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

Mr. Cordell Reed
Assistant Vice President
Commonwealth Edison Company
Post Office Box 767
Chicago, Illinois 60690

Dear Mr. Reed:

The Commission has issued the enclosed Amendments Nos. 44 and 39 to Facility Operating Licenses Nos. DPR-19 and DPR-25 for the Dresden Nuclear Power Station Units Nos. 2 and 3, and Amendments Nos. 53 and 50 to Facility Operating Licenses Nos. DPR-29 and DPR-30 for the Quad Cities Nuclear Power Station Units Nos. 1 and 2, in response to your application dated May 16, 1977, as supplemented November 3, 1978.

The amendments modify the Technical Specifications to change the withdrawal schedules of the pressure vessel material surveillance capsules to be in accordance with 10 CFR 50, Appendix H.

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

Sincerely,

Original Signed by
T. A. Ippolito

Thomas A. Ippolito, Chief
Operating Reactors Branch #3
Division of Operating Reactors

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Enclosures:
1. Amendment No. 44 to DPR-19
2. Amendment No. 39 to DPR-25
3. Amendment No. 53 to DPR-29
4. Amendment No. 50 to DPR-30
5. Safety Evaluation
6. Notice

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cc w/enclosures:
See next page

OFFICE	ORB #3	AD:ORP	OELD	ORB #3	
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DATE	/ /79	/ /79	/ /79	/ /79	

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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 NO. 2

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 44
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 May 16, 1977, as supplemented by filing dated November 3, 1978, 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-19 is hereby amended to read as follows:

   (B) Technical Specifications

   The Technical Specifications contained in Appendix A, as revised through Amendment No. 44, 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 its date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

Thomas A. Ippolito, Chief
Operating Reactors Branch #3
Division of Operating Reactors

Attachment:
Changes to the Technical
Specifications

Date of Issuance: August 13, 1979

ATTACHMENT TO LICENSE AMENDMENT NO. 44

FACILITY OPERATING LICENSE NO. DPR-19

DOCKET NO. 50-237

Replace the following existing pages of the Technical Specifications with the attached revised pages. Changed areas on the revised pages are shown by a marginal line.

Remove Pages	Insert Pages
88	88
93	93
	93A
	94A

3.6 LIMITING CONDITION FOR OPERATION

B. Pressurization Temperature

1. The reactor vessel shall be vented and power operation shall not be conducted unless the reactor vessel temperature is equal to or greater than that shown in Figure 4.6.1.

2. The reactor vessel head bolting studs shall not be under tension unless the temperature of the vessel shell immediately below the vessel flange is ≥120°F.

C. Coolant Chemistry

1. The reactor coolant system radioactivity concentration in water shall not exceed 20 microcuries of total iodine per ml of water.

4.6 SURVEILLANCE REQUIREMENT

B. Pressurization Temperature

1. Reactor Vessel shell temperature and reactor coolant pressure shall be permanently recorded at 15 minute intervals whenever the shell temperature is below 220°F and the reactor vessel is not vented.

2. When the reactor vessel head bolting studs are tightened or loosened the reactor vessel shell temperature immediately below the head flange shall be permanently recorded.

3. Neutron flux monitors and samples shall be installed in the reactor vessel adjacent to the vessel wall at the core midplane level. The monitor and sample program where possible conform to ASTM E 185. The monitors and samples will be removed and tested as outlined in Table 4.6.2 to experimentally verify the calculated values of integrated neutron flux that are used to determine NDTT for Figure 4.6.1.

C. Coolant Chemistry

1. a. A sample of reactor coolant shall be taken at least every 96 hours and analyzed for radio-activity.

   b. Isotopic analysis of a sample of reactor coolant shall be made at least once per month.

the vessel flange have an NDT temperature of 60°F. The design life of the reactor vessel is 40 years and the maximum fast neutron exposure at 40 years is calculated to be 2.7×10^{17} nvt.

The NDT temperature limit curve in Figure 4.6.1 uses the "worst case" curve of the SAR to establish the NDT temperature shift and is, therefore, based on more conservative pressure data. For example, the expected NDT temperature shift for this vessel at 2.7×10^{17} nvt is expected to be 15°F instead of the 90°F assumed in establishing Figure 4.6.1. Figure 4.6.1 also incorporates a 60°F factor of safety. This factor is based upon the requirements of the ASME code and the considerations which resulted in these requirements. Therefore, the specification provides for "worst case" data as well as 60°F of margin to provide assurance that operation in the non-ductile region will not occur.

