April 13, 2004

Mr. George Vanderheyden, Vice President
Calvert Cliffs Nuclear Power Plant, Inc.
Calvert Cliffs Nuclear Power Plant
1650 Calvert Cliffs Parkway
Lusby, MD 20657-4702

SUBJECT: CALVERT CLIFFS NUCLEAR POWER PLANT, UNIT NOS. 1 AND 2 - AMENDMENT RE: EXTENSION OF DIESEL GENERATOR REQUIRED ACTION TIME (TAC NOS. MC8976 AND MC8977)

Dear Mr. Vanderheyden:

The Commission has issued the enclosed Amendment No. 265 to Renewed Facility Operating License No. DPR-53 and Amendment No. 242 to Renewed Facility Operating License No. DPR-69 for the Calvert Cliffs Nuclear Power Plant, Unit Nos. 1 and 2. These amendments consist of changes to the Technical Specifications (TSs) in response to your application transmitted by letter dated May 12, 2003 (ADAMS Accession No. Ml031360415), as supplemented December 5, 2003, (ADAMS Accession No. ML03344041), February 23, 2004 (ADAMS Accession No. ML040570709), March 26, 2004 (ADAMS Accession No. ML040900254), and April 6, 2004 (ADAMS Accession No. ML041000428).

These amendments would extend several Required Action Completion times for inoperable diesel generators identified in TS 3.8.1, “AC Sources Operating.”

A copy of the related Safety Evaluation is enclosed. A Notice of Issuance will be included in the Commission’s next regular biweekly *Federal Register* notice.

Sincerely,

/RA/

Guy S. Vissing, Senior Project Manager, Section 1
Project Directorate I
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Docket Nos. 50-317 and 50-318

Enclosures: 1. Amendment No. 265 to DPR-53
2. Amendment No. 242 to DPR-69
3. Safety Evaluation

cc w/encls: See next page

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1650 Calvert Cliffs Parkway
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cc w/encls: See next page

ADAMS Accession Numbers: Letter - ML040980651; TSs - ML ;
Package Number: ML040980658
*Safety evaluation provided - no significant changes made **See previous concurrence

OFFICE	PDI-1/PM	PDI-1/LA	EEIB/SC*	SBSB/SC*	IROB	OGC**	PDI-1/SC
NAME	GVissing	SLittle	RJenkins	MRubin	TBoyce	GLongo	PTam for RLaufer
DATE	4/13/04	4/8/04	03/02/2004	03/26/2004	4/12/04	4/9/04	4/9/04

OFFICIAL RECORD COPY

Calvert Cliffs Nuclear Power Plant, Unit Nos. 1 and 2

cc:

President
Calvert County Board of
Commissioners
175 Main Street
Prince Frederick, MD 20678

James M. Petro, Esquire
Counsel
Constellation Energy Group, Inc.
750 East Pratt Street, 5th floor
Baltimore, MD 21202

Jay E. Silberg, Esquire
Shaw, Pittman, Potts, and Trowbridge
2300 N Street, NW
Washington, DC 20037

Mark Geckle
Calvert Cliffs Nuclear Power Plant
1650 Calvert Cliffs Parkway
Lusby, MD 20657-4702

Resident Inspector
U.S. Nuclear Regulatory
Commission
P.O. Box 287
St. Leonard, MD 20685

Mr. Richard I. McLean, Manager
Nuclear Programs
Power Plant Research Program
Maryland Dept. of Natural Resources
Tawes State Office Building, B3
Annapolis, MD 21401

Regional Administrator, Region I
U.S. Nuclear Regulatory Commission
475 Allendale Road
King of Prussia, PA 19406

Kristen A. Burger, Esquire
Maryland People's Counsel
6 St. Paul Centre
Suite 2102
Baltimore, MD 21202-1631

Patricia T. Birnie, Esquire
Co-Director
Maryland Safe Energy Coalition
P.O. Box 33111
Baltimore, MD 21218

Mr. Loren F. Donatell
NRC Technical Training Center
5700 Brainerd Road
Chattanooga, TN 37411-4017

DATED: April 13, 2004

AMENDMENT NO. 265 TO RENEWED FACILITY OPERATING LICENSE NO. DPR-53
CALVERT CLIFFS UNIT 1

AMENDMENT NO. 242 TO RENEWED FACILITY OPERATING LICENSE NO. DPR-69
CALVERT CLIFFS UNIT 2

PUBLIC
PDI-1 R/F
RLaufer
SLittle
GVissing
OGC
GHill (2)
TBoyce
ACRS
CBixler, RI

cc: Plant Service list

CALVERT CLIFFS NUCLEAR POWER PLANT, INC.

