendments consist of changes to the Dresden and Quad Cities Technical Specifications (TS) that will: (1) revise the diesel generator operability requirements; (2) revise the 125 volt DC battery availability and testing requirements; (3) eliminate some redundant emergency core cooling testing requirements for Quad Cities; (4) delete an electrical power availability requirement for Dresden; (5) modify the electrical feedback requirements for Quad Cities; and (6) incorporate various administrative changes primarily associated with the above changes.

During the review of this submittal, an inconsistency was noted between the Dresden and Quad Cities TS with regard to operating philosophy in the event both offsite power sources are lost (Section 2.5 of the enclosed Safety Evaluation). It is our understanding that this difference will be resolved and justification will be provided prior to the submittal of upgraded TS Section 3.9/4.9 for both stations.

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Mr. Thomas J. Kovach

- 2 -

October 19, 1992

The Notice of Issuance will be included in the Commission's biweekly Federal Register notice.

Sincerely,

original signed by:

Byron L. Siegel, Project Manager
Project Directorate III-2
Division of Reactor Projects - III/IV/V
Office of Nuclear Reactor Regulation

Enclosures:

- 1. Amendment No. 119 to DPR-19
- 2. Amendment No. 115 to DPR-25
- 3. Amendment No. 138 to DPR-29
- 4. Amendment No. 134 to DPR-30
- 5. Safety Evaluation

cc w/enclosures:
See next page

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Commonwealth Edison Company

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

COMMONWEALTH EDISON COMPANY

DOCKET NO. 50-237

DRESDEN NUCLEAR POWER STATION, UNIT 2

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 119
License No. DPR-19

1. The Nuclear Regulatory Commission (the Commission) has found that:
 - A. The application for amendment by the Commonwealth Edison Company (the licensee) dated June 29, 1992, as supplemented August 28, 1992, 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.
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-19 is hereby amended to read as follows:

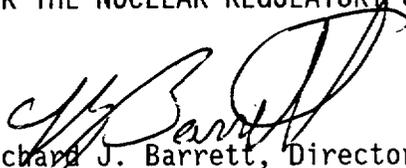
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(2) Technical Specifications

The Technical Specifications contained in Appendix A, as revised through Amendment No. 119, 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 to be implemented within 60 days.

FOR THE NUCLEAR REGULATORY COMMISSION



Richard J. Barrett, Director
Project Directorate III-2
Division of Reactor Projects - III/IV/V
Office of Nuclear Reactor Regulation

Attachment:
Changes to the Technical
Specifications

Date of Issuance: October 19, 1992

ATTACHMENT TO LICENSE AMENDMENT NO. 119

FACILITY OPERATING LICENSE NO. DPR-19

DOCKET NO. 50-237

Revise the Appendix A Technical Specifications by removing the pages identified below and inserting the attached pages. The revised pages are identified by the captioned amendment number and contain marginal lines indicating the area of change.

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3.9 LIMITING CONDITION FOR OPERATION

AUXILIARY ELECTRICAL SYSTEMS

Applicability:

Applies to the auxiliary electrical power system.

Objective:

To assure an adequate supply of electrical power during plant operation.

Specification:

- A. The reactor shall not be made critical unless all the following requirements are satisfied:
1. One 138 KV line, associated switchgear, and the reserve auxiliary power transformer capable of carrying power to Unit 2 shall be available.
 2. The Dresden 2 diesel generator and the Unit 2/3 diesel generator shall be operable.
 3. One 345 KV line from Unit 3 capable of carrying auxiliary power to an essential electrical bus of Unit 2 through the 4160 volt bus tie shall be available.

4.9 SURVEILLANCE REQUIREMENT

AUXILIARY ELECTRICAL SYSTEMS

Applicability:

Applies to the periodic testing requirements of the auxiliary electrical system.

Objective:

Verify the operability of the auxiliary electrical system.

Specification:

- A. Station Batteries
1. Every week the specific gravity, voltage and temperature of the pilot cell and overall battery voltage shall be measured.
 2. Every three months the measurements shall be made of voltage of each cell to nearest 0.01 volt, specific gravity of each cell, and temperature of every fifth cell.
 3. At least once each operating cycle, the unit's batteries shall be tested to verify that the battery capacity is adequate to supply and maintain operable the actual or simulated emergency loads for

3.9 LIMITING CONDITION FOR OPERATION
(Cont'd.)

4.9 SURVEILLANCE REQUIREMENT
(Cont'd.)

the design duty cycle when the battery is subjected to a battery service test. Specific gravity and voltage of each cell shall be determined after each service test.

4. At least once per 60 months, in lieu of the battery service test required by 4.9.A.3, the Unit's batteries shall be subjected to a performance discharge test to verify that the battery capacity is the greater of either 80% of the manufacturer's rating or the minimum acceptable battery capacity from the latest revision of the load profile when subjected to a performance discharge test.
5. For any battery that shows signs of degradation or has reached 85% of the service life for the expected application as determined under Section 4.9.A.4, a performance discharge test of battery capacity shall be performed at least once each operating cycle. Degradation is indicated when the battery capacity drops more than 10% of rated capacity from its average on previous performance tests, or is below 90% of the manufacturer's rating.
6. To assure operability prior to use, once the alternate 125 volt battery cell-to-cell connections are completed and the maintenance charger placed into service, each such battery shall adhere to the surveillances specified in 4.9.A.

3.9 LIMITING CONDITION FOR OPERATION
(Cont'd.)

4.9 SURVEILLANCE REQUIREMENT
(Cont'd.)

4. (a) 4160 volt buses
23-1 and 24-1 are energized.
 - (b) 480 volt buses
28 and 29 are energized.
 5. The unit 24/48 volt batteries, the two station 125 volt batteries and the two station 250 volt batteries and a battery charger for each required battery are operable.
- B. Except when the reactor is in the Cold Shutdown or Refueling modes the availability of electric power shall be as specified in 3.9.A, except as specified in 3.9.B.1, 3.9.B.2, and 3.9.B.3.
1. From and after the date that incoming power is available from only one of the lines specified in 3.9.A reactor operation is

B. N/A

3.9 LIMITING CONDITION FOR OPERATION
(Cont'd.)

4.9 SURVEILLANCE REQUIREMENT
(Cont'd.)

permissible only during the succeeding seven days unless the second line is sooner placed in service providing both the Unit 2 and Unit 2/3 emergency diesel generators are demonstrated operable per Specification 4.9.D.1.a. From and after the date that incoming power is not available from any line, reactor operation is permissible providing both the Unit 2 and Unit 2/3 emergency diesel generators are demonstrated operable per Specification 4.9.D.1.a and all core and containment cooling systems are operable and the NRC is notified within 24 hours of the situation, the precautions to be taken during this situation, and the plans for prompt restoration of incoming power.

2. a. From and after the date that one of the diesel generators and/or its associated bus is inoperable, reactor operation is permissible according to Specification 3.9.B.2.c and 3.9.D only during the succeeding seven days unless the diesel generator and/or bus is sooner made operable, provided that during such seven days two offsite lines as specified in 3.9.A are available. If the diesel became inoperable for any cause

3.9 LIMITING CONDITION FOR OPERATION
(Cont'd.)

other than pre-planned
preventative mainten-
ance or testing, the
operable diesel gen-
erator shall be demon-
strated operable per
Specification 4.9.D.1.a
immediately and daily
thereafter.

4.9 SURVEILLANCE REQUIREMENT
(Cont'd.)

3.9 LIMITING CONDITION FOR OPERATION
(Cont'd.)

- b. Deleted.
- c. During any period when the unit or shared diesel generator is inoperable, continued reactor operation is permissible only during the succeeding seven days provided that all of the low pressure core cooling and containment cooling subsystems shall be operable. If this requirement cannot be met, an

4.9 SURVEILLANCE REQUIREMENT
(Cont'd.)

3.9 LIMITING CONDITION FOR OPERATION
(Cont'd.)

orderly shutdown
shall be initiated
and the reactor
shall be in the Cold
Shutdown Condition
within 24 hours.

3. From and after the date that one of the two 125 or 250V battery systems is made or found to be inoperable, except as specified in 3.9.B.4, Unit shutdown shall be initiated within 2 hours and the unit shall be in cold shutdown in 24 hours unless the failed battery can be sooner made operable.
4. a. Each 250 volt battery may be inoperable for a maximum of 7 days per operating cycle for maintenance and testing.
- b. If it is determined that a 250 volt battery need be replaced as a result of maintenance or testing, a specific battery may be inoperable for an additional 7 days per operating cycle.
- c. With both units operating, each 125 volt battery may be inoperable for up to a maximum of seven days per operating cycle for maintenance or testing, provided the alternate 125 volt battery is placed into service and is operable per specification 4.9.A.6
- d. With the other unit in cold shutdown or refueling, operations may continue with one

4.9 SURVEILLANCE REQUIREMENT
(Cont'd.)

3.9 LIMITING CONDITION FOR OPERATION
(Cont'd.)

of the two 125 volt battery systems inoperable provided the alternate 125 volt battery is placed into service and is operable per specification 4.9.A.6.

- e. If it is determined that a 125 volt battery need be replaced as a result of maintenance or testing, a specific battery may be inoperable for an additional seven days provided the alternate 125 volt battery is placed into service and is operable per specification 4.9.A.6.

C. Diesel Fuel

There shall be a minimum of 10,000 gallons of diesel fuel supply on site for each diesel.

D. Diesel Generator Operability

Whenever the reactor is in the Cold Shutdown or

4.9 SURVEILLANCE REQUIREMENT
(Cont'd.)

C. Diesel Fuel

Once a month the quantity of diesel fuel available shall be logged.

Once a month a sample of diesel fuel shall be checked for quality.

D. Diesel Generator Operability

- 1. Once per month:

- a. Each diesel generator shall be started and verified to deliver rated voltage and frequency.
- b. Each diesel generator shall be synchronized, fully loaded and run for at least one hour.

3.9 LIMITING CONDITION FOR OPERATION
(Cont'd.)

Refueling modes, a minimum of one diesel generator (either the Dresden 2 diesel generator or the Unit 2/3 diesel generator) shall be operable whenever any work is being done which has the potential for draining the vessel, secondary containment is required, or a core or containment cooling system is required.

4.9 SURVEILLANCE REQUIREMENT
(Cont'd.)

2. During the monthly generator test, the diesel starting air compressor shall be checked for operation and its ability to recharge air receivers.
3. During the monthly generator test, the diesel fuel oil transfer pumps shall be operated.
4. Additionally, during each refueling outage, a simulated loss of offsite power in conjunction with an ECCS initiation signal test shall be performed on the 4160 volt emergency bus by:
 - (a) Verifying de-energization of the emergency buses and load shedding from the emergency buses.