The reactor vessel head flange and the vessel flange in combination with the double "O" ring type seal are designed to provide a leak-tight seal when bolted together. When the vessel head is placed on the reactor vessel, only that portion of the head flange near the inside of the vessel rests on the vessel flange. As the head bolts are replaced and tensioned, the vessel head is flexed slightly to bring together the entire contact surfaces adjacent to the "O" rings of the head and vessel flange. The closure flanges and connecting shell materials have an NDT temperature of 10°F, and they are not subject to any appreciable neutron radiation exposure. However, the vertical electroslag seams terminating immediately below the vessel flange have an NDT temperature of 60°F, and they are moderately stressed by tensioning of the studs. Therefore, the minimum temperature of the vessel shell immediately below the vessel flange is established as 60°F + 60°F, or 120°F.

Numerous data are available relating integrated flux and the change in nil-ductility transition temperature (NDTT) in various steels. The most conservative data has been used in Specification 3.6. The integrated flux at the vessel wall is calculated from core physics data and will be measured using flux monitors installed inside the vessel. The measurements of the neutron flux at the vessel wall will be used to check and if necessary correct, the calculated data to determine an accurate NDTT.

In addition, vessel material samples will be located within the vessel to monitor the affect of neutron exposure on these materials. The samples include specimens of base metal, weld zone metal, heat affected zone metal, and standard specimens. These samples will receive neutron exposure more rapidly than the vessel wall material and therefore will lead the vessel in integrated neutron flux exposure. These samples will provide further assurance that the shift in NDTT used in the specification is conservative.

The withdrawal schedule in Table 4.6.2 is based on the three capsule surveillance program as defined in Section 11.C.3.a of 10 CFR 50 Appendix H. The accelerated capsule (Near Core Top Guide) are not required by Appendix H but will be tested to provide additional information on the vessel material.

This surveillance program conforms to ASTM E 185-73 "Recommended Practice for Surveillance Tests for Nuclear Reactor Vessels" with one exception. The base metal specimens of the vessel were made with their longitudinal axes parallel to the principle rolling direction of the vessel plate.

C. Coolant Chemistry – A radioactivity concentration limit of 20 μCi/ml total iodine can be reached if the gaseous effluents are near the limit as set forth in Specification 3.8.C.1 or there is a failure or a prolonged shutdown of the cleanup demineralizer. In the event of a steam line rupture, outside the drywell, the resultant radiological dose at the site boundary would be about 10 rem to the thyroid. This dose was calculated on the basis of a total iodine activity limit of 20 μCi/ml, meteorology corresponding

Table 4.6.2

Neutron Flux and Samples Withdrawal Schedule for Dresden Unit 2

Withdrawal Year	Part No.	Location	Comments
1977	6	Near Core Top Guide - 180°	Accelerated Sample
1980	8	Wall - 215°	
2000	7	Wall - 95°	
	9	Wall - 245°	Standby
	10	Wall - 275°	Standby

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

COMMONWEALTH EDISON COMPANY

DOCKET NO. 50-249

DRESDEN STATION UNIT NO. 3

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 39
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 May 16, 1977, as supplemented by filing dated November 3, 1978, 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. 39, are hereby incorporated in the license. The licensee shall operate the facility in accordance with the Technical Specifications.

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

FOR THE NUCLEAR REGULATORY COMMISSION

Thomas A. Ippolito, Chief
Operating Reactors Branch #3
Division of Operating Reactors

Attachment:
Changes to the Technical
Specifications

Date of Issuance: August 13, 1979

ATTACHMENT TO LICENSE AMENDMENT NO. 39

FACILITY OPERATING LICENSE NO. DPR-25

DOCKET NO. 50-249

Replace the following existing pages of the Technical Specifications with the attached revised pages. Changed areas on the revised pages are shown by a marginal line.

