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

BALTIMORE GAS AND ELECTRIC COMPANY

DOCKET NO. 50-317

CALVERT CLIFFS NUCLEAR POWER PLANT UNIT NO. 1

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 166
License No. DPR-53

1. The Nuclear Regulatory Commission (the Commission) has found that:

   A. The application for amendment by Baltimore Gas and Electric Company (the licensee) dated July 2, 1991, as supplemented November 15, 1991, 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-53 is hereby amended to read as follows:

(2) Technical Specifications

The Technical Specifications contained in Appendices A and B, as revised through Amendment No. 166, 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 and shall be implemented when the spent fuel cask handling crane modifications are complete prior to July 31, 1992.

FOR THE NUCLEAR REGULATORY COMMISSION

Robert A. Capra

Robert A. Capra, Director
Project Directorate I-1
Division of Reactor Projects - I/II
Office of Nuclear Reactor Regulation

Attachment:
Changes to the Technical
Specifications

Date of Issuance: January 17, 1992

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

BALTIMORE GAS AND ELECTRIC COMPANY

DOCKET NO. 50-318

CALVERT CLIFFS NUCLEAR POWER PLANT, UNIT NO. 2

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 146
License No. DPR-69

1. The Nuclear Regulatory Commission (the Commission) has found that:

   A. The application for amendment by Baltimore Gas and Electric Company (the licensee) dated July 2, 1991, as supplemented November 15, 1991, 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-69 is hereby amended to read as follows:

(2) Technical Specifications

The Technical Specifications contained in Appendices A and B, as revised through Amendment No. 146, 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 and shall be implemented when the spent fuel cask handling crane modifications are complete prior to July 31, 1992.

FOR THE NUCLEAR REGULATORY COMMISSION

Robert A. Capra

Robert A. Capra, Director
Project Directorate I-1
Division of Reactor Projects - I/II
Office of Nuclear Reactor Regulation

Attachment:
Changes to the Technical
Specifications

Date of Issuance: January 17, 1992

ATTACHMENT TO LICENSE AMENDMENTS

AMENDMENT NO. 166 FACILITY OPERATING LICENSE NO. DPR-53

AMENDMENT NO. 146 FACILITY OPERATING LICENSE NO. DPR-69

DOCKET NOS. 50-317 AND 50-318

Revise Appendix A as follows:

Remove Pages	Insert Pages
3/4 9-7	3/4 9-7
3/4 9-16	3/4 9-16
B3/4 9-2	B3/4 9-2
B3/4 9-3	B3/4 9-3

REFUELING OPERATIONS

CRANE TRAVEL - SPENT FUEL STORAGE POOL BUILDING

LIMITING CONDITION FOR OPERATION

3.9.7 Loads in excess of 1600 pounds shall be prohibited from travel over fuel assemblies in the storage pool unless such loads are handled by the single-failure-proof Spent Fuel Cask Handling Crane.

APPLICABILITY: With fuel assemblies in the storage pool.

ACTION:

With the requirements of the above specification not satisfied, place the crane load in a safe condition. The provisions of Specification 3.0.3 are not applicable.

SURVEILLANCE REQUIREMENTS

4.9.7.1 The weight of each load, other than a fuel assembly and CEA, shall be verified to be $\leq$ 1600 pounds prior to moving it over fuel assemblies unless such loads are handled by the single-failure-proof Spent Fuel Cask Handling Crane.

4.9.7.2 Slings and special lifting devices shall be visually inspected and verified operable within 7 days prior to and at least once per 7 days thereafter during Spent Fuel Cask Handling Crane operation over the spent fuel storage pool.

4.9.7.3 In addition to the requirements of Section 4.9.7.2, pre-operational and periodic tests and preventive maintenance shall be performed per plant procedures.

DELETED

3/4.9.6 REFUELING MACHINE OPERABILITY

The **OPERABILITY** requirements for the refueling machine ensure that: (1) the refueling machine will be used for movement of CEAs and fuel assemblies, (2) the refueling machine has sufficient load capacity to lift a CEA or fuel assembly, and (3) the core internals and pressure vessel are protected from excessive lifting force in the event they are inadvertently engaged during lifting operations.