3.9 LIMITING CONDITION FOR OPERATION BASES

- A. The general objective of this Specification is to assure an adequate source of electrical power to operate the auxiliaries during plant operation, to operate facilities to cool and lubricate the plant during shutdown, and to operate the engineered safeguards following an accident. There are three sources of electrical energy available; namely, the 138 KV transmission system, the diesel generators, and the 345 KV transmission system through the 4160 volt bus tie.

The d-c supply is required for control and motive power for switchgear and engineered safety features. The electrical power required provides for the maximum availability of power; i.e., one active offsite source and a back-up source of off-site power and the maximum amount of onsite sources.

An alternate 125 volt DC battery has been installed for each unit with the primary purpose of supporting the performance of the rated discharge test on the permanent 125 volt battery. The alternate battery is utilized to avoid a reduction in the single failure capability of the 125-volt system during the performance of the discharge test on the permanent battery.

- B. Auxiliary power for Unit 2 is supplied from two sources, either the Unit 2 auxiliary transformer or the Unit 2 reserve auxiliary transformer. Both of these transformers are sized to carry 100% of the auxiliary load. If the reserve auxiliary transformer is lost, the unit can continue to run for 7 days since the unit auxiliary transformer is available and both diesel generators are operational. A reduced period is provided since if an accident occurs during this period, the unit would trip and power to the unit auxiliary transformer would be lost and the diesels would be the only source of power. In such cases, diesel generator operability demonstrations will be limited to an unloaded start test.

In the normal mode of operation the 138 KV system is operating and two diesel generators are operational. One diesel generator may be allowed out of service based on the availability of power to the 138 KV switchyard, a source of power available from the 345 KV system through a 4160 volt bus tie and the fact that one diesel carries sufficient engineered safeguards equipment to cover all breaks. Offsite power is quite reliable. In the last 25 years there has only been one instance in which all offsite power was lost at a Commonwealth Edison generating station.

3.9 LIMITING CONDITION FOR OPERATION BASES (Cont'd.)

For low-pressure ECCS, the verification of operability, as used in this context, means to administratively check by examining logs or other information to determine if certain components/systems are out-of-service for maintenance or other reasons. It does not mean to perform the surveillance requirements needed to demonstrate the operability of the component/system. For the remaining diesel generator, an operability demonstration to identify any potential common causes for failure will be performed. In such cases, the demonstration will be limited to an unloaded start test.

Two battery chargers are supplied for each of the 125 volt batteries, while for the 250 volt system a battery charger is supplied for each battery and a third battery charger acts as a shared unit. Thus, on loss of a battery charger, another battery charger is available. Since an alternate charger is available, one battery charger per unit for the 125 volt and one battery charger overall for the 250 volt battery system can be out of service for thirty days. The system becomes inoperable whenever there is a loss of the battery or loss of both chargers for that system and a battery voltage of 105 volts for the 125 or 210 volts for the 250 volt batteries.

3.9 LIMITING CONDITION FOR OPERATION BASES (Cont'd.)

- C. The diesel fuel supply of 10,000 gallons will supply each diesel generator with a minimum of two days of full load operation or about four days at 1/2 load. Additional diesel fuel can be obtained and delivered to the site within an 8-hour period; thus a 2-day supply provides for adequate margin.

4.9 SURVEILLANCE REQUIREMENT BASES

- A. Although station batteries will deteriorate with time, utility experience indicates there is almost no possibility of precipitous failure. The type of surveillance described in this specification is that which has been demonstrated over the years to provide an indication of a cell becoming irregular or unserviceable long before it becomes a failure.

In addition, the checks described also provide adequate indication that the batteries have the specified ampere hour capability.

- B. The diesel fuel oil quality must be checked to ensure proper operation of the diesel generators. Water content should be minimized because water in the fuel would contribute to excessive corrosion of the system causing decreased reliability. The growth of micro-organisms results in slime formations which are one of the chief causes of jelling in hydro-carbon fuels. Minimizing of such slimes is also essential to assuring high reliability.
- C. The monthly test of the diesel generator is conducted to check for equipment failures and deterioration. Testing is conducted up to equilibrium operating conditions to demonstrate proper operation at these conditions. The diesel will be manually started, synchronized to the bus and load picked up. Diesel generator experience at other Commonwealth Edison generating stations indicates that the testing frequency is adequate and provides a high reliability of operation should the system be required. In addition, during the test when the generator is synchronized to the bus, it is also synchronized to the offsite power source and thus not completely independent of this source. To maintain the maximum amount of independence, a thirty-day testing interval is also desirable.



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

COMMONWEALTH EDISON COMPANY
DOCKET NO. 50-249
DRESDEN NUCLEAR POWER STATION, UNIT 3
AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 115
License No. DPR-25

1. The Nuclear Regulatory Commission (the Commission) has found that:
 - A. The application for amendment by the Commonwealth Edison Company (the licensee) dated June 29, 1992, as supplemented August 28, 1992, 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.
2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment and paragraph 3.B. of Facility Operating License No. DPR-25 is hereby amended to read as follows:

B. Technical Specifications

The Technical Specifications contained in Appendix A, as revised through Amendment No. 115, 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 to be implemented within 60 days.

FOR THE NUCLEAR REGULATORY COMMISSION



Richard J. Barrett, Director
Project Directorate III-2
Division of Reactor Projects - III/IV/V
Office of Nuclear Reactor Regulation

Attachment:
Changes to the Technical
Specifications

Date of Issuance: October 19, 1992

ATTACHMENT TO LICENSE AMENDMENT NO. 115

FACILITY OPERATING LICENSE NO. DPR-25

DOCKET NO. 50-249

Revise the Appendix A Technical Specifications by removing the pages identified below and inserting the attached pages. The revised pages are identified by the captioned amendment number and contain marginal lines indicating the area of change.

<u>REMOVE</u>	<u>INSERT</u>
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vi	vi
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--	3/4.9-1a
3/4.9-2	3/4.9-2
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3.9 LIMITING CONDITION FOR OPERATION

AUXILIARY ELECTRICAL SYSTEMS

Applicability:

Applies to the auxiliary electrical power system.

Objective:

To assure an adequate supply of electrical power during plant operation.

Specification:

- A. The reactor shall not be made critical unless all the following requirements are satisfied:
1. One 345 KV line, associated switchgear, and the reserve auxiliary power transformer capable of carrying power to Unit 3 shall be available.
 2. The Dresden 3 diesel generator and the Unit 2/3 diesel generator shall be operable.
 3. One 138 KV line from Unit 2 capable of carrying auxiliary power to an essential electrical bus of Unit 3 through the 4160 volt bus tie shall be available.

4.9 SURVEILLANCE REQUIREMENT

AUXILIARY ELECTRICAL SYSTEMS

Applicability:

Applies to the periodic testing requirements of the auxiliary electrical system.

Objective:

Verify the operability of the auxiliary electrical system.

Specification:

- A. Station Batteries
1. Every week the specific gravity, voltage and temperature of the pilot cell and overall battery voltage shall be measured.
 2. Every three months the measurements shall be made of voltage of each cell to nearest 0.01 volt, specific gravity of each cell, and temperature of every fifth cell.
 3. At least once each operating cycle, the unit's batteries shall be tested to verify that the battery capacity is adequate to supply and maintain operable the actual or simulated emergency loads for

3.9 LIMITING CONDITION FOR OPERATION
(Cont'd.)

4.9 SURVEILLANCE REQUIREMENT
(Cont'd.)

the design duty cycle when the battery is subjected to a battery service test. Specific gravity and voltage of each cell shall be determined after each service test.

4. At least once per 60 months, in lieu of the battery service test required by 4.9.A.3, the Unit's batteries shall be subjected to a performance discharge test to verify that the battery capacity is the greater of either 80% of the manufacturer's rating or the minimum acceptable battery capacity from the latest revision of the load profile when subjected to a performance discharge test.
5. For any battery that shows signs of degradation or has reached 85% of the service life for the expected application as determined under Section 4.9.A.4, a performance discharge test of battery capacity shall be performed at least once each operating cycle. Degradation is indicated when the battery capacity drops more than 10% of rated capacity from its average on previous performance tests, or is below 90% of the manufacturer's rating.
6. To assure operability prior to use, once the alternate 125 volt battery cell-to-cell connections are completed and the maintenance charger placed into service, each such battery shall adhere to the surveillances specified in 4.9.A.

3.9 LIMITING CONDITION FOR OPERATION
(Cont'd.)

4. (a) 4160 volt buses
33-1 and 34-1 are
energized.
- (b) 480 volt buses
38 and 39 are
energized.
5. The unit 24/48 volt
batteries, the two
station 125 volt
batteries and the two
station 250 volt
batteries and a battery
charger for each
required battery are
operable.

B. Except when the reactor
is in the Cold Shutdown or
Refueling modes, the avail-
ability of electric power
shall be as specified in
3.9.A, except as specified
in 3.9.B.1, 3.9.B.2, and
3.9.B.3.

1. From and after the date
that incoming power is
available from only one
of the lines specified
in 3.9.A., reactor
operation is

4.9 SURVEILLANCE REQUIREMENT
(Cont'd.)

B. N/A

3.9 LIMITING CONDITION FOR OPERATION
(Cont'd.)

4.9 SURVEILLANCE REQUIREMENT
(Cont'd.)

permissible only during the succeeding seven days unless the second line is sooner placed in service providing both the Unit 3 and Unit 2/3 emergency diesel generators are demonstrated operable per Specification 4.9.D.1.a. From and after the date that incoming power is not available from any line, reactor operation is permissible providing both the Unit 3 and Unit 2/3 emergency diesel generators are demonstrated operable per Specification 4.9.D.1.a and all core and containment cooling systems are operable and the NRC is notified within 24 hours of the situation, the precautions to be taken during this situation, and the plans for prompt restoration of incoming power.

2. a. From and after the date that one of the diesel generators and/or its associated bus is inoperable, reactor operation is permissible according to Specification 3.9.B.2.c and 3.9.D only during the succeeding seven days unless the diesel generator and/or bus is sooner made operable, provided that during such seven days two offsite lines as specified in 3.9.A are available. If the diesel became inoperable for any cause

3.9 LIMITING CONDITION FOR OPERATION
(Cont'd.)

other than pre-planned preventative maintenance or testing, the operable diesel generator shall be demonstrated operable per Specification 4.9.D.1.a immediately and daily thereafter.

4.9 SURVEILLANCE REQUIREMENT
(Cont'd.)

3.9 LIMITING CONDITION FOR OPERATION
(Cont'd.)

- b. Deleted.
- c. During any period when the unit or shared diesel generator is inoperable, continued reactor operation is permissible only during the succeeding seven days provided that all of the low pressure core cooling and containment cooling subsystems shall be operable. If this requirement cannot be met, an orderly shutdown shall be initiated and the reactor shall be in the Cold Shutdown Condition within 24 hours.
- 3. From and after the date that one of the two 125

4.9 SURVEILLANCE REQUIREMENT
(Cont'd.)

3.9 LIMITING CONDITION FOR OPERATION
(Cont'd.)

or 250V battery systems is made or found to be inoperable, except as specified in 3.9.B.4, Unit shutdown shall be initiated within 2 hours and the unit shall be in cold shutdown in 24 hours unless the failed battery can be sooner made operable.