Remove Pages	Insert Pages
88	88
93	93
	93A
	94A

3.6 LIMITING CONDITION FOR OPERATION	4.6 SURVEILLANCE REQUIREMENT
B. Pressurization Temperature	B. Pressurization Temperature
1. The reactor vessel shall be vented and power operation shall not be conducted unless the reactor vessel temperature is equal to or greater than that shown in Figure 4.6.1.	1. Reactor Vessel shell temperature and reactor coolant pressure shall be permanently recorded at 15 minute intervals whenever the shell temperature is below 220°F and the reactor vessel is not vented.
2. The reactor vessel head bolting studs shall not be under tension unless the temperature of the vessel shell immediately below the vessel flange is ≥120°F.	2. When the reactor vessel head bolting studs are tightened or loosened the reactor vessel shell temperature immediately below the head flange shall be permanently recorded.
	3. Neutron flux monitors and samples shall be installed in the reactor vessel adjacent to the vessel wall at the core midplane level. The monitor and sample program where possible conform to ASTM E 185. The monitors and samples will be removed and tested as outlined in Table 4.6.2 to experimentally verify the calculated values of integrated neutron flux that are used to determine NDTT for Figure 4.6.1.
C. Coolant Chemistry	C. Coolant Chemistry
1. The reactor coolant system radioactivity concentration in water shall not exceed 20 microcuries of total iodine per ml of water.	1. a. A sample of reactor coolant shall be taken at least every 96 hours and analyzed for radio-activity.
	b. Isotopic analysis of a sample of reactor coolant shall be made at least once per month.

the vessel flange have an NDT temperature of 60°F. The design life of the reactor vessel is 40 years and the maximum fast neutron exposure at 40 years is calculated to be 2.7×10^{17} nvt.

The NDT temperature limit curve in Figure 4.6.1 uses the "worst case" curve of the SAR to establish the NDT temperature shift and is, therefore, based on more conservative pressure data. For example, the expected NDT temperature shift for this vessel at 2.7×10^{17} nvt is expected to be 15°F instead of the 90°F assumed in establishing Figure 4.6.1. Figure 4.6.1 also incorporates a 60°F factor of safety. This factor is based upon the requirements of the ASME code and the considerations which resulted in these requirements. Therefore, the specification provides for "worst case" data as well as 60°F of margin to provide assurance that operation in the non-ductile region will not occur.

The reactor vessel head flange and the vessel flange in combination with the double "O" ring type seal are designed to provide a leak-tight seal when bolted together. When the vessel head is placed on the reactor vessel, only that portion of the head flange near the inside of the vessel rests on the vessel flange. As the head bolts are replaced and tensioned, the vessel head is flexed slightly to bring together the entire contact surfaces adjacent to the "O" rings of the head and vessel flange. The closure flanges and connecting shell materials have an NDT temperature of 10°F, and they are not subject to any appreciable neutron radiation exposure. However, the vertical electroslag seams terminating immediately below the vessel flange have an NDT temperature of 60°F, and they are moderately stressed by tensioning of the studs. Therefore, the minimum temperature of the vessel shell immediately below the vessel flange is established as 60°F + 60°F, or 120°F.

Numerous data are available relating integrated flux and the change in nil-ductility transition temperature (NDTT) in various steels. The most conservative data has been used in Specification 3.6. The integrated flux at the vessel wall is calculated from core physics data and will be measured using flux monitors installed inside the vessel. The measurements of the neutron flux at the vessel wall will be used to check and if necessary correct, the calculated data to determine an accurate NDTT.

In addition, vessel material samples will be located within the vessel to monitor the affect of neutron exposure on these materials. The samples include specimens of base metal, weld zone metal, heat affected zone metal, and standard specimens. These samples will receive neutron exposure more rapidly than the vessel wall material and therefore will lead the vessel in integrated neutron flux exposure. These samples will provide further assurance that the shift in NDTT used in the specification is conservative.

The withdrawal schedule in Table 4.6.2 is based on the three capsule surveillance program as defined in Section 11.C.3.a of 10 CFR 50 Appendix H. The accelerated capsule (Near Core Top Guide) are not required by Appendix H but will be tested to provide additional information on the vessel material.

This surveillance program conforms to ASTM E 185-73 "Recommended Practice for Surveillance Tests for Nuclear Reactor Vessels" with one exception. The base metal specimens of the vessel were made with their longitudinal axes parallel to the principle rolling direction of the vessel plate.