DOCKET NO. 50-317

CALVERT CLIFFS NUCLEAR POWER PLANT, UNIT NO. 1

AMENDMENT TO RENEWED FACILITY OPERATING LICENSE

Amendment No. 265
Renewed License No. DPR-53

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

   A. The application for amendment by Calvert Cliffs Nuclear Power Plant, Inc. (the licensee) dated May 12, 2003, as supplemented December 5, 2003, February 23, 2004, March 26, 2004, and April 6, 2004, 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 Renewed 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. 265, are hereby incorporated into 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 within 30 days.

FOR THE NUCLEAR REGULATORY COMMISSION

/RA by PTam for/

Richard J. Laufer, Chief, Section 1
Project Directorate I
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Attachment:
Changes to the Technical
Specifications

Date of Issuance: April 13, 2004

CALVERT CLIFFS NUCLEAR POWER PLANT, INC.

DOCKET NO. 50-318

CALVERT CLIFFS NUCLEAR POWER PLANT, UNIT NO. 2

AMENDMENT TO RENEWED FACILITY OPERATING LICENSE

Amendment No. 242
Renewed License No. DPR-69

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

   A. The application for amendment by Calvert Cliffs Nuclear Power Plant, Inc. (the licensee) dated May 12, 2003, as supplemented December 5, 2003, February 23, 2004, March 26, 2004, and April 6, 2004, 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 Renewed 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. 242, 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 within 30 days.

FOR THE NUCLEAR REGULATORY COMMISSION

/RA by PTam for/

Richard J. Laufer, Chief, Section 1
Project Directorate I
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Attachment:
Changes to the Technical
Specifications

Date of Issuance: April 13, 2004

ATTACHMENT TO LICENSE AMENDMENTS

AMENDMENT NO. 265 TO RENEWED FACILITY OPERATING LICENSE NO. DPR-53

AMENDMENT NO. 242 TO RENEWED FACILITY OPERATING LICENSE NO. DPR-69

DOCKET NOS. 50-317 AND 50-318

Replace the following pages of the Appendix A Technical Specifications with the attached revised pages. The revised pages are identified by amendment number and contain marginal lines indicating the areas of change.

Remove Pages	Insert Pages
3.8.1-2	3.8.1-2
3.8.1-3	3.8.1-3
3.8.1-4	3.8.1-4
3.8.1-5	3.8.1-5
3.8.1-6	3.8.1-6
3.8.1-7	3.8.1-7
3.8.1-8	3.8.1-8
3.8.1-9	3.8.1-9
3.8.1-10	3.8.1-10
3.8.1-11	3.8.1-11
3.8.1-12	3.8.1-12
3.8.1-13	3.8.1-13
3.8.1-14	3.8.1-14
3.8.1-15	3.8.1-15
----------	3.8.1-16

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 265 TO RENEWED

FACILITY OPERATING LICENSE NO. DPR-53

AND AMENDMENT NO. 242 TO RENEWED FACILITY OPERATING LICENSE NO. DPR-69

CALVERT CLIFFS NUCLEAR POWER PLANT, INC.