3/4.9.7 CRANE TRAVEL - SPENT FUEL STORAGE BUILDING

The restriction on movement of loads in excess of the nominal weight of a fuel assembly and CEA over other fuel assemblies in the storage pool ensures that in the event this load is dropped (1) the activity release will be limited to that contained in a single fuel assembly, and (2) any possible distortion of fuel in the storage racks will not result in a critical array. This assumption is consistent with the activity release assumed in the accident analyses. The Spent Fuel Cask Handling Crane, which has a critical load capacity of 125/15 ton, meets the "single-failure-proof" criteria of NUREG-0554 and NUREG-0612.

3/4.9.8 COOLANT CIRCULATION

The requirement that at least one shutdown cooling loop be in operation ensures that (1) sufficient cooling capacity is available to remove decay heat and maintain the water in the reactor pressure vessel below 140°F as required during the **REFUELING MODE**, and (2) sufficient coolant circulation is maintained through the reactor core to minimize the effects of a boron dilution incident and prevent boron stratification.

The requirement to have two shutdown cooling loops **OPERABLE** when there is less than 23 feet of water above the core ensures that a single failure of the operating shutdown cooling loop will not result in a complete loss of decay heat removal capability. With the reactor vessel head removed and 23 feet of water above the core, a large heat sink is available for core cooling, thus in the event of a failure of the operating shutdown cooling loop, adequate time is provided to initiate emergency procedures to cool the core.

In **MODE** 6, shutdown cooling flow must provide sufficient heat removal to match core decay heat generation rates and maintain the core exit temperature within the **MODE** limit. Thus, as decay heat production is reduced with time, shutdown cooling flow may be proportionally reduced. Pursuant to NRC Generic Letter 88-17, flow reduction is necessary for operations near the mid-point of the hot leg piping to prevent vortex formation at the shutdown cooling suction nozzle. Prevention of vortex formation reduces the potential for a loss of shutdown cooling due to air binding of the low pressure safety injection (LPSI) pump(s) operating to provide shutdown cooling flow. In accordance with the recommendations of NRC Bulletin 88-04, "Safety Related Pump Loss," a minimum flow rate

requirement of 1500 gpm is imposed. This protects the vendor recommended minimum continuous duty flow rate of 1340 gpm for the LPSI pumps. The 1500 gpm minimum flow rate is also more than adequate to preclude a boron dilution event in MODE 6 operation and in no way restricts the ability to increase flow as necessary to remove decay heat.

3/4.9.9 CONTAINMENT PURGE VALVE ISOLATION SYSTEM

The OPERABILITY of this system ensures that the containment purge valves will be automatically isolated upon detection of high radiation levels within the containment. The OPERABILITY of this system is required to restrict the release of radioactive material from the containment atmosphere to the environment.

3/4.9.10 and 3/4.9.11 WATER LEVEL-REACTOR VESSEL AND SPENT FUEL POOL WATER LEVEL

The restrictions on minimum water level ensure that sufficient water depth is available to remove 99% of the assumed 10% iodine gap activity released from the rupture of an irradiated fuel assembly. The minimum water depth is consistent with the assumptions of the accident analysis.

3/4.9.12 SPENT FUEL POOL VENTILATION SYSTEM

The limitations on the spent fuel pool ventilation system ensure that all radioactive material released from an irradiated fuel assembly will be filtered through the HEPA filters and charcoal adsorber prior to discharge to the atmosphere. The OPERABILITY of this system and the resulting iodine removal capacity are consistent with the assumptions of the accident analyses.

3/4.9.14 CONTAINMENT VENT ISOLATION VALVES

The OPERABILITY and closure restrictions on the containment vent isolation valves are sufficient to restrict radioactive material release from a fuel element rupture based upon the lack of containment pressurization potential while in the REFUELING MODE.

REFUELING OPERATIONS

CRANE TRAVEL - SPENT FUEL STORAGE POOL BUILDING

LIMITING CONDITION FOR OPERATION

3.9.7 Loads in excess of 1600 pounds shall be prohibited from travel over fuel assemblies in the storage pool unless such loads are handled by the single-failure-proof Spent Fuel Cask Handling Crane.

APPLICABILITY: With fuel assemblies in the storage pool.

ACTION:

With the requirements of the above specification not satisfied, place the crane load in a safe condition. The provisions of Specification 3.0.3 are not applicable.

SURVEILLANCE REQUIREMENTS

4.9.7.1 The weight of each load, other than a fuel assembly and CEA, shall be verified to be $\leq$ 1600 pounds prior to moving it over fuel assemblies unless such loads are handled by the single-failure-proof Spent Fuel Cask Handling Crane.

4.9.7.2 Slings and special lifting devices shall be visually inspected and verified operable within 7 days prior to and at least once per 7 days thereafter during Spent Fuel Cask Handling Crane operation over the spent fuel storage pool.