C. Coolant Chemistry – A radioactivity concentration limit of 20 μCi/ml total iodine can be reached if the gaseous effluents are near the limit as set forth in Specification 3.8.C.1 or there is a failure or a prolonged shutdown of the cleanup demineralizer. In the event of a steam line rupture, outside the drywell, the resultant radiological dose at the site boundary would be about 10 rem to the thyroid. This dose was calculated on the basis of a total iodine activity limit of 20 μCi/ml, meteorology corresponding

Table 4.6.2

Neutron Flux and Samples Withdrawal Schedule for Dresden Unit 3

Withdrawal Year	Part No.	Location	Comments
1979	16	Near Core Top Guide - 180°	Accelerated Sample
1981	18	Wall - 215°	
2001	17	Wall - 95°	
	19	Wall - 245°	Standby
	20	Wall - 275°	Standby

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

COMMONWEALTH EDISON COMPANY
AND
IOWA ILLINOIS GAS AND ELECTRIC COMPANY

DOCKET NO. 50-254

QUAD CITIES NUCLEAR POWER STATION UNIT NO. 1

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 53
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 May 16, 1977, as supplemented by filing dated November 3, 1978, 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-29 is hereby amended to read as follows:

   B. Technical Specifications

   The Technical Specifications contained in Appendices A and B, as revised through Amendment No. 53, are hereby incorporated in the license. The licensee shall operate the facility in accordance with the Technical Specifications.

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

FOR THE NUCLEAR REGULATORY COMMISSION

Thomas A. Ippolito, Chief
Operating Reactors Branch #3
Division of Operating Reactors

Attachment:
Changes to the Technical
Specifications

Date of Issuance: August 13, 1979

ATTACHMENT TO LICENSE AMENDMENT NO. 53

FACILITY OPERATING LICENSE NO. DPR-29

DOCKET NO. 50-254

Replace the following existing pages of the Technical Specifications with the attached revised pages. Changed areas on the revised pages are shown by a marginal line.

Remove Pages	Insert Pages
3.6/4.6-2	3.6/4.6-2
3.6/4.6-9	3.6/4.6-9
	3.6/4.6-9A
	3.6/4.6-21A

that shown in Figure 3.6-1. The reactor vessel shall not be pressurized above 250 psig unless the reactor vessel temperature is equal to or greater than 190° F when fuel is in the reactor vessel.

2. For isothermal inservice hydrostatic tests, full test pressures shall be permissible on the vessel above the limiting pressurization temperature as shown in Figure 3.6-1. For isothermal inservice hydrostatic tests conducted between 140° F and the limiting pressurization temperature shown in Figure 3.6-1, test pressures shall be limited to 1/2 of the vessel operating pressure (500 psig).

3. The reactor vessel heat bolting studs shall not be under tension unless the temperature of the vessel shell immediately below the vessel flange is ≥ 100° F.

C. Coolant Chemistry

1. The steady-state radioiodine concentration in the reactor coolant shall not exceed 5 μCi of I-131 dose equivalent per gram of water.

below 220°F and the reactor vessel is not vented.

2. Neutron flux monitors and samples shall be installed in the reactor vessel adjacent to the vessel wall at the core midplane level. The monitor and sample program shall conform to ASTM E 185-66. The monitors and samples shall be removed and tested in accordance with the guidelines set forth in 10CFR50 Appendix H to experimentally verify the calculated values of integrated neutron flux that are used to determine the NDTT for Figure 3.6-1.

3. When the reactor vessel head bolting studs are tightened or lossened, the reactor vessel shell temperature immediately below the head flange shall be permanently recorded.

C. Coolant Chemistry

1. a. A sample of reactor coolant shall be taken at least every 96 hours and analyzed for radioactive iodines of I-131 through I-135 during power operation. In addition, when chimney monitors indicate an increase in radioactive gaseous effluents of 25% or 5000 μCi/sec, whichever is greater, during steady-state reactor operation, a reactor coolant sample shall be taken and analyzed for radioactive iodines.

b. An isotopic analysis of a reactor coolant sample shall be made at least once per month.

c. Whenever the steady-state radioiodine concentration of prior operation is greater than 1% but less than 10% of Specification 3.6.C.1, a sample of reactor coolant shall be taken within 24 hours of any reactor startup and analyzed

region shifts to higher temperatures when the thickness of the specimen tested is increased (size effect).