CALVERT CLIFFS NUCLEAR POWER PLANT, UNIT NOS. 1 AND 2

DOCKET NOS. 50-317 AND 50-318

1.0 INTRODUCTION

By letter dated May 12, 2003 (ADAMS Accession No. ML031360415), as supplemented December 5, 2003 (ADAMS Accession No. ML03344041), February 23, 2004 (ADAMS Accession No. ML040570709), March 26, 2004 (ADAMS Accession No. ML040900254), and April 6, 2004 (ADAMS Accession No. ML041000428) Calvert Cliffs Nuclear Power Plant, Inc. (the licensee) proposed changes to Calvert Cliffs Nuclear Power Plant (CCNPP), Unit Nos. 1 and 2 Technical Specifications (TSs). The proposed amendments would revise diesel generator (DG) limiting conditions for operation (LCOs) action statements. The proposed change would extend required action completion times (CT) specified in TS 3.8.1, "AC Sources - Operating," to restore an inoperable DG to operable status from 3 days to 14 days. The main purpose of the proposed amendments is to allow online DG maintenance activities that would normally be performed during refueling outages, and to provide the licensee with needed flexibility and more efficient planning for performing various DG maintenance and repair activities during power operation. In addition, the extended CT may also be used for corrective maintenance that may be needed to resolve DG deficiencies that are discovered during surveillance to avert a potential unplanned plant shutdown. The licensee's December 5, 2003, February 23, 2004, March 26, 2004, and April 6, 2004, letters provided additional information that clarified the application, did not change the scope of the application as originally noticed, and did not change the staff's original proposed no significant hazards consideration determination.

The licensee's proposed CT extension is founded on the findings of both deterministic and probabilistic risk assessment (PRA) perspectives. The Nuclear Regulatory Commission (NRC) staff has reviewed the proposed changes and has documented its findings below.

2.0 REGULATORY EVALUATION

The regulatory requirements which the NRC staff applied in its review of the application include:

General Design Criterion (GDC) 17, “Electric power systems,” of Appendix A, ”General Design Criteria for Nuclear Power Plants,” to Title 10, of the *Code of Federal Regulations*, Part 50 (10 CFR Part 50) requires, in part, that nuclear power plants have onsite and offsite electric power systems to permit the functioning of structures, systems, and components that are important to safety. The onsite system is required to have sufficient independence, redundancy, and testability to perform its safety function, assuming a single failure. The offsite power system is required to be supplied by two physically independent circuits that are designed and located so as to minimize, to the extent practical, the likelihood of their simultaneous failure under operating and postulated accident and environmental conditions. In addition, this criterion requires provisions to minimize the probability of losing electric power from the remaining electric power supplies as a result of loss of power from the unit, the offsite transmission network, or the onsite power supplies.

GDC-18, “Inspection and testing of electric power systems,” requires that electric power systems that are important to safety must be designed to permit appropriate periodic inspection and testing. The 10 CFR 50.36 “Technical specifications,” requires a licensee’s TSs to establish LCOs, which include CTs for equipment that is required for safe operation of the facility. The 10 CFR 50.36 “Requirements for monitoring the effectiveness of maintenance at nuclear power plants,” requires that preventive maintenance activities must not reduce the overall availability of the systems, structures and components. Regulatory Guide (RG)1.93, “Availability of Electric Power Sources,” provides guidance with respect to operating restrictions (i.e., CTs) if the number of available alternate current (AC) sources is less than that required by the TS LCO. In particular, this guide prescribes a maximum CT of 72 hours for an inoperable AC source and 2 hours for two inoperable onsite emergency sources.

The offsite and onsite power systems at CCNPP are designed to comply with the requirements of GDCs 17 and 18. As described by the licensee’s application for amendment dated May 12, 2003, the CCNPP switchyard is connected to the grid by three physically independent 500-kV transmission lines. The licensee performed load flow and stability studies which indicate that the tripping of one or both fully loaded units would not impair the ability of the system to supply plant loads. These studies were made at the projected peak load conditions and also at minimum load conditions when the two units were supplying the entire Baltimore system. Two physically independent circuits from the switchyard to the onsite electrical system are provided from two 500-kV/4.16 kV service transformers that are fed from separate 500-kV switchyard buses. The two plant service transformers feed six 13.8-kV/4.16 kV service transformers, three of which are capable of supplying the total plant 4.16-kV auxiliary load. Four engineered safety feature (ESF) buses are supported by these transformers (each unit has two ESF buses). These buses can also be supplied from the DGs or from the station blackout (SBO) DG.