4. a. Each 250 volt battery may be inoperable for a maximum of 7 days per operating cycle for maintenance and testing.
- b. If it is determined that a 250 volt battery need be replaced as a result of maintenance or testing, a specific battery may be inoperable for an additional 7 days per operating cycle.
- c. With both units operating, each 125 volt battery may be inoperable for up to a maximum of seven days per operating cycle for maintenance or testing, provided the alternate 125 volt battery is placed into service and is operable per specification 4.9.A.6.
- d. With the other unit in cold shutdown or refueling, operations may continue with one of the two 125 volt battery systems inoperable provided the alternate 125 volt battery is placed into service and is operable per specification 4.9.A.6.

4.9 SURVEILLANCE REQUIREMENT
(Cont'd.)

3.9 LIMITING CONDITION FOR OPERATION
(Cont'd.)

4.9 SURVEILLANCE REQUIREMENT
(Cont'd.)

- e. If it is determined that a 125 volt battery need be replaced as a result of maintenance or testing, a specific battery may be inoperable for an additional seven days provided the alternate 125 bolt battery is placed into service and is operable per specification 4.9.A.6.

C. Diesel Fuel

There shall be a minimum of 10,000 gallons of diesel fuel supply on site for each diesel.

D. Diesel Generator Operability

Whenever the reactor is in the Cold Shutdown or Refueling modes, a minimum of one diesel generator (either the Dresden 3 diesel generator or the Unit 2/3 diesel generator) shall be

C. Diesel Fuel

Once a month the quantity of diesel fuel available shall be logged.

Once a month a sample of diesel fuel shall be checked for quality.

D. Diesel Generator Operability

1. Once per month:

- a. Each diesel generator shall be started and verified to deliver rated voltage and frequency.
- b. Each diesel generator shall be synchronized, fully loaded and run for at least one hour.

3.9 LIMITING CONDITION FOR OPERATION
(Cont'd.)

operable whenever any work is being done which has the potential for draining the vessel, secondary containment is required, or a core or containment cooling system is required.

4.9 SURVEILLANCE REQUIREMENT
(Cont'd.)

2. During the monthly generator test, the diesel starting air compressor shall be checked for operation and its ability to recharge air receivers.
3. During the monthly generator test, the diesel fuel oil transfer pumps shall be operated.
4. Additionally, during each refueling outage, a simulated loss of off-site power in conjunction with an ECCS initiation signal test shall be performed on the 4160 volt emergency bus by:
 - (a) Verifying de-energization of the emergency buses and load shedding from the emergency buses.

3.9

LIMITING CONDITION FOR OPERATION BASES

- A. The general objective of this Specification is to assure an adequate source of electrical power to operate the auxiliaries during plant operation, to operate facilities to cool and lubricate the plant during shutdown, and to operate the engineered safeguards following an accident. There are three sources of electrical energy available; namely, the 345 KV transmission system, the diesel generators, and the 138 KV transmission system through the 4160 volt bus tie.

The d-c supply is required for control and motive power for switchgear and engineered safety features. The electrical power required provides for the maximum availability of power; i.e., one active off-site source and a back-up source of off-site power and the maximum amount of on-site sources.

An alternate 125 volt DC battery has been installed for each unit with the primary purpose of supporting the performance of the rated discharge test on the permanent 125 volt battery. The alternate battery is utilized to avoid a reduction in the single failure capability of the 125-volt system during the performance of the discharge test on the permanent battery.

- B. Auxiliary power for Unit 3 is supplied from two sources, either the Unit 3 auxiliary transformer or the Unit 3 reserve auxiliary transformer. Both of these transformers are sized to carry 100% of the auxiliary load. If the reserve auxiliary transformer is lost, the unit can continue to run for 7 days since the unit auxiliary transformer is available and both diesel generators are operational. A reduced period is provided since if an accident occurs during this period, the unit would trip and power to the unit auxiliary transformer would be lost and the diesels would be the only source of power. In such cases, diesel generator operability demonstrations will be limited to an unloaded start test.

In the normal mode of operation the 345 KV system is operating and two diesel generators are operational. One diesel generator may be allowed out of service based on the availability of power to the 345 KV switchyard, a source of power available from the 138 KV system through a 4160 volt bus tie and the fact that one diesel carries sufficient engineered safeguards equipment to cover all breaks. Off-site power is quite reliable. In the last 25 years there has only been one instance in which all off-site power was lost at a Commonwealth Edison generating station.

3.9

LIMITING CONDITION FOR OPERATION BASES (Cont'd)

For low-pressure ECCS, the verification of operability, as used in this context, means to administratively check by examining logs or other information to determine if certain components/systems are out-of-service for maintenance or other reasons. It does not mean to perform the surveillance requirements needed to demonstrate the operability of the component/system. For the remaining diesel generator, an operability demonstration to identify any potential common causes for failure will be performed. In such cases, the demonstration will be limited to an unloaded start test.

Two battery chargers are supplied for each of the 125 volt batteries, while for the 250 volt system a battery charger is supplied for each battery and a third battery charger acts as a shared unit. Thus, on loss of a battery charger, another battery charger is available. Since an alternate charger is available, one battery charger per unit for the 125 volt and one battery charger overall for the 250 volt battery system can be out of service for thirty days. The system becomes inoperable whenever there is a loss of the battery or loss of both chargers for that system and a battery voltage of 105 volts for the 125 or 210 volts for the 250 volt batteries.

3.9 LIMITING CONDITION FOR OPERATION BASES (Cont'd.)

- C. The diesel fuel supply of 10,000 gallons will supply each diesel generator with a minimum of two days of full load operation or about four days at 1/2 load. Additional diesel fuel can be obtained and delivered to the site within an 8-hour period; thus a 2-day supply provides for adequate margin.

4.9 SURVEILLANCE REQUIREMENT BASES

- A. Although station batteries will deteriorate with time, utility experience indicates there is almost no possibility of precipitous failure. The type of surveillance described in this specification is that which has been demonstrated over the years to provide an indication of a cell becoming irregular or unserviceable long before it becomes a failure.

In addition, the checks described also provide adequate indication that the batteries have the specified ampere hour capability.

- B. The diesel fuel oil quality must be checked to ensure proper operation of the diesel generators. Water content should be minimized because water in the fuel would contribute to excessive corrosion of the system causing decreased reliability. The growth of micro-organisms results in slime formations which are one of the chief causes of jelling in hydro-carbon fuels. Minimizing of such slimes is also essential to assuring high reliability.
- C. The monthly test of the diesel generator is conducted to check for equipment failures and deterioration. Testing is conducted up to equilibrium operating conditions to demonstrate proper operation at these conditions. The diesel will be manually started, synchronized to the bus and load picked up. Diesel generator experience at other Commonwealth Edison generating stations indicates that the testing frequency is adequate and provides a high reliability of operation should the system be required. In addition, during the test when the generator is synchronized to the bus, it is also synchronized to the off-site power source and thus not completely independent of this source. To maintain the maximum amount of independence, a thirty-day testing interval is also desirable.



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

COMMONWEALTH EDISON COMPANY

DOCKET NO. 50-254

QUAD CITIES NUCLEAR POWER STATION, UNIT 1

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 138
License No. DPR-29

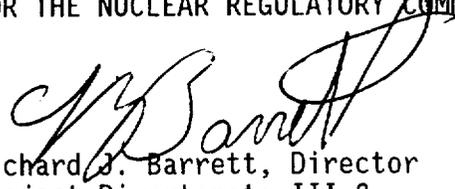
1. The Nuclear Regulatory Commission (the Commission) has found that:
 - A. The application for amendment by the Commonwealth Edison Company (the licensee) dated June 29, 1992, as supplemented August 28, 1992, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the 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.
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-29 is hereby amended to read as follows:

(2) Technical Specifications

The Technical Specifications contained in Appendix A, as revised through Amendment No. 138, 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 to be implemented within 60 days.

FOR THE NUCLEAR REGULATORY COMMISSION



Richard J. Barrett, Director
Project Directorate III-2
Division of Reactor Projects - III/IV/V
Office of Nuclear Reactor Regulation

Attachment:
Changes to the Technical
Specifications

Date of Issuance: October 19, 1992

ATTACHMENT TO LICENSE AMENDMENT NO. 138

FACILITY OPERATING LICENSE NO. DPR-29

DOCKET NO. 50-254

Revise the Appendix A Technical Specifications by removing the pages identified below and inserting the attached pages. The revised pages are identified by the captioned amendment number and contain marginal lines indicating the area of change.

<u>REMOVE</u>	<u>INSERT</u>
iii	iii
3.9/4.9-1	3.9/4.9-1
3.9/4.9-2	3.9/4.9-2
3.9/4.9-3	3.9/4.9-3
--	3.9/4.9-3a
3.9/4.9-4	3.9/4.9-4
3.9/4.9-5	3.9/4.9-5
3.9/4.9-6	3.9/4.9-6
3.9/4.9-9	3.9/4.9-9
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3.9/4.9-11	3.9/4.9-11

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3.9/4.9 AUXILIARY ELECTRICAL SYSTEMS

LIMITING CONDITIONS FOR OPERATION

Applicability:

Applies to the auxiliary electrical power system.

Objective:

To assure an adequate supply of electrical power during plant operation.

SURVEILLANCE REQUIREMENTS

Applicability:

Applies to the periodic testing requirement of the auxiliary electrical system.

Objective:

To verify the operability of the auxiliary electrical system

SPECIFICATIONS

A. Normal and Emergency A-C Auxiliary Power

The reactor shall not be made critical unless all the following requirements are satisfied.

1. The Unit diesel generator and the Unit 1/2 diesel generator shall be operable.

A. Normal and Emergency A-C Auxiliary Power

1. a. Once per month:

- (1) Each diesel generator shall be started and verified to deliver rated voltage and frequency.

- (2) Each diesel generator shall be synchronized, fully loaded and run for at least one hour.

- b. During the monthly generator test, the diesel-starting air compressor shall be checked for operation and its ability to recharge air receivers.