Accordingly, a conservative reactor vessel pressurization temperature as a function of fast neutron exposure is presented in Figure 3.6-1 to cover 'worst-case' limits required during reactor power operation. This curve is based on an initial NDTT of the vessel shell electroslag welds adjacent to the core of 40° F plus 100° F to assure an adequate fracture toughness for small thickness material plus a 50° F margin to account for the thickness effect of heavy section steel to give 190° F minimum temperature from initial operation to the time when the neutron fluence exceeds 5 x 10^{16} nvt. At that time, the minimum temperature will increase steadily as the neutron fluence increases based on the 'worst-case' curve relating the change in transition temperature to neutron fluence shown in Figure 4.2-2 of the SAR. For temperatures below the limiting pressurization temperature, the vessel pressure will be limited to 250 psig during reactor startup and shutdown operations. The total stress level including hoop stress and transient thermal stress in the reactor vessel during startup and shutdown operation for internal pressures of 250 psig is approximately the same as the reactor vessel hoop stress incurred during isothermal hydrostatic testing at an internal pressure of 500 psig. Therefore during isothermal hydrostatic tests at 500 psig, the pressurization temperature may be below the curve shown in Figure 3.6-1 but above 140° F.

The reactor vessel head flange and the vessel flange in combination with the double O-ring type seal are designed to provide a leaktight seal when bolted together. When the vessel head is placed on the reactor vessel, only that portion of the head flange near the inside of the vessel rests on the vessel flange. As the head bolts are replaced and tensioned, the vessel head is flexed slightly to bring together the entire contact surfaces adjacent to the O-rings of the head and vessel flange. The closure flanges and connecting shell materials have an NDTT of 10° F, and they are not subject to any appreciable neutron radiation exposure. However, the vertical electroslag seams terminating immediately below the vessel flange have an NDTT of 40° F, and they are moderately stressed by tensioning of the studs. Therefore, the minimum temperature of the vessel shell immediately below the vessel flange is established as 40° F + 60° F, or 100° F.

Numerous data are available relating integrated flux and the change in NDTT in various steels. The most conservative data has been used in Specification 3.6. The integrated flux at the vessel wall is calculated from core physics data and will be measured using flux monitors installed inside the vessel. The measurements of the neutron flux at the vessel wall will be used to check and if necessary correct the calculated data to determine an accurate NDTT.

In addition, vessel material samples will be located within the vessel to monitor the effect of neutron exposure on these materials. The samples include specimens of base metal, weld zone metal, heat affected zone metal, and standard specimens. These samples will receive neutron exposure more rapidly than the vessel wall material and will therefore lead the vessel in integrated neutron flux exposure. These samples will provide further assurance that the shift in NDTT used in the specification is conservative.

The withdrawal schedule in Table 4.6.2 is based on the three capsule surveillance program as defined in Section 11.C.3.a of 10 CFR 50 Appendix H. The accelerated capsule (Near Core Top Guide) are not required by Appendix H but will be tested to provide additional information on the vessel material.

This surveillance program conforms to ASTM E 185-73 "Recommended Practice for Surveillance Tests for Nuclear Reactor Vessels" with one exception. The base metal specimens of the vessel were made with their longitudinal axes parallel to the principle rolling direction of the vessel plate.

C. Coolant Chemistry

A steady-state radioiodine concentration limit of 5 μCi of I-131 dose equivalent per gram of water in the reactor coolant system can be reached if the gross radioactivity in the gaseous effluents are near the limit as set forth in Specification 3.8.C.1 or there is a failure or prolonged shutdown of the cleanup demineralizer. In the event of a steamline rupture outside the drywell, the NRC staff calculations show the resultant radiological dose at the site boundary to be less than 30 rem to the thyroid. This dose was calculated on the basis of the radioiodine concentration limit of 5 μCi of I-131 dose equivalent per gram of water, atmospheric diffusion from an elevated release at 30 meters under fumigation conditions for Pasquill Type F, 1 meter per second wind speed, and a steamline isolation valve closure time of 5 seconds.