A total of four DGs, two dedicated to each unit, are provided to supply power to the ESF loads. Three of these DGs are Fairbanks Morse (FM) diesels with generators, each with a continuous rating of 3000 kW. The fourth is a Societe Alsacienne De Constructions Mecaniques De Mulhouse (SACM) DG with a continuous rating of 5400 kW. Either of the two DGs dedicated to a unit is capable of supplying all of the ESF loads for the associated bus. The electrical

distribution system has shared functions between the units. DGs 1A and 2B act as the emergency power supply for the other unit's control room emergency ventilation system (CREVS), control room emergency temperature system (CRETS) and H_2 analyzer. Therefore, the dedicated DGs not only provide support to their specified unit, but also to the opposite unit.

Any combination of two of the safety-related DGs (one from each unit) is capable of supplying sufficient power for the operation of ESF necessary loads during accident conditions on one unit and shutdown loads of the alternate unit concurrent with a loss of offsite power (LOOP), and for the safe and orderly shutdown of both units under LOOP conditions. The DGs start automatically following a safety injection signal or an undervoltage condition on the busses that supply vital loads and are ready to accept loads within 10 seconds.

In addition, an SBO DG (designated 0C DG) with a continuous rating of 5400 kW is also installed at CCNPP. The 0C DG is capable of starting and supplying the essential loads necessary to safely shutdown one unit and maintain it in a safe shutdown condition during an SBO event. The 0C DG is capable of supplying the same emergency plant loads as the other safety-related DGs. This DG is similar to the safety-related 1A DG and is classified as augmented quality. It can be aligned to any of the four 4160-Volt emergency buses to support SBO loads or ESF loads, if necessary.

Each unit also has one motor-driven auxiliary feedwater (AFW) pump and two turbine-driven AFW pumps. The 4-kV bus 11 supports the Unit 1 motor-driven pump (AFW Pump13) and 4 kV-bus 24 supports the Unit 2 motor-driven pump (AFW Pump 23). Due to the cross-connected capability of the CCNPP electrical distribution and auxiliary feedwater systems, these motor-driven pumps are able to provide decay heat removal to either unit. For example when the 1A DG fails, the 2B DG can support AFW Pump 23, which can support Unit 1. Further, the 125-V DC system is cross-connected across the units. Either the 1A DG or 2A DG can provide power to the 'A' facility 125-V DC Buses. Likewise, either the 1B DG or 2B DG can provide power to the 'B' facility 125 V DC Buses.

The Regulatory evaluation applied by the NRC staff in its review of the licensee's proposed changes have been developed in consistency with the objectives of the staff's PRA Policy Statement, "Use of Probabilistic Risk Assessment Methods in Nuclear Activities: Final Policy Statement," for enhanced decision making and will result in more efficient use of resources, improvement in safety, and reduction of unnecessary burden. The regulatory documentation on which NRC staff based its acceptance are:

1. NRC RG 1.174, "An Approach for Using Probabilistic Risk Assessment in Risk-Informed Decisions on Plant-Specific Changes to the Licensing Basis," describes a risk-informed approach, acceptable to the NRC, for assessing the nature and impact of proposed licensing-basis changes by considering engineering issues and applying risk insights.

2. RG 1.177, "An Approach for Plant-Specific, Risk-Informed Decisionmaking Technical Specifications," describes an acceptable risk-informed approach specifically for assessing TS changes in CTs. These RGs also provide acceptance guidelines for evaluating the results of such evaluations.

3.0 TECHNICAL EVALUATION

3.1 Deterministic Evaluation

3.1.1 Proposed TS Changes

LCO 3.8.1, Condition B, currently requires that if one LCO 3.8.1.b DG becomes inoperable, the inoperable DG be restored to operable status within 72 hours. The licensee proposed to increase the required CT for one DG inoperable from the current 72 hours to 14 days provided the 0C DG (SBO DG) is available and the other three DGs are operable. This would be accomplished by adding a new Required Action B.1 and Condition C with Required Actions C.1.1 and C.1.2. Required Action B.1 would require verification, within 1 hour and once per 24 hours thereafter, that both DGs on the other unit are operable and the 0C DG is available. If the Required Action B.1 and associated CT of Required Action B.1 are not met, Required Action C.1.1 and C.1.2 of Condition C would require either to restore both DGs on the other unit to operable status and the 0C DG to available status within 72 hours, or to restore the DG to operable status within 72 hours.