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- c. During the monthly generator test, the diesel fuel oil transfer pumps shall be operated.
- 2. One 345-kV line, associated switchgear, and the reserve auxiliary power transformer capable of carrying power to the unit shall be available.
- 3. One other 345-kV line capable of carrying auxiliary power to an essential electrical bus of the unit through the 4160-volt bus tie shall be available.
- 4.
 - a. The Unit engineered safety features 4160-volt buses (13-1 and 14-1, Unit 1; 23-1 and 24-1, Unit 2) are energized.
 - b. The Unit engineered safety features 480-volt buses (18 and 19, Unit 1; 28 and 29, Unit 2) are energized.
- 2. The status of the 345-kV lines, associated switchgear, and the reserve auxiliary power transformer shall be checked daily.
- 3. The status of the additional source of power via the 4160-volt bus tie shall be checked daily.
- 4. The Unit engineered safety features 4160-volt and 480-volt buses shall be checked daily.

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B. Station Batteries

The unit 24/48-volt batteries, two station 125-volt batteries, the two station 250-volt batteries, and a battery charger for each required battery shall be operable before the reactor can be made critical.

B. Station Batteries

1. Every week the specific gravity and voltage of the pilot cell, the temperature of adjacent cell, and overall battery voltage shall be measured.
2. Every 3 months the measurement shall be made of the voltage of each cell to the nearest 0.01 volt, the specific gravity of each cell, and the temperature of every fifth cell.
3. At least once each operating cycle, the unit's batteries shall be tested to verify that the battery capacity is adequate to supply and maintain operable the actual or simulated emergency loads for the design duty cycle when the battery is subjected to a battery service test. Specific gravity and voltage of each cell shall be determined after each service test.
4. At least once per 60 months, in lieu of the battery service test required by 4.9.B.3, the Unit's batteries shall be subjected to a performance discharge test to verify that the battery capacity is the greater of either 80% of the manufacturer's rating or the minimum acceptable battery capacity from the latest revision of the load profile when subjected to a performance discharge test.
5. For any battery that shows signs of degradation or has reached 85% of the service life for the expected application as determined under Section 4.9.B.4, a performance discharge test of battery capacity shall be performed at least once each operating cycle. Degradation is indicated when the battery capacity drops more than 10% of rated capacity.

from its average on previous performance tests, or is below 90% of the manufacturer's rating.

6. To assure operability prior to use, once the alternate 125 volt battery cell-to-cell connections are completed and the maintenance charger placed into service, each such battery shall adhere to the surveillances specified in 4.9.B.

C. Electric Power Availability

Whenever the reactor is in the Run mode or for startup from a hot shutdown condition, the availability of electric power shall be as specified in Specifications 3.9.A and 3.9.B except as stated in Specifications 3.9.C.1, 3.9.C.2, 3.9.C.3, and 3.9.E.

C. Electric Power Availability

The availability status of electric power shall be checked daily.

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1. From and after the date that incoming power is available from only one of the lines specified in 3.9.A, continued reactor operation is permissible only during the succeeding 7 days, unless the second line is sooner made available, providing both the Unit and Unit 1/2 emergency diesel generators are demonstrated operable per Specification 4.9.A.1.a(1).
2. From and after the date the incoming power is not available from any line, continued reactor operation is permissible providing both the Unit and Unit 1/2 emergency diesel generators are demonstrated operable per Specification 4.9.A.1.a(1), all core and containment cooling systems are operable, reactor power level is reduced to 40% of rated, and the NRC is notified within 24 hours of the situation, the precautions to be taken during this period, and the plans for prompt restoration of incoming power.
3. From and after the date that one of the two 125/250-volt battery systems is made or found to be inoperable for any reason, continued reactor operation is permissible only during the succeeding 3 days unless such battery system is sooner made operable.
 - a. With both units operating, each 125 volt battery may be inoperable for up to a maximum of seven days per operating cycle for maintenance or testing, provided the alternate 125 volt battery is placed into service and is operable per specification 4.9.B.6.
 - b. With the other unit in cold shutdown or refueling,

operations may continue with one of the two 125 volt battery systems inoperable provided the alternate 125 volt battery is placed into service and is operable per specification 4.9.B.6.

- c. If it is determined that a 125 volt battery need be replaced as a result of maintenance or testing, a specific battery may be inoperable for an additional seven days provided the alternate 125 volt battery is placed into service and is operable per specification 4.9.B.6.

D. Diesel Fuel

There shall be a minimum of 10,000 gallons of diesel fuel supply on site for each diesel generator.

E. Diesel-Generator Operability

- 1. Whenever the reactor is in the Startup/Hot Standby or Run mode and the unit or shared diesel generators and/or their respective associated buses are inoperable, continued reactor operation is permissible only during the succeeding 7 days provided that all of the low-pressure core cooling and all loops of the containment cooling mode of the RHR system associated with the operable diesel generator shall be operable and two offsite lines as specified in 3.9.A are available. If the diesel generator became inoperable due to any cause other than pre-planned preventive maintenance or testing,

D. Diesel Fuel

Once a month the quantity of diesel fuel available shall be logged.

Once a month a sample of diesel fuel shall be checked for quality.

E. Diesel-Generator Operability

- 1. Deleted.
- 2. During each refueling outage, a simulated loss of off-site power in conjunction with an ECCS initiation signal test shall be performed on the 4160 volt emergency bus by:

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demonstrate the operability of the remaining operable diesel generator by performing surveillance requirement 4.9.A.1.a(1) immediately and daily thereafter. If these requirements cannot be met, an orderly shutdown shall be initiated and the reactor shall be in the cold shutdown condition within 24 hours.

2. Deleted.

3. When the reactor is in the Cold Shutdown or Refueling mode, a minimum of one diesel generator (either the Unit diesel generator or the Unit 1/2 diesel generator) shall be operable whenever any work is being done which has the potential for draining the vessel, secondary containment is required, or a core or containment cooling system is required.

F. REACTOR PROTECTION BUS POWER MONITORING SYSTEM

1. Two RPS electric power monitoring channels for each inservice RPS MG set or inservice alternate power source shall be OPERABLE except when the reactor is in the SHUTDOWN mode.

a. Verifying de-energization of the emergency buses, and load shedding from the emergency buses.

b. Verifying the diesel starts from ambient condition on the auto-start signal, energizes the emergency buses with permanently connected loads, energizes the auto-connected emergency loads through the load sequencer, and operates for greater than 5 minutes while its generator is loaded with the emergency loads.

F. REACTOR PROTECTION BUS POWER MONITORING SYSTEM

1. The RPS Bus power monitoring system instrumentation shall be determined OPERABLE:

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3.9 LIMITING CONDITIONS FOR OPERATION BASES

- A. The general objective of this specification is to assure an adequate source of electrical power to operate the auxiliaries during plant operation, to operate facilities to cool and lubricate the plant during shutdown, and to operate the engineered safety features following an accident. There are two sources of electrical energy available, namely, the 345-kV transmission system and the diesel generators.
- B. The d-c supply is required for control and motive power for switchgear and engineered safety features. The electrical power required provides for the maximum availability of power, i.e., one active offsite source and one backup source of offsite power and the maximum numbers of onsite sources.

An alternate 125 volt DC battery has been installed for each unit with the primary purpose of supporting the performance of the rated discharge test on the permanent 125 volt battery. The alternate battery is utilized to avoid a reduction in the single failure capability of the 125-volt system during the performance of the discharge test on the permanent battery.

- C. Auxiliary power for the Unit is supplied from two sources, either the Unit auxiliary transformer or the Unit reserve auxiliary transformer. Both of these transformers are sized to carry 100% of the auxiliary load. If the reserve auxiliary transformer is lost, the unit can continue to run for 7 days, since the Unit auxiliary transformer is available and both diesel generators are operational. A 7-day period is provided if one source of offsite power is lost. This period is based on having two diesels operable which are adequate to handle an accident assuming a single failure. In addition, auxiliary power from the other unit can be obtained through the 4160-volt bus tie. If both offsite lines are lost, power is reduced to 40% of rated so that the turbine bypass system could accept the steam flow without reactor trip should the generator be separated from the system or a turbine trip occur. In this condition, the turbine-generator is capable of supplying house load and ECCS load if necessary through the unit auxiliary transformer. If the unit were shut down on loss of both lines, fewer sources of power would be available than for sustained operation at 40% power. Attention will be given to restoring normal offsite power to minimize the length of time operation is allowed in a condition where both sources are available. In such cases, diesel generator operability demonstrations will be limited to an unloaded start test.

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In the normal mode of operation, the 345-kV system is operable and two diesel generators are operable. One diesel generator may be allowed out of service for a short period of time to conduct pre-planned preventative maintenance or testing provided that power is available from the 345-kV system through a 4160-volt bus tie to supply the emergency buses, and the alternate diesel generator is operable. Offsite power is quite reliable, and in the last 25 years there has been only one instance in which all offsite power was lost at a Commonwealth Edison Generating Station.

When the unit or shared diesel generator is made or found inoperable for reasons other than pre-planned preventative maintenance or testing, the remaining diesel generator and its associated low-pressure core cooling and containment cooling systems, which provide sufficient engineered safety features equipment to cover all breaks, will be operable.

For low-pressure ECCS, the verification of operability, as used in this context, means to administratively check by examining logs or other information to determine if certain components/systems are out-of-service for maintenance or other reasons. It does not mean to perform the surveillance requirements needed to demonstrate the operability of the component/system. For the remaining diesel generator, an operability demonstration to identify any potential common causes for failure will be performed. In such cases, the demonstration will be limited to an unloaded start test.

- D. The diesel fuel supply of 10,000 gallons will supply each diesel generator with a minimum of 2 days of full load operation or about 4 days at 1/2 load. Additional diesel fuel can be obtained and delivered to the site within an 8-hour period; thus a 2-day supply provides for adequate margin.
- E. Diesel generator operability is discussed in Paragraph 3.9.C above.
- F. Specifications are provided to ensure the operability of the RPS Bus electrical protection assemblies (EPA's). Each RPS MG set and the alternate power source has 2 EPA channels wired in series. A trip of either channel from either overvoltage, undervoltage, or underfrequency will trip the associated MG set or alternate power source.

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4.9 SURVEILLANCE REQUIREMENTS BASES

- A. The monthly test of the diesel generator is conducted to check for equipment failures and deterioration. Testing is conducted up to equilibrium operating conditions to demonstrate proper operation at these conditions. The diesel will be manually started, synchronized to the bus, and load picked up. Diesel-generator experience at other Commonwealth Edison generating stations indicates that the testing frequency is adequate and provides a high reliability of operation should the system be required. In addition, during the test, the generator is synchronized to the offsite power sources and thus not completely independent of this source. To maintain the maximum amount of independence, a 30-day testing interval is also desirable.

Each diesel generator has two air compressors and four air tanks. Two air tanks are piped together to form an air receiver. Each air compressor supplies an air receiver. This arrangement provides redundancy in starting capability. It is expected that the air compressors will run only infrequently.

During the monthly check of the diesel, the receivers will be drawn down below the point at which the compressor automatically starts to check operation and the ability of the compressors to recharge the receivers. Pressure indicators are provided on each of the receivers.