Table 4.6.2

Revised Withdrawal Schedule for Quad-Cities Unit 1

Withdrawal Year	Part No.	Location	Comments
1982	8	Wall - 215°	
2002	7	Wall - 95°	
	9	Wall - 245°	Standby
	5	Wall - 65°	Standby
	10	Wall - 275°	Standby
1981	4	Near Core Top Guide - 90°	
1984	6	Near Core Top Guide - 180°	

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

COMMONWEALTH EDISON COMPANY
AND
IOWA-ILLINOIS GAS AND ELECTRIC COMPANY

DOCKET NO. 50-265

QUAD CITIES STATION UNIT NO. 2

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 50
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 May 16, 1977, as supplemented by filing dated November 3, 1978, 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 Commisison;

   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 Appendices A and B, as revised through Amendment No. 50, are hereby incorporated in the license. The licensee shall operate the facility in accordance with the Technical Specifications.

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

FOR THE NUCLEAR REGULATORY COMMISSION

Thomas A. Ippolito, Chief
Operating Reactors Branch #3
Division of Operating Reactors

Attachment:
Changes to the Technical
Specifications

Date of Issuance: August 13, 1979

ATTACHMENT TO LICENSE AMENDMENT NO. 50

FACILITY OPERATING LICENSE NO. DPR-30

DOCKET NO. 50-265

Replace the following existing pages of the Technical Specifications with the attached revised pages. Changed areas on the revised pages are shown by a marginal line.

Remove Pages	Insert Pages
3.6/4.6-2	3.6/4.6-2
3.6/4.6-9	3.6/4.6-9
	3.6/4.6-9A
	3.6/4.6-21A

that shown in Figure 3.6-1. The reactor vessel shall not be pressurized above 250 psig unless the reactor vessel temperature is equal to or greater than 190° F when fuel is in the reactor vessel.

2. For isothermal inservice hydrostatic tests, full test pressures shall be permissible on the vessel above the limiting pressurization temperature as shown in Figure 3.6-1. For isothermal inservice hydrostatic tests conducted between 140° F and the limiting pressurization temperature shown in Figure 3.6-1, test pressures shall be limited to 1/2 of the vessel operating pressure (500 psig).

3. The reactor vessel heat bolting studs shall not be under tension unless the temperature of the vessel shell immediately below the vessel flange is ≥ 100° F.

C. Coolant Chemistry

1. The steady-state radioiodine concentration in the reactor coolant shall not exceed 5 μCi of I-131 dose equivalent per gram of water.

below 220 °F and the reactor vessel is not vented.

2. Neutron flux monitors and samples shall be installed in the reactor vessel adjacent to the vessel wall at the core midplane level. The monitor and sample program shall conform to ASTM E 185-66. The monitors and samples shall be removed and tested in accordance with the guidelines set forth in 10CFR50 Appendix H to experimentally verify the calculated values of integrated neutron flux that are used to determine the NDTT for Figure 3.6-1.

3. When the reactor vessel head bolting studs are tightened or lossened, the reactor vessel shell temperature immediately below the head flange shall be permanently recorded.

C. Coolant Chemistry

1. a. A sample of reactor coolant shall be taken at least every 96 hours and analyzed for radioactive iodines of I-131 through I-135 during power operation. In addition, when chimney monitors indicate an increase in radioactive gaseous effluents of 25% or 5000 μCi/sec, whichever is greater, during steady-state reactor operation, a reactor coolant sample shall be taken and analyzed for radioactive iodines.

b. An isotopic analysis of a reactor coolant sample shall be made at least once per month.

c. Whenever the steady-state radioiodine concentration of prior operation is greater than 1% but less than 10% of Specification 3.6.C.1, a sample of reactor coolant shall be taken within 24 hours of any reactor startup and analyzed [illegible]

region shifts to higher temperatures when the thickness of the specimen tested is increased (size effect).

Accordingly, a conservative reactor vessel pressurization temperature as a function of fast neutron exposure is presented in Figure 3.6-1 to cover 'worst-case' limits required during reactor power operation. This curve is based on an initial NDTT of the vessel shell electroslag welds adjacent to the core of 40° F plus 100° F to assure an adequate fracture toughness for small thickness material plus a 50° F margin to account for the thickness effect of heavy section steel to give 190° F minimum temperature from initial operation to the time when the neutron fluence exceeds 5 x 10^{16} nvt. At that time, the minimum temperature will increase steadily as the neutron fluence increases based on the 'worst-case' curve relating the change in transition temperature to neutron fluence shown in Figure 4.2-2 of the SAR. For temperatures below the limiting pressurization temperature, the vessel pressure will be limited to 250 psig during reactor startup and shutdown operations. The total stress level including hoop stress and transient thermal stress in the reactor vessel during startup and shutdown operation for internal pressures of 250 psig is approximately the same as the reactor vessel hoop stress incurred during isothermal hydrostatic testing at an internal pressure of 500 psig. Therefore during isothermal hydrostatic tests at 500 psig, the pressurization temperature may be below the curve shown in Figure 3.6-1 but above 140° F.