4.9.7.3 In addition to the requirements of Section 4.9.7.2, pre-operational and periodic tests and preventive maintenance shall be performed per plant procedures.

DELETED

3/4.9.6 REFUELING MACHINE OPERABILITY

The **OPERABILITY** requirements for the refueling machine ensure that: (1) the refueling machine will be used for movement of CEAs and fuel assemblies, (2) the refueling machine has sufficient load capacity to lift a CEA or fuel assembly, and (3) the core internals and pressure vessel are protected from excessive lifting force in the event they are inadvertently engaged during lifting operations.

3/4.9.7 CRANE TRAVEL - SPENT FUEL STORAGE BUILDING

The restriction on movement of loads in excess of the nominal weight of a fuel assembly and CEA over other fuel assemblies in the storage pool ensures that in the event this load is dropped (1) the activity release will be limited to that contained in a single fuel assembly, and (2) any possible distortion of fuel in the storage racks will not result in a critical array. This assumption is consistent with the activity release assumed in the accident analyses. The Spent Fuel Cask Handling Crane, which has a critical load capacity of 125/15 ton, meets the "single-failure-proof" criteria of NUREG-0554 and NUREG-0612.

3/4.9.8 COOLANT CIRCULATION

The requirement that at least one shutdown cooling loop be in operation ensures that (1) sufficient cooling capacity is available to remove decay heat and maintain the water in the reactor pressure vessel below 140°F as required during the **REFUELING MODE**, and (2) sufficient coolant circulation is maintained through the reactor core to minimize the effects of a boron dilution incident and prevent boron stratification.

The requirement to have two shutdown cooling loops **OPERABLE** when there is less than 23 feet of water above the core ensures that a single failure of the operating shutdown cooling loop will not result in a complete loss of decay heat removal capability. With the reactor vessel head removed and 23 feet of water above the core, a large heat sink is available for core cooling, thus in the event of a failure of the operating shutdown cooling loop, adequate time is provided to initiate emergency procedures to cool the core.

In **MODE** 6, shutdown cooling flow must provide sufficient heat removal to match core decay heat generation rates and maintain the core exit temperature within the **MODE** limit. Thus, as decay heat production is reduced with time, shutdown cooling flow may be proportionally reduced. Pursuant to NRC Generic Letter 88-17, flow reduction is necessary for operations near the mid-point of the hot leg piping to prevent vortex formation at the shutdown cooling suction nozzle. Prevention of vortex formation reduces the potential for a loss of shutdown cooling due to air binding of the low pressure safety injection (LPSI) pump(s) operating to provide shutdown cooling flow. In accordance with the recommendations of NRC Bulletin 88-04, "Safety Related Pump Loss," a minimum flow rate

requirement of 1500 gpm is imposed. This protects the vendor-recommended minimum continuous duty flow rate of 1340 gpm for the LPSI pumps. The 1500 gpm minimum flow rate is also more than adequate to preclude a boron dilution event in MODE 6 operation and in no way restricts the ability to increase flow as necessary to remove decay heat.

3/4.9.9 CONTAINMENT PURGE VALVE ISOLATION SYSTEM

The OPERABILITY of this system ensures that the containment purge valves will be automatically isolated upon detection of high radiation levels within the containment. The OPERABILITY of this system is required to restrict the release of radioactive material from the containment atmosphere to the environment.

3/4.9.10 and 3/4.9.11 WATER LEVEL-REACTOR VESSEL AND SPENT FUEL POOL WATER LEVEL

The restrictions on minimum water level ensure that sufficient water depth is available to remove 99% of the assumed 10% iodine gap activity released from the rupture of an irradiated fuel assembly. The minimum water depth is consistent with the assumptions of the accident analysis.

3/4.9.12 SPENT FUEL POOL VENTILATION SYSTEM

The limitations on the spent fuel pool ventilation system ensure that all radioactive material released from an irradiated fuel assembly will be filtered through the HEPA filters and charcoal adsorber prior to discharge to the atmosphere. The OPERABILITY of this system and the resulting iodine removal capacity are consistent with the assumptions of the accident analyses.

3/4.9.14 CONTAINMENT VENT ISOLATION VALVES

The OPERABILITY and closure restrictions on the containment vent isolation valves are sufficient to restrict radioactive material release from a fuel element rupture based upon the lack of containment pressurization potential while in the REFUELING MODE.