Following the monthly test of the diesels, the fuel oil day tank will be approximately half full based on the 2-hour test at full load and 205 gph at full load. At the end of the monthly load test of the diesel generators, the fuel oil transfer pumps will be operated to refill the day tank and to check the operation of these pumps from the emergency source.

The test of the emergency diesel generator during the refueling outage will be more comprehensive in that it will functionally test the system, i.e., it will check diesel starting, closure of diesel breaker, and sequencing of loads on the diesel. The diesel will be started by simulation of a loss-of-coolant accident. In addition, an undervoltage condition will be imposed to simulate a loss of the time required. The only load on the diesel is that due to friction and windage and a small amount of bypass flow on each pump.

Periodic tests between refueling outages verify the ability of the diesel to run at full load and the core and containment cooling pumps to deliver full flow. Periodic testing of the various components plus a functional test at the refueling interval are sufficient to maintain adequate reliability.

- B. Although station batteries will deteriorate with time, utility experience indicates there is almost no possibility of precipitous failure. The type of surveillance described in this specification is that which has been demonstrated over the years to provide an indication of a cell becoming irregular or unserviceable long before it becomes a failure.



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

COMMONWEALTH EDISON COMPANY

DOCKET NO. 50-265

QUAD CITIES NUCLEAR POWER STATION, UNIT 2

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 134
License No. DPR-30

1. The Nuclear Regulatory Commission (the Commission) has found that:
 - A. The application for amendment by the Commonwealth Edison Company (the licensee) dated June 29, 1992, as supplemented August 28, 1992, 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.
2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment and paragraph 3.B. of Facility Operating License No. DPR-30 is hereby amended to read as follows:

B. Technical Specifications

The Technical Specifications contained in Appendix A, as revised through Amendment No. 134, 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 to be implemented within 60 days.

FOR THE NUCLEAR REGULATORY COMMISSION



Richard J. Barrett, Director
Project Directorate III-2
Division of Reactor Projects - III/IV/V
Office of Nuclear Reactor Regulation

Attachment:
Changes to the Technical
Specifications

Date of Issuance: October 19, 1992

ATTACHMENT TO LICENSE AMENDMENT NO. 134

FACILITY OPERATING LICENSE NO. DPR-30

DOCKET NO. 50-265

Revise the Appendix A Technical Specifications by removing the pages identified below and inserting the attached pages. The revised pages are identified by the captioned amendment number and contain marginal lines indicating the area of change.

REMOVE

INSERT

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3.9/4.9-1

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3.9/4.9-2

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3.9/4.9 AUXILIARY ELECTRICAL SYSTEMS

LIMITING CONDITIONS FOR OPERATION

Applicability:

Applies to the auxiliary electrical power system.

Objective:

To assure an adequate supply of electrical power during plant operation.

SURVEILLANCE REQUIREMENTS

Applicability:

Applies to the periodic testing requirement of the auxiliary electrical system.

Objective:

To verify the operability of the auxiliary electrical system.

SPECIFICATIONS

A. Normal and Emergency A-C Auxiliary Power

The reactor shall not be made critical unless all the following requirements are satisfied:

1. The Unit diesel generator and the Unit 1/2 diesel generator shall be operable.

A. Normal and Emergency A-C Auxiliary Power

1. a. Once per month:

- (1) Each diesel generator shall be started and verified to deliver rated voltage and frequency.

- (2) Each diesel generator shall be synchronized, fully loaded and run for at least one hour.

- b. During the monthly generator test, the diesel-starting air compressor shall be checked for operation and its ability to recharge air receivers.

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2. One 345-kV line, associated switchgear, and the reserve auxiliary power transformer capable of carrying power to the unit shall be available.
 3. One other 345-kV line capable of carrying auxiliary power to an essential electrical bus of the unit through the 4160-volt bus tie shall be available.
 4. a. The Unit engineered safety features 4160-volt buses (13-1 and 14-1, Unit 1; 23-1 and 24-1, Unit 2) are energized.
b. The Unit engineered safety features 480-volt buses (18 and 19, Unit 1; 28 and 29, Unit 2) are energized.
- c. During the monthly generator test, the diesel fuel oil transfer pumps shall be operated.
 2. The status of the 345-kV lines, associated switchgear, and the reserve auxiliary power transformer shall be checked daily.
 3. The status of the additional source of power via the 4160-volt bus tie shall be checked daily.
 4. The Unit engineered safety features 4160-volt and 480-volt buses shall be checked daily.

B. Station Batteries

The unit 24/48-volt batteries, two station 125-volt batteries, the two station 250-volt batteries, and a battery charger for each required battery shall be operable before the reactor can be made critical.

B. Station Batteries

1. Every week the specific gravity and voltage of the pilot cell, the temperature of adjacent cell, and overall battery voltage shall be measured.
2. Every 3 months the measurement shall be made of the voltage of each cell to the nearest 0.01 volt, the specific gravity of each cell, and the temperature of every fifth cell.
3. At least once each operating cycle, the unit's batteries shall be tested to verify that the battery capacity is adequate to supply and maintain operable the actual or simulated emergency loads for the design duty cycle when the battery is subjected to a battery service test. Specific gravity and voltage of each cell shall be determined after each service test.
4. At least once per 60 months, in lieu of the battery service test required by 4.9.B.3, the Unit's batteries shall be subjected to a performance discharge test to verify that the battery capacity is the greater of either 80% of the manufacturer's rating or the minimum acceptable battery capacity from the latest revision of the load profile when subjected to a performance discharge test.
5. For any battery that shows signs of degradation or has reached 85% of the service life for the expected application as determined under Section 4.9.B.4, a performance discharge test of battery capacity shall be performed at least once each operating cycle. Degradation is indicated when the battery capacity drops more than 10% of rated capacity from its average on previous performance tests, or is below 90% of the manufacturer's rating.

6. To assure operability prior to use, once the alternate 125 volt battery cell-to-cell connections are completed and the maintenance charger placed into service, each such battery shall adhere to the surveillances specified in 4.9.B.

C. Electric Power Availability

Whenever the reactor is in the Run mode or for startup from a hot shutdown condition, the availability of electric power shall be as specified in Specifications 3.9.A and 3.9.B except as stated in Specifications 3.9.C.1, 3.9.C.2, 3.9.C.3, and 3.9.E.

1. From and after the date that incoming power is available from only one of the lines specified in 3.9.A, continued reactor operation is permissible only during the succeeding 7 days, unless the second line is sooner made available, providing both the Unit and Unit 1/2 emergency diesel generators are demonstrated operable per Specification 4.9.A.1.a(1).
2. From and after the date the incoming power is not available from any line, continued reactor operation is permissible providing both the Unit and Unit 1/2 emergency diesel generators are demonstrated operable per Specification 4.9.A.1.a(1), all core and containment cooling systems are operable, reactor power level is reduced to 40% of rated, and the NRC is notified within 24 hours of the situation, the precautions to be taken during this period, and the plans for prompt restoration of incoming power.

C. Electric Power Availability

The availability status of electric power shall be checked daily.

3. From and after the date that one of the two 125/250-volt battery systems is made or found to be inoperable for any reason, continued reactor operation is permissible only during the succeeding 3 days unless such battery system is sooner made operable.
- a. With both units operating, each 125 volt battery may be inoperable for up to a maximum of seven days per operating cycle for maintenance or testing, provided the alternate 125 volt battery is placed into service and is operable per specification 4.9.B.6.
 - b. With the other unit in cold shutdown or refueling, operations may continue with one of the two 125 volt battery systems inoperable provided the alternate 125 volt battery is placed into service and is operable per specification 4.9.B.6.
 - c. If it is determined that a 125 volt battery need be replaced as a result of maintenance or testing, a specific battery may be inoperable for an additional seven days provided the alternate 125 volt battery is placed into service and is operable per specification 4.9.B.6.

D. Diesel Fuel

There shall be a minimum of 10,000 gallons of diesel fuel supply on site for each diesel generator.

D. Diesel Fuel

Once a month the quantity of diesel fuel available shall be logged.

Once a month a sample of diesel fuel shall be checked for quality.

E. Diesel-Generator Operability

1. Whenever the reactor is in the Startup/Hot Standby or Run mode and the unit or shared diesel generators and/or their respective associated buses are inoperable, continued reactor operation is permissible only during the succeeding 7 days provided that all of the low-pressure core cooling and all loops of the containment cooling mode of the RHR system associated with the operable diesel generator shall be operable and two offsite lines as specified in 3.9.A are available. If the diesel generator became inoperable due to any cause other than pre-planned preventive maintenance or testing, demonstrate the operability of the remaining operable diesel generator by performing surveillance requirement 4.9.A.1.a(1) immediately and daily thereafter. If these requirements cannot be met, an orderly shutdown shall be initiated and the reactor shall be in the cold shutdown condition within 24 hours.
2. Deleted.

E. Diesel-Generator Operability

1. Deleted.
2. During each refueling outage, a simulated loss of off-site power in conjunction with an ECCS initiation signal test shall be performed on the 4160 volt emergency bus by:
 - a. Verifying de-energization of the emergency buses, and load shedding from the emergency buses.

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- (1) overvoltage 126.5 V = 2.5%
Min. 123.3 V
Max. 129.6 V

- (2) undervoltage 108 V = 2.5%
Min. 105.3 V
Max. 110.7 V

- (3) underfrequency 56.0 Hz \pm 1%
 of 60 Hz
Min. 55.4 Hz
Max. 56.6 Hz

- 2. a. With one RPS electric power monitoring channel for an inservice RPS MG set or inservice alternate power source inoperable, restore the inoperable channel to OPERABLE status within 72 hours or remove the associated RPS MG set or alternate power source from service.

- b. With both RPS electric power monitoring channels for an inservice RPS MG set or inservice alternate power source inoperable, restore at least one channel to OPERABLE status within 30 minutes, or remove the associated RPS MG set or alternate power source from service.

3.9 LIMITING CONDITIONS FOR OPERATION BASES

- A. The general objective of this specification is to assure an adequate source of electrical power to operate the auxiliaries during plant operation, to operate facilities to cool and lubricate the plant during shutdown, and to operate the engineered safety features following an accident. There are two sources of electrical energy available, namely, the 345-kV transmission system and the diesel generators.
- B. The d-c supply is required for control and motive power for switchgear and engineered safety features. The electrical power required provides for the maximum availability of power, i.e., one active offsite source and one backup source of offsite power and the maximum numbers of onsite sources.

An alternate 125 volt DC battery has been installed for each unit with the primary purpose of supporting the performance of the rated discharge test on the permanent 125 volt battery. The alternate battery is utilized to avoid a reduction in the single failure capability of the 125-volt system during the performance of the discharge test on the permanent battery.