LCO 3.8.1, Condition D, currently allows the other unit's DG (DG 1A and DG 2B) that supplies emergency power to the CREVS, CRETS, and H_2 analyzer to be inoperable for 72 hours before these components are to be declared inoperable. The operating unit has a 7-day LCO for an inoperable CREVS train. This results in an effective 10-day required action CT for a DG on the other unit that supports CREVS (DGs 1A and 2B). Thus, the effective 10-day required action CT for DGs 1A and 2B is driven by CREVS-required action completion time (3 days for the DGs and 7 days for CREVS). This required action completion time applies regardless of the status of the 0C DG or the other safety-related DGs. The licensee proposed to increase the required action CT for the 1A and 2B DGs when acting as the 3.8.1.c DG from the current 10 days to 21 days (14 days for the DG and 7 days for CREVS). The 14-day required action CT for a DG inoperable for CREVS is only allowed when the 0C DG is available and the other three safety-related DGs are operable. The 72-hour required action CT for a DG inoperable to CREVS for all other conditions remains the same. The DG required action CT extension also impacts the maximum time required action CT for the CRETS and H_2 analyzer. The licensee states that the CREVS required action CT is considered to bound the impact of the CRETS and the H_2 analyzer.

The proposed change would be accomplished by adding Required Action E.1 and Condition F with Required Actions F.1.1, F.1.2 and F.1.3. Required Action E.1 would require verification, within 1 hour and once per 24 hours thereafter, that both LCO 3.8.1.b DGs are operable, the other unit's DG is operable and the 0C DG is available. If required action and associated CT of Required Action E.1 are not met, Required Action F.1.1 and F.1.2 of Condition F would require either to restore both LCO 3.8.1.b DGs and other unit's DG to operable status and 0C DG to available status within 72 hours, or to restore the DG to operable status within 72 hours. If Required Actions of F.1.1 and F.1.2 are not met, Required Action F.1.3 would require CREVS, CRETS and H_2 analyzer supported by the inoperable DG to be declared inoperable.

In addition to the above changes, the licensee also proposed administrative changes. A correction is made to the CT for the current Required Action D.1 so that it correctly reads "once

per 8 hours thereafter," instead of "one per 8 hours thereafter." Also, to accommodate the proposed changes, the final TS 3.8.1 Required Actions and pages will be renumbered.

The licensee states that the proposed CT extension of 14 days is adequate to support periodic major overhauls of the DGs while the units are at power. For such cases, the intent would be that a major overhaul of each DG would be performed at a frequency of no more than once per DG, per operating cycle. In addition, the longer CT will help avert a potential unplanned shutdown by providing margin for the performance of corrective maintenance that may be needed to resolve DG deficiencies discovered during equipment surveillance or scheduled preventive maintenance activities.

3.1.2 Alternate AC Source

In addition to the safety-related DGs, the licensee had previously installed 0C DG as an alternate AC (AAC) source pursuant to the requirements of 10 CFR 50.63 (regarding SBO). The 0C DG will be available as a backup to the inoperable DG during the extended CT. In addition, the 0C DG will be confirmed to be available within 1 hour and once per 24 hours while the DG is out of service. The 0C DG can be available within 10 minutes of diagnosing an SBO event. Therefore, in the event of a LOOP and failure of the operable DG during the extended CT, power will be supplied from the 0C DG. This DG can be aligned to any of the four 4160-volt emergency buses to support SBO loads or ESF loads. The 0C DG is tested periodically to ensure that power supply is available upon demand. It will be treated as a backup to the inoperable DG and as a protected train component.

3.1.3 Additional Operational Restrictions

In the event a DG is inoperable, Required Action B.3 specifies that within 4 hours, all of its redundant systems, subsystems, trains, components and devices that depend on the remaining operable DG as a source of emergency power are verified operable. This required action provides assurance that a LOOP event will not result in a complete loss of safety function of critical systems during the period one of the DGs is inoperable.