The reactor vessel head flange and the vessel flange in combination with the double O-ring type seal are designed to provide a leaktight seal when bolted together. When the vessel head is placed on the reactor vessel, only that portion of the head flange near the inside of the vessel rests on the vessel flange. As the head bolts are replaced and tensioned, the vessel head is flexed slightly to bring together the entire contact surfaces adjacent to the O-rings of the head and vessel flange. The closure flanges and connecting shell materials have an NDTT of 10° F, and they are not subject to any appreciable neutron radiation exposure. However, the vertical electroslag seams terminating immediately below the vessel flange have an NDTT of 40° F, and they are moderately stressed by tensioning of the studs. Therefore, the minimum temperature of the vessel shell immediately below the vessel flange is established as 40° F + 60° F, or 100° F.

Numerous data are available relating integrated flux and the change in NDTT in various steels. The most conservative data has been used in Specification 3.6. The integrated flux at the vessel wall is calculated from core physics data and will be measured using flux monitors installed inside the vessel. The measurements of the neutron flux at the vessel wall will be used to check and if necessary correct the calculated data to determine an accurate NDTT.

In addition, vessel material samples will be located within the vessel to monitor the effect of neutron exposure on these materials. The samples include specimens of base metal, weld zone metal, heat affected zone metal, and standard specimens. These samples will receive neutron exposure more rapidly than the vessel wall material and will therefore lead the vessel in integrated neutron flux exposure. These samples will provide further assurance that the shift in NDTT used in the specification is conservative.

The withdrawal schedule in Table 4.6.2 is based on the three capsule surveillance program as defined in Section 11.C.3.a of 10 CFR 50 Appendix H. The accelerated capsule (Near Core Top Guide) are not required by Appendix H but will be tested to provide additional information on the vessel material.

This surveillance program conforms to ASTM E 185-73 "Recommended Practice for Surveillance Tests for Nuclear Reactor Vessels" with one exception. The base metal specimens of the vessel were made with their longitudinal axes parallel to the principle rolling direction of the vessel plate.

C. Coolant Chemistry

A steady-state radioiodine concentration limit of 5 μCi of I-131 dose equivalent per gram of water in the reactor coolant system can be reached if the gross radioactivity in the gaseous effluents are near the limit as set forth in Specification 3.8.C.1 or there is a failure or prolonged shutdown of the cleanup demineralizer. In the event of a steamline rupture outside the drywell, the NRC staff calculations show the resultant radiological dose at the site boundary to be less than 30 rem to the thyroid. This dose was calculated on the basis of the radioiodine concentration limit of 5 μCi of I-131 dose equivalent per gram of water, atmospheric diffusion from an elevated release at 30 meters under fumigation conditions for Pasquill Type F, 1 meter per second wind speed, and a steamline isolation valve closure time of 5 seconds.

Table 4.6.2

Revised Withdrawal Schedule for Quad-Cities Unit 2

Withdrawal Year	Part No.	Location	Comments
1982	18	Wall - 215°	
2002	17	Wall - 95°	
	19	Wall - 245°	Standby
	15	Wall - 65°	Standby
	20	Wall - 275°	Standby
1980	14	Near Core Top Guide - 0°	
1983	16	Near Core Top Guide - 180°	

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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

SUPPORTING AMENDMENT NO. 44 TO FACILITY OPERATING LICENSE NO. DPR-19

AMENDMENT NO. 39 TO FACILITY OPERATING LICENSE NO. DPR-25

AMENDMENT NO. 53 TO FACILITY OPERATING LICENSE NO. DPR-29

AMENDMENT NO. 50 TO FACILITY OPERATING LICENSE NO. DPR-30

COMMONWEALTH EDISON 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

INTRODUCTION

By letter dated May 16, 1977 and supplemented with additional information in a letter dated November 3, 1978, Commonwealth Edison Company (CECO) submitted an application to amend the Technical Specifications appended to Facility Operating Licenses DPR-19 and DPR-25 for Dresden Units Nos. 2 and 3, and DPR-29 and DPR-30 for Quad Cities Units Nos. 1 and 2. The requested changes would modify the withdrawal schedules of the pressure vessel material surveillance capsules to be in accordance with 10 CFR 50, Appendix H.