- C. Auxiliary power for the Unit is supplied from two sources, either the Unit auxiliary transformer or the Unit reserve auxiliary transformer. Both of these transformers are sized to carry 100% of the auxiliary load. If the reserve auxiliary transformer is lost, the unit can continue to run for 7 days, since the Unit auxiliary transformer is available and both diesel generators are operational. A 7-day period is provided if one source of offsite power is lost. This period is based on having two diesels operable which are adequate to handle an accident assuming a single failure. In addition, auxiliary power from the other unit can be obtained through the 4160-volt bus tie. If both offsite lines are lost, power is reduced to 40% of rated so that the turbine bypass system could accept the steam flow without reactor trip should the generator be separated from the system or a turbine trip occur. In this condition, the turbine-generator is capable of supplying house load and ECCS load if necessary through the unit auxiliary transformer. If the unit were shut down on loss of both lines, fewer sources of power would be available then for sustained operation at 40% power. Attention will be given to restoring normal offsite power to minimize the length of time operation is allowed in a condition where both sources are available. In such cases, diesel generator operability demonstrations will be limited to an unloaded start test.

In the normal mode of operation, the 345-kV system is operable and two diesel generators are operable. One diesel generator may be allowed out of service for a short period of time to conduct pre-planned preventative maintenance or testing provided that power is available from the 345-kV system through a 4160-volt bus tie to supply the emergency buses, and the alternate diesel generator is operable. Offsite power is quite reliable, and in the last 25 years there has been only one instance in which all offsite power was lost at a Commonwealth Edison Generating Station.

When the unit or shared diesel generator is made or found inoperable for reasons other than pre-planned preventative maintenance or testing, the remaining diesel generator and its associated low-pressure core cooling and containment cooling systems, which provide sufficient engineered safety features equipment to cover all breaks, will be operable.

For low-pressure ECCS, the verification of operability, as used in this context, means to administratively check by examining logs or other information to determine if certain components/systems are out-of-service for maintenance or other reasons. It does not mean

to perform the surveillance requirements needed to demonstrate the operability of the component/system. For the remaining diesel generator, an operability demonstration to identify any potential common causes for failure will be performed. In such cases, the demonstration will be limited to an unloaded start test.

- D. The diesel fuel supply of 10, 000 gallons will supply each diesel generator with a minimum of 2 days of full load operation or about 4 days at 1/2 load. Additional diesel fuel can be obtained and delivered to the site within an 8-hour period; thus a 2-day supply provides for adequate margin.
- E. Diesel generator operability is discussed in Paragraph 3.9.C above.
- F. Specifications are provided to ensure the operability of the RPS Bus electrical protection assemblies (EPA's). Each RPS MG set and the alternate power source has 2 EPA channels wired in series. A trip of either channel from either overvoltage, undervoltage, or underfrequency will trip the associated MG set or alternate power source.

4.9 SURVEILLANCE REQUIREMENTS BASES

- A. The monthly test of the diesel generator is conducted to check for equipment failures and deterioration. Testing is conducted up to equilibrium operating conditions to demonstrate proper operation at these conditions. The diesel will be manually started, synchronized to the bus, and load picked up. Diesel-generator experience at other Commonwealth Edison generating stations indicates that the testing frequency is adequate and provides a high reliability of operation should the system be required. In addition, during the test, the generator is synchronized to the offsite power sources and thus not completely independent of this source. To maintain the maximum amount of independence, a 30-day testing interval is also desirable.

Each diesel generator has two air compressors and four air tanks. Two air tanks are piped together to form an air receiver. Each air compressor supplies an air receiver. This arrangement provides redundancy in starting capability. It is expected that the air compressors will run only infrequently.

During the monthly check of the diesel, the receivers will be drawn down below the point at which the compressor automatically starts to check operation and the ability of the compressors to recharge the receivers. Pressure indicators are provided on each of the receivers.

Following the monthly test of the diesels, the fuel oil day tank will be approximately half full based on the 2-hour test at full load and 205 gph at full load. At the end of the monthly load test of the diesel generators, the fuel oil transfer pumps will be operated to refill the day tank and to check the operation of these pumps from the emergency source.

The test of the emergency diesel generator during the refueling outage will be more comprehensive in that it will functionally test the system, i.e., it will check diesel starting, closure of diesel breaker, and sequencing of loads on the diesel. The diesel will be started by simulation of a loss-of-coolant accident. In addition, an undervoltage condition will be imposed to simulate a loss of the time required. The only load on the diesel is that due to friction and windage and a small amount of bypass flow on each pump.

Periodic tests between refueling outages verify the ability of the diesel to run at full load and the core and containment cooling pumps to deliver full flow. Periodic testing of the various components plus a functional test at the refueling interval are sufficient to maintain adequate reliability.

- B. Although station batteries will deteriorate with time, utility experience indicates there is almost no possibility of precipitous failure. The type of surveillance described in this specification is that which has been demonstrated over the years to provide an indication of a cell becoming irregular or unserviceable long before it becomes a failure. In addition, the checks described also provide adequate indication that the batteries have the specified ampere-hour capability.

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- C. Because the availability of electricity to the system is a normal operating function, a check of the status of these systems provides adequate surveillance.
- D. The diesel fuel oil quality must be checked to ensure proper operation of the diesel generators. Water content should be minimized, because water in the fuel would contribute to excessive corrosion of the system, causing decreased reliability. The growth of micro-organisms results in slime formations, which are one of the chief causes of jellying in hydrocarbon fuels. Minimizing of such slimes is also essential to assuring high reliability.
- E. Diesel-generator operability surveillance is discussed in Paragraph 4.9.A above.
- F. Surveillance requirements are provided for the RPS EPA's to demonstrate their operability. The setpoints for overvoltage, undervoltage, and underfrequency have been chosen based on analysis (ref. February 4, 1983 letter to H. Denton from T. Rausch).



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION
RELATED TO AMENDMENT NO. 119 TO FACILITY OPERATING LICENSE NO. DPR-19,
AMENDMENT NO. 115 TO FACILITY OPERATING LICENSE NO. DPR-25,
AMENDMENT NO. 138 TO FACILITY OPERATING LICENSE NO. DPR-29,
AND AMENDMENT NO. 134 TO FACILITY OPERATING LICENSE NO. DPR-30
COMMONWEALTH EDISON COMPANY
AND
IOWA ILLINOIS GAS AND ELECTRIC COMPANY
DRESDEN NUCLEAR POWER STATION, UNITS 2 AND 3
QUAD CITIES NUCLEAR POWER STATION, UNITS 1 AND 2
DOCKET NOS. 50-237, 50-249, 50-254, AND 50-265

1.0 INTRODUCTION

Technical Specification Section 3/4.9 provides the requirements for Dresden and Quad Cities Station's "Auxiliary Electrical Systems." These requirements provide assurance that an adequate supply of electrical power is available to the plant during operating, shutdown, and everyday conditions. The equipment encompassed by this specification are the incoming (off-site) transmission lines and associated switchgear, the station batteries, the emergency diesel generators, and the in-plant AC buses important to reactor safety.

In a submittal dated June 29, 1992, as supplemented August 28, 1992, Commonwealth Edison Company, (the licensee, CECO) proposed changes to Section 3/4.9 of Technical Specifications (TS) for the Dresden and Quad Cities Stations. The primary purpose of the proposed changes is to: (1) revise the operability requirements for a diesel generator when performing preventive maintenance and surveillance; (2) revise the requirements for operability of a diesel generator upon loss of other auxiliary electrical equipment; (3) revise the 125 volt DC battery availability requirements to address the use of and inclusion in the TS of the alternate 125 volt DC batteries; and (4) revise the battery testing requirements to include both service and performance test surveillance requirements that reflect current industry standards.

In addition, other proposed TS amendment changes include: (1) the elimination of redundant emergency core cooling systems testing associated with the operable diesel generator; (2) deletion of a Dresden requirement associated with electrical power availability that necessitates having the reactor vessel

head off; (3) deleting the exemption from declaring the diesel generator inoperable for a period not to exceed 1-1/2 hours for the purpose of conducting preventive maintenance; (4) modifying the current Quad Cities TS electrical backfeed requirements to be less prescriptive with regard to the second source of power available from the other unit; and (5) various administrative changes primarily associated with the above changes.

The acceptability of these proposed changes of Dresden, Units 2 and 3, and Quad Cities, Units 1 and 2, is addressed in this safety evaluation.

2.0 EVALUATION

2.1 Diesel Generators (D/G)

The licensee has proposed changes to TS Section 3/4.9 related to the D/G for Dresden and Quad Cities. Specific changes proposed are related to monthly surveillance testing, operability requirements upon loss of offsite power, demonstration of operability of the alternate D/G when a D/G is found inoperable, and the treatment of surveillance testing as it relates to D/G operability in a manner similar to that of preventive maintenance. Most of these proposed changes are the result of, or related to, a concern identified by the Dresden resident inspectors that Dresden did not declare the D/G inoperable when performing preventive maintenance testing, surveillance testing or operability tests that required synchronizing and loading of the D/G to the grid. These concerns were discussed in teleconferences between the NRC staff and the licensee (including both the Dresden and Quad Cities Stations) on April 1, and 15, 1992. In a letter dated April 24, 1992, CECO documented the results of these teleconferences which included TS interpretations that were found to be acceptable to the NRC staff on an interim basis. In this letter CECO also stated that both the Dresden and Quad Cities Stations' TS are in the process of being modified to address this issue. The proposed TS contained in this submittal fulfill the licensee's commitment and fully address the staff concerns. The specific changes are discussed and evaluated below.

2.1.1 Monthly Surveillance Testing

Current TS 4.9.D.1 at Dresden and 4.9.A.1 at Quad Cities, respectively, presents the monthly operability test requirements for the diesel generators. The surveillance requirement specifies that each diesel generator shall be started and loaded each month to demonstrate operational readiness, and that the duration of each surveillance shall be sufficient to ensure that both the diesel engine and the generator have achieved equilibrium temperature conditions while full load output is maintained.

The licensee's TS separates the start test and its acceptance criteria from the portion of the test which requires synchronizing the generator to the grid, loading the diesel generator, and running it for an extended period. This separation simplifies reference to these individual portions of the testing and does not change the actual test requirements.

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The diesel generator units at Dresden and Quad Cities are not equipped with instrumentation for the monitoring of stator temperature as this was not a standard feature offered by the manufacturer. Currently, the monthly operability surveillance requires full load to be maintained on the diesel generator until equilibrium temperature conditions are achieved. The proposed specification requires the diesel generator to run fully loaded for a minimum of one hour. The time duration specified by the surveillance to achieve equilibrium temperature conditions for the diesel engine has been demonstrated as sufficient by past tests and exceeds the recommended time frame (45 to 50 minutes) provided by the vendor.