Since the extension of the DG CT is based on the finding of a deterministic and probabilistic safety analysis, entry into this action requires that a risk assessment be performed in accordance with a Configuration Risk Management Program (CRMP). This ensures that a proceduralized PRA-informed process is in place that assesses the overall impact of plant maintenance on plant risk prior to entering the LCO Action statement for planned activities.

3.1.4 Compensatory Measures

The licensee will take the following compensatory measures when utilizing the extended 14-day CT:

A. Weather conditions will be evaluated prior to entering the extended DG CT for elective maintenance. An extended DG CT will not be entered for elective maintenance purposes if official weather forecasts are predicting severe conditions (tornado or thunderstorm warnings).

B. The condition of the offsite power will be evaluated prior to entering the extended CT.

C. No elective maintenance will be performed in the switchyard, on the 4-kV Distribution System, or on the 13-kV system during the extended CT.

D. No maintenance or testing that affects the reliability of the train associated with the operable DG will be scheduled during the extended CT. If any testing or maintenance activities which affects the train reliability must be performed while the extended CT is in effect, a 10 CFR 50.65(a)(4) evaluation will be performed.

E. Elective maintenance will not be performed on the AAC power source (0C DG). Personnel will be made aware of the dedication of the AAC source to the affected unit.

F. Planned maintenance will not be performed on the AFW.

G. The system dispatcher (System Operations and Maintenance Department) will be contacted prior to removing the DG from service and after it has been returned to service.

H. The operations crews will be briefed concerning the unit activities, including compensatory measures established and the importance of promptly starting and aligning the AAC source (0C DG).

I. The on-shift operations crew will discuss and review the appropriate normal and emergency operating procedures prior to or shortly after assuming the watch for the first time after having scheduled days off while the extended CT is in affect.

J. The condition of the grid will be evaluated prior to entering the extended DG 3.8.1 Condition B CT for elective maintenance. An extended DG CT will not be entered to perform elective maintenance when the grid stress conditions are considered “High” per plant procedures. This will include conditions such as expected extreme summer temperatures and/or high demand.

3.1.5 Deterministic Conclusion

The NRC staff has evaluated the proposed changes to determine whether the applicable regulations continue to be met. Based on its review of the information provided by the licensee, the NRC staff concludes that extending the CT for an inoperable DG from the current 72 hours to 14 days is acceptable. The NRC staff’s conclusion is founded on the following five considerations:

(1) The extended CT will be typically used to perform infrequent (i.e., once every 24 months) diesel manufacturer’s recommended inspections and preventive maintenance activities.

2) The extended CT would reduce entries into the LCO and reduce the number of DG starts for major DG maintenance activities.

3) The AAC source (0C DG) will be available and capable of powering the inoperable DG bus loads in the event of an SBO or LOOP.

4) The licensee will implement its CRMP during the extended outage.

5) The capability of the CCNPP electrical and auxiliary feedwater systems to be cross-connected between units.

Further, the NRC staff believes that the implementation of the compensatory measures would ensure the availability of the remaining sources of AC power during the extended CT. The NRC staff also concludes that the proposed changes will not affect the compliance of CCNPP1&2 with the requirements of GDCs 17 and 18.

3.2 Probabilistic Evaluation

3.2.1 Tier 1-PRA Capability and Calculational Insights

The licensee has evaluated its proposed DG CT changes to determine that current regulations and guidelines continue to be met, that adequate defense-in-depth and safety margin provisions are maintained and that any increases in the "at-power" Core Damage Frequency (CDF) and Large Early Release Frequency (LERF) are small and consistent with the staff's Safety Goal Policy Statement. The impact on risk of the 14-day DG CT is evaluated according to the guidelines in RG 1.174, "An Approach for Using Probabilistic Risk Assessment in Risk-Informed Decisions on Plant-Specific Changes to the Licensing Basis," and RG (RG) 1.177, "An Approach for Plant-Specific Risk-Informed Decisionmaking: Technical Specifications."