DISCUSSION

Neutron irradiation causes the pressure vessel reference nil ductility temperature, RT_{NDT}, to increase with time, and the material fracture toughness properties to decrease with time. These irradiated properties are used to establish safe pressure-temperature operating limits for the life of the pressure vessel.

10 CFR Part 50, Appendix H, "Reactor Vessel Material Surveillance Program Requirements," requires a material surveillance program to monitor changes in the fracture toughness properties of ferritic materials in the vessel beltline region resulting from neutron irradiation and high temperatures. Under this program, fracture toughness test data are obtained from material specimens periodically withdrawn from the vessel. Appendix H gives withdrawal schedules based on the amount of radiation damage predicted at the end of the service lifetime of the vessel. The proposed schedules for the subject vessels are based on the three capsule program defined in Section II.C.3.a of 10 CFR 50, Appendix H. The three capsule program can be used by vessels that have materials whose RT_{NDT} values will not exceed 100°F at end of service life. Based on the results of tests on materials that have been removed from the vessels thus far, we conclude that RT_{NDT} will be less than 100°F at end of life for the materials in each of the four vessels. Therefore, the three capsule surveillance is considered acceptable.

Several capsules have already been removed from the subject pressure vessels and tested. These capsules are not considered to be a part of the three capsule program, but are in addition to the three capsules and are in excess of the Code requirements.

From our review of the proposed surveillance capsule withdrawal schedule, we conclude that the schedule is in accordance with 10 CFR 50, Appendix H, and is therefore acceptable.

ENVIRONMENTAL CONSIDERATIONS

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

CONCLUSION

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

Dated: August 13, 1979

UNITED STATES NUCLEAR REGULATORY COMMISSION

DOCKET NOS. 50-237, 50-249, 50-254 AND 50-265

COMMONWEALTH EDISON COMPANY
AND

IOWA-ILLINOIS GAS AND ELECTRIC COMPANY

NOTICE OF ISSUANCE OF AMENDMENTS TO FACILITY OPERATING LICENSES

The U. S. Nuclear Regulatory Commission (the Commission) has issued Amendments Nos. 44 and 39 to Facility Operating Licenses Nos. DPR-19 and DPR-25, issued to Commonwealth Edison Company, which revised the Technical Specifications for operation of the Dresden Nuclear Power Station, Units Nos. 2 and 3, located in Grundy County, Illinois. The Commission has also issued Amendments Nos. 53 and 50 to Facility Operating Licenses Nos. DPR-29 and DPR-30, issued to Commonwealth Edison Company and Iowa-Illinois Gas and Electric Company, which revised the Technical Specifications for operation of the Quad-Cities Nuclear Power Station, Units Nos. 1 and 2, located in Rock Island County, Illinois. The amendments become effective as of the date of issuance.

The amendments modify the Technical Specifications to change the withdrawal schedules of the pressure vessel material surveillance capsules to be in accordance with 10 CFR 50, Appendix H.

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

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

For further details with respect to this action, see (1) the application for amendments dated May 16, 1977, as supplemented November 3, 1978, (2) Amendment No. 44 to License No. DPR-19, Amendment No. 39 to License No. DPR-25, Amendment No. 53 to License No. DPR-29, and Amendment No. 50 to License No. DPR-30, and (3) the Commission's related Safety Evaluation. All of these items are available for public inspection at the Commission's Public Document Room, 1717 H Street, N. W., Washington, D. C., and at the Morris Public Library, 604 Liberty Street, Morris, Illinois, for Dresden 2 and 3, and at the Moline Public Library, 504 - 17th Street, Moline, Illinois, for Quad Cities 1 and 2. A copy of items (2) and (3) may be obtained upon request addressed to the U. S. Nuclear Regulatory Commission, Washington, D. C. 20555, Attention: Director, Division of Operating Reactors.

Dated at Bethesda, Maryland, this 13th day of August 1979.

FOR THE NUCLEAR REGULATORY COMMISSION

Thomas A. Ippolito, Chief
Operating Reactors Branch #3
Division of Operating Reactors