The staff has reviewed these proposed changes for Dresden and Quad Cities and determined that it is acceptable to separate the start test and its acceptance criteria from the portion of the test which requires synchronizing the generator to the grid and loading the D/G. As a result of staff concerns related to D/G operability previously discussed, the need to run the D/G synchronized to the grid and loaded is not always necessary. The performance of a start test under some conditions, that will be addressed later, is all that is necessary. The proposed TS also identifies the correct parameters, rated voltage and frequency to determine operability for a start test. The proposed TS change states that a monthly operability surveillance test will be performed with the D/G synchronized and fully loaded for at least one hour. Since this is consistent with the D/G vendor's recommendations and the Standard Technical Specifications (STS), the staff finds this acceptable.

2.1.2 Operability Requirements

Current Specification 3.9.B at Dresden and 3.9.C.3.9.E at Quad Cities, respectively, provides two conditions under which a D/G must be operated following the discovery of inoperable or unavailable equipment. The licensee proposed revisions for this required D/G operation as a result of the inoperability or unavailability of other equipment. These include: (a) revising the requirement for operating the D/G upon loss of the two incoming offsite power lines, (b) revising the requirement for the demonstration of operability of the alternate diesel generator when a D/G is found inoperable, or (c) when making a D/G inoperable for the performance of pre-planned preventive maintenance to include surveillance testing.

The current TS requires that upon loss of both incoming offsite power lines the diesel generators must be "operating." The manufacturer does not recommend the diesel generators to be operated at no load for long periods of time, so the diesel generators are synchronized and loaded in this situation. While connected to the bus, the diesel generators are vulnerable to a load transient should the turbine generator of the unit trip. To eliminate this vulnerability and enhance the availability of the diesel generators, the

licensee's proposed TS requires the diesel generators to be "demonstrated operable" rather than "operating." A similar vulnerability exists if the alternate diesel generator is demonstrated operable by starting and loading following the loss of one diesel generator in accordance with current TS 3.9.B.2.a for Dresden and 4.9.E.1 at Quad Cities, respectively. The proposed TS require the alternate diesel generator to be demonstrated operable by conducting a start test only. The vulnerability of the D/G will be eliminated if the required demonstration does not require a subsequent synchronizing and loading.

Currently, Specification 3.9.B.2.b/3.9.E.2 (Dresden/Quad Cities) allows D/G to be made inoperable for a period of 1-1/2 hours for the purpose of preventive maintenance; however, an operability demonstration on the alternate diesel generator is required prior to the performance of the maintenance activity. Therefore, a pre-planned, short duration D/G outage for the purpose of preventive maintenance currently results in additional D/G operability demonstrations (for the alternate D/G). With the current requirements, station implementation of INPO (and vendor) recommended practices, intended to reduce the potential for damage to a diesel engine during starts, is impractical. In accordance with the recommended practice, a D/G would be manually rotated, or "barred", one revolution prior to each routine start (i.e., starts not resulting from the inoperability of other AC auxiliary electrical power equipment), in order to check for fluid in the engine's cylinders. For personnel safety during this procedure, the automatic start capability of the diesel generator needs to be disabled (by isolating the air supply to the air start motors), thereby rendering the diesel generator inoperable. Consequently, implementation of this practice with the current Technical Specifications would result in an additional diesel generator operability demonstration (for the alternate diesel generator). This situation is also described on a general basis in Information Notice 91-62.

In the licensee's proposed change, a D/G would be declared inoperable and the normal allowed out-of-service time of seven days would be applied for the purposes of conducting pre-planned preventive maintenance or surveillance testing. However, in keeping with the reduction of unnecessary starts on the emergency D/G, and since these pre-planned preventive maintenance or surveillance testing activities are unrelated to potential generic concerns, the operability verification for the alternate D/G will not be based on an operability demonstration. The verification of operability as used in this context, means to administratively check by examining logs or other information to determine if components and systems are out-of-service for maintenance or other reasons. This operability verification approach is consistent with the later BWR Technical Specifications (such as Hope Creek, River Bend, and Limerick), and practices for pre-planned diesel generator outages for the purposes of preventive maintenance or testing.

These changes address two of the primary concerns of the NRC staff; the vulnerability of the D/G to a load transient should the turbine generator of the unit trip when the D/G is loaded to the grid, and that under the current

TS a D/G can be made inoperable for a period of 1-1/2 hours for preventive maintenance without declaring the D/G inoperable. The staff has reviewed the licensee's proposed TS changes related to testing the D/G when both offsite incoming power lines are lost or one of the D/G is inoperable. The performance of a start test assures operability of the D/G and eliminates the vulnerability to a load transient if the turbine generator should trip. The monthly surveillance test of the D/G will be performed with the D/G synchronized and loaded to the grid. However, the D/G are tested one at a time and this test is needed to assure that the D/G will perform its intended function when loaded. The probability of an accident occurring, that would result in a commitment loss of offsite power, during the time of the monthly D/G surveillance test is very low. The staff has reviewed these proposed changes and concluded that since the vulnerability of the D/G to fail in the event of a load transient will be eliminated and that the changes are consistent with the BWR STS, they are acceptable.

The staff has reviewed the licensee's proposed TS change and determined that deletion of the current requirement permitting a D/G to be inoperable for a period of 1-1/2 hours for the purpose of preventive maintenance without declaring the D/G inoperable and the substitution of a requirement that a D/G be declared inoperable during pre-planned preventive maintenance or surveillance testing provided the operability of the alternate D/G can be verified administratively, is acceptable. By the elimination of the 1-1/2 hour grace period the D/G will appropriately be declared inoperable and the operability verification approach for the alternate diesel both reduces unnecessary starts and is a position the staff has accepted for newer plants.

2.2 125 Volt DC Alternate Batteries

The 125 volt DC electrical distribution system for each unit consists of two separate divisions. These divisions are provided 125 volt DC power by two battery systems (shared between two units), each of which originally consisted of one 125 volt battery and two chargers. The normal operating configuration has each 125 volt system supplying DC power for one of the two 125 volt DC divisions on each unit through the battery chargers.

A safety-related alternate 125 volt battery has been installed for each unit with a primary purpose of supporting the performance of the rated discharge tests on the permanent battery. The alternate battery is utilized to avoid a reduction in the single failure capacity of the 125-volt system during performance of the rated discharge test in the permanent battery.

The alternate batteries are of the same type (lead-calcium) as the normal 125 volt batteries and were provided by the same vendor. The alternate batteries have been sized to carry the normal DC loads and the required safe shutdown loads as described in the Final Safety Analysis Report (FSAR), Section 8, and the capacity of each battery meets or exceeds that of its associated normal (permanent) battery. The alternate batteries have been seismically qualified and installed and meets the same requirements as the primary batteries except

provide the missile protection discussed in FSAR Section 12; however, a risk analysis has shown the probability of a tornado missile event during a full calendar year to be less than $1 \text{ E-}7$ ($0.87 \text{ E-}7$) which is below the threshold level where the event is a concern. For Quad Cities, Unit 2, the alternate battery is located in the turbine building which provides the same protection for Unit 2 alternate battery as a Class 1 structure, except for the case of tornado missiles. However, a probabilistic analysis has been performed which shows that limiting the period that the alternate battery is relied upon to less than 52 days in any calendar year limits the probability of a tornado missile striking the battery while it is relied upon to less than $1 \text{ E-}7$. Commonwealth Edison Company has limited the period that the Unit 2 alternate battery is relied upon to less than 52 days in any calendar year. There are no limitations on the Unit 1 alternate battery.

In a September 30, 1991, submittal CECO provided a description of the alternate 125 volt DC battery system design and installation. During the staff review it was determined that the alternate battery system does not have two disconnect switches on the reserve bus end of the cable connecting the main bus with the reserve bus.

In a submittal dated August 21, 1992, CECO provided a supplement to its June 29, 1992, submittal. One of the purposes of this supplement was to change the proposed TS related to when the alternate 125 volt DC battery can be used. In this supplement CECO stated that the original design of the 125 volt DC battery distribution system for Dresden and Quad Cities Stations only included a single manual disconnect switch at one end of the cable connecting the 125 volt DC reserve bus. In 1981, an evaluation of the 125 volt DC distribution systems noted that a fire in the main 125 volt DC bus switchgear could fault the cable used to provide the backup feed to the 125 volt DC reserve bus with the ultimate result that both buses could be disabled. To address this concern, both Dresden and Quad Cities installed two (2) disconnect switches on the reserve bus end of the cable connecting the main bus with the reserve bus.

Although the alternate 125 volt DC battery system design meets the isolation criteria of the original 125 volt DC system for both Dresden and Quad Cities, it does not include the additional disconnect switches between the reserve bus and main bus. Due to this design difference Dresden and Quad Cities Stations only propose adding the alternate battery as a permanent auxiliary method of ensuring plant DC power sources are available in the event that the normal 125 volt DC system is unavailable. This requirement would be waived for a period up to seven days if the alternate 125 volt DC battery system was placed into service and operable as defined by the applicable surveillance requirements. The current requirements at Dresden allow the 125 volt DC system to be inoperable for a period of seven days per operating cycle for maintenance or testing. In addition, Dresden's requirements allow an additional seven days if the battery needs to be replaced due to maintenance or testing. The current requirements at Quad Cities allow the 125 volt DC system to be inoperable for any reason for a period of three days.

Since the alternate 125 volt DC battery system does not provide the same protection from the consequences of loss of function as specified in Appendix R, during periods when using the alternate 125 volt battery, CECO has committed to institute administrative controls to reduce the risk of causing a fault to the system. In a letter dated October 16, 1992, CECO provided further clarification regarding the administrative controls that will be in place when the alternate battery system is placed in service. This letter stated that during periods when the alternate 125 volt battery is placed into service, the circuit breaker that is normally open between the DC Main Bus (Division I) and the DC Reserve Bus (Division II) shall be administratively controlled open by hanging an out-of-service (OOS) card (using the appropriate OOS site procedure) on the breaker. The station procedures that control the process to place into service the alternate 125 volt battery shall specify that the normally open breaker will be (on the DC reserve BUS Division 2) either placed into the open condition using the appropriate posting of notification/card, following the normal OOS procedure or verified to be in the open position (notification/card).

In addition, this letter stated that when the alternate 125 volt battery system is not in service the batteries are physically disconnected from the DC system.

The proposed TS changes that permit use of the alternate 125 volt DC battery system during operation are as follows:

1. With both units operating, each 125 volt battery may be inoperable for up to a maximum of seven days per operating cycle for maintenance and testing provided the alternate 125 volt battery is placed into service.
2. With the other unit in cold shutdown or refueling, operations may continue with one of the two 125 volt battery systems inoperable provided the alternate 125 volt battery is placed into service.
3. If it is determined that a 125 volt battery needs to be replaced as a result of maintenance or testing, a specific battery may be inoperable for an additional seven days provided the alternate 125 volt battery is placed into service.

The staff has reviewed the design of the alternate 125 volt DC battery system and concluded that it is equivalent to the primary battery system except for an additional disconnect switch that was installed to provide protection against a fire in the main 125 volt DC switchgear that could fault the cable and result in disability of both the main and reserve buses. Commonwealth Edison Company has also evaluated the additional combustible load resulting from alternate battery and its associated cables and concluded it is low and produces little heat due to the low BTU rating. The alternate battery also does not cross a fire area boundary, is located in an area where fire detectors are present, and any abnormal conditions will be indicated in the Control Room. In addition, there is a portable CO2 extinguisher suppression

system available in the area and the existing fire detection system is sufficient for the additional fire loading due to the alternate battery.

The staff has evaluated the proposed TS changes that would permit use of the alternate 125 volt DC battery system and concluded it is acceptable based on the following:

1. Plant safety and battery reliability are improved by the addition of this system.
2. The proposed limited usage of the alternate battery system results in an improvement in plant safety since the current TS permit continued operation for up to a maximum of 14 days during an operating cycle with one primary battery system inoperable.
3. There is a low probability that a fault would occur, that could disable both the main and reserve bus, during the limited time period the alternate battery is connected.
4. Adequate administrative controls are in place to assure that the circuit breaker between the DC main bus and the DC reserve bus will remain in the normally open position during the use of the alternate battery.

Although the staff finds the limited use of the alternate battery acceptable, to assure that it is not permanently connected and left in place, CECO should revise the TS Bases of this section to include the reason why only limited use of this battery is permitted and why it should not be permanently connected. The Bases section can be revised as part of the TS upgrade program.

2.3 Battery Service and Performance Tests

Current Specifications 4.9.A.3 for Dresden and 4.9.B for Quad Cities requires a "rated load discharge test" for the station batteries on a refueling outage frequency. A review of battery testing specifications of other CECO nuclear units revealed that the LaSalle County Station Technical Specifications for battery service and performance testing closely resembled the testing that the other stations committed to perform. The proposed changes reflect these revised testing requirements. The current specifications require that a rated load discharge test be conducted "every refueling outage" on the batteries. The proposed specifications for the service and performance tests are proposed to be conducted once each operating cycle. This frequency is the same as each refueling outage but allows the testing to be performed at other times during the operating cycle which may be consistent with safe operation.

Commonwealth Edison Company has adopted the Institute of Electrical and Electronic Engineers (IEEE) Standard 450, 1987 Edition. Consistent with this standard, Dresden now performs a service test (load profile test) at least once each operating cycle to verify that the battery capacity is adequate to supply and maintain operable the actual or simulated emergency loads for the design duty cycle. In addition, at least once per 60 months, in lieu of the

battery service test, the unit's batteries will be subjected to a performance discharge test (constant amperage discharge test) to verify that the battery capacity is greater than either 80 percent of the manufacturer's, or the minimum acceptable, battery capacity from the latest revision of the load profile. For any battery that shows signs of degradation or has reached 85 percent of the service life for the expected application, a performance discharge test of battery capacity will be performed at least once each operating cycle. Degradation is indicated when the battery capacity drops more than 10 percent of rated capacity from its average on previous performance tests, or is below 90 percent of the manufacturers rating.

The staff has evaluated the licensee's proposed TS change and determined that it results in an improvement over the current TS which only specify that the unit's batteries shall be subjected to a rated load discharge test. Until recently only performance discharge type tests were performed at the Dresden and Quad Cities Stations. With the adaptation of IEEE Standard 450 for testing of the batteries, which is endorsed by the NRC Regulatory Guide 1.129 and the NRC Standard Review Plan, Section 8.3.2, both service life tests and periodic performance discharge tests are performed. The service tests simulates the worst-case load profile that would occur during accident conditions and, therefore, provides assurance that the batteries will perform their function. The periodic performance test provides assurance that significant battery degradation has not occurred. Since the current TS at Dresden and Quad Cities do not specifically state the type of load discharge test to be performed, the licensee determined that the adaptation of IEEE 450 was at least equivalent to the type of load discharge test previously performed. The submittal of this proposed TS change specifically documents the licensee's commitment regarding the type of tests, testing frequency, and acceptance criteria to be utilized in determining the operability of the batteries. On the bases of the above discussion the staff has determined that these proposed TS changes are a significant improvement over the current TS and are, therefore, acceptable.

2.4 Quad Cities-Redundant ECCS Testing

Quad Cities also proposes to delete the requirements for demonstrating the operability of all low-pressure core cooling systems and all loops of the containment cooling modes of the RHR system associated with the operable diesel generator. The proposed verification of operability, as used in this context, means to administratively check by examining logs or other information, to determine if these components and systems are out-of-service for maintenance or other reasons.

The requirement for demonstrating operability of the redundant systems identified above for Quad Cities, Units 1 and 2, was originally chosen because there was a lack of plant operating history and a lack of sufficient equipment failure data. Since that time, plant operating experience has demonstrated that testing of the redundant ECCS when one system is inoperable is not necessary to provide adequate assurance of system operability.

The staff has reviewed the proposed TS change related to verification of operability of all the redundant low-pressure core cooling system and all loops of the containment cooling modes of the RHR system associated with the operable diesel generator and concluded it is acceptable based on the following:

1. Taking the redundant system out of service for testing creates the risk of the second system also failing and in some instances it has been observed that failures of the redundant system are related to the test itself and not an indication that the system would have failed should it have been needed.
2. Operability of these systems can be shown by checking records to verify that valve lineups, electrical lineups, and instrumentation requirements have not been changed since the last time the system was verified to be operable.
3. The current Standard Technical Specifications and more specifically all the technical specifications approved for recently licensed BWR's accept the philosophy of system operability based on satisfactory performance of monthly, quarterly, refueling interval, post-maintenance or other specified performance tests without requiring additional testing when another system is inoperable.
4. Similar changes have been previously approved for Dresden Station (Amendments 107 and 102, dated August 10, 1989).

2.5 Power Reduction Following Loss of Both Offsite Lines

Dresden Station was requested to address a difference between Dresden and Quad Cities Stations' Technical Specification for action to be taken upon loss of both incoming power lines. In addition to verifying both diesel generators and the core and containment cooling systems operable, and notifying the NRC within 24 hours of the precautions and plans for prompt restoration, Quad Cities is also required to reduce power to 40 percent of rated power. This reduction in power is based on the steam bypass capacity of the station and was intended to allow continued reactor operation following a complete loss of off-site power and a subsequent turbine trip. While it is theoretically possible for a unit to avoid an automatic shutdown after a power reduction and subsequent separation from the grid, continued operation would depend on the ability of the turbine speed control circuitry to respond sufficiently to avoid a turbine overspeed and actuation of main generator protection functions.

Dresden Station has not proposed this provision be added to the subject Technical Specification. Dresden Station believes it to be more prudent to operate at a power level to be determined based on the conditions and configuration at the time of the occurrence. Additionally, a forced power reduction may conflict with the load dispatcher efforts to sustain grid

stability, which has the potential to affect the time in which incoming power is restored.

Commonwealth Edison Company has not proposed changes to the Dresden and Quad Cities TS related to operation of the plants following the loss of both offsite power lines. Therefore, no action on the part of the staff is required at this time. However, there is clearly a difference in operating philosophy between the two stations on this issue and one of the approaches is probably better than the other although it is not readily apparent. Commonwealth Edison Company stated this issue is undergoing further evaluation at Quad Cities and will be evaluated within the ongoing TS upgrade program. Since CECO has committed, as part of the upgrade program, to a consistent approach between both sites, except for design differences, the staff expects that these differences will be resolved when the upgraded TS Section 3.9/4.9 is submitted and that adequate justification will be provided.

2.6 Quad Cities Backfeed Modification Changes

The current Quad Cities Technical Specification 3.9.A.3 provides the requirement for the availability of a second source of offsite auxiliary power during reactor operation. This source of offsite auxiliary power is specifically described as:

"One other 345-kV line and unit reserve aux transformer capable of carrying auxiliary power to an essential electrical bus of the unit through the 4160-volt bus tie shall be available."

Although the current requirement ensures that two independent sources of offsite auxiliary power are available to provide the necessary power for loads which are required to operate to mitigate the consequences of postulated abnormal occurrences and design basis accidents, it specifically delineates that the other unit's reserve auxiliary transformer shall be used as the second source of offsite power. Based upon a loss-of-offsite power event at Dresden Station in 1985 and the recognition of transformer aging concerns, CECO initiated an engineering evaluation at Dresden and Quad Cities Stations to identify modifications and or procedure changes which would be necessary to provide a second source of offsite power when the reserve auxiliary transformer (RAT) is unavailable. Based upon this engineering evaluation, CECO will be implementing modifications and procedure changes at both stations which will allow the backfeed of power from the offsite distribution system through the main power transformer (MPT) and unit auxiliary transformer (UAT) of a shutdown unit to an operating unit through the 4160-volt bus tie.

Currently, both Dresden and Quad Cities Station will be implementing the required protective relay modifications during the next refuel outage on each unit. However, in order to utilize the backfeed option when the RAT of the shutdown unit is unavailable, Quad Cities TS 3.9.A.3 (DRP-29 and DRP-30) must be revised to account for the ability to supply offsite power through the MPT/UAT and 4160-volt bus tie. Dresden Station TS 3.9.A.3 requires an offsite

line capable of carrying power to an essential service bus through 4160-volt bus tie, but does not specify that it has to be provided through the UAT.

The proposed amendment to Quad Cities TS 3.9.A.3 for Unit 2 (DPR-30) will be necessary following implementation of the modification on Unit 1 in October 1992. Subsequent to the completion of the modifications to Unit 1, the Unit 1 RAT (TR-12) will be taken out-of-service for repair, inspection and testing. The duration of planned work activities for TS-12 is currently 14 days. This would result in the shutdown of Unit 2 within seven days if the proposed TS amendment is not implemented by that time.

The proposed amendment will delete the current requirement for TS 3.9.A.3 and adopt the wording of Dresden, Unit 2, TS 3.9.A.3 which states:

"One 345 KV line from Unit 3 capable of carrying auxiliary power to an essential electrical bus of Unit 2 through the 4160 volt bus tie shall be available."

The staff has evaluated the proposed amendment and determined it is acceptable since the change only provides additional flexibility, by allowing the use of either the MPT or the UAT of the shut down unit to supply power through the 4160-volt bus tie to an operating unit during extended RAT outages.

2.7 Administrative Changes

The proposed amendment also contains administrative changes such as the deletion of redundant requirements, combining, clarifying and rearranging requirements and wording changes to provide consistency between the Dresden and Quad Cities TS. Since these are editorial in nature the staff has determined they are acceptable.

3.0 STATE CONSULTATION

In accordance with the Commission's regulations, the Illinois 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 the installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20 and change 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 (57 FR 42770). 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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