Station Blackout 0C DG

The SBO DG, designated as 0C DG, is designed to provide a power source capable of starting and supplying the essential loads necessary to safely shut down one unit and maintain it in a safe shutdown condition during an SBO event. (Updated Final Safety Analysis Report (UFSAR), Rev. 31, Section 8.4). The 0C DG is capable of supplying the same emergency plant loads as the DGs. The SBO DG can be aligned to any of the four ESF busses (UFSAR, Rev. 31, Section 8.1).

The 0C DG is similar to the safety-related 1A DG.

Additional Operational Restrictions

In the event a DG is inoperable, Required Action B.3 requires that, within 4 hours, all of its redundant systems, subsystems, trains, components, and devices that depend on the remaining operable DG as a source of emergency power are verified operable. This Required Action provides assurance that a LOOP event will not result in a complete loss of the safety function of critical systems during the period when one of the DGs is inoperable.

Since a relaxation of the DG CT is based on the findings of deterministic and probabilistic safety analyses, entry into this action requires that a risk assessment be performed in accordance with a CRMP, which ensures that a proceduralized PRA-informed process is in

place that assesses the overall impact of plant maintenance activities on plant risk prior to entering and during the LCO Action Statement.

1A DG Importance

Due to the interconnectivity of the site's electrical distribution system, the 1A DG is the most important DG to both Unit 1 and Unit 2. This importance is driven by these issues:

- Independence of the 1A DG from other plant systems,
- Rugged construction of the 1A DG building (wind resistant),
- Seismically rugged (the 1A DG meets a Class 1 Seismic Design),
- Automatic start of the DG, and
- The 1A DG is aligned to an important 4kV bus.

These design features are especially evident in the external events analysis. Large seismic events, beyond design bases, can challenge the Turbine Building Service Water System (TBSRW). Large fires in the Turbine Building can also challenge the TBSRW. Since the Safety-Related Service Water and the TBSRW (non-safety-related) are normally connected (TBSRW is isolated on Safety Injection Actuation Signal (SIAS)), the failure of the TBSRW can result in the failure of the safety-related SRW due to a loss of inventory. This can, in turn, result in the failure of the Fairbanks Morse DGs, which are water-cooled (the SACM 1A DG is air-cooled).

0C DG Seismic Modification

The 0C DG Building was designed and installed to standard building codes. However, the diesel engine and generator are the same as in the case of the 1A DG. During the Individual Plant Examination of External Events (IPEEE) walkdowns, it was noted that the 0C DG is generally rugged with a few exceptions associated with the 0C DG building heating, ventilation, and air conditioning (HVAC). A modification was initiated to improve the seismic capacity of the HVAC system in support of the present proposed license amendment. Improving the HVAC system to meet a 0.3g High Confidence of Low Probability of Failures (HCLPFs) provides, according to the licensee, a 3% reduction in the total CDF for Unit 1 (4% for Unit 2) and significantly enhances the importance of the 0C DG.

Fire, Seismic, and High Wind Impacts

Seismic, Fire, and Wind account for a large percentage of the CDF change associated with the proposed DG CT extension. Table 1 (below) shows the percentage of the CDF change due to external events associated with taking a DG out of service.

Table 1

Percentage of CDF Change Due to Fire, Seismic, and Wind

DG OOS	Unit 1	Unit 2
1A	57%	75%
1B	62%	43%
2A	57%	77%
2B	36%	45%
0C	64%	57%

The upper bound risks and changes thereof referred to in Tables 2 and 3 are results of the original (May 12, 2003) licensee analyses which assumed a CT of 21d when a single DG is inoperable before the CRETS and H_2 Analyzer trains are declared inoperable. This CT request has now been reduced to 14d.

Table 2 (below) shows the upper bound expected risks and changes thereof, reflecting the benefit of the 0C DG seismic modification. The benefit of improving the seismic ruggedness of the 0C DG outweighs the increased at-power unavailability that results from increasing the DG required action CT.

Table 2
Upper Bounds in Average Risks and Changes Thereof
(Reflecting Benefit of 0C DG Seismic Modification)

Risk Metric	Risk Significance	Risk Metric Results	
	Guideline	Unit1	Unit2
Base CDF	NA	6.4E-5	6.7E-5
Delta CDF	<1.0E-6	2.6E-7	9.6E-8
Base LERF	NA	5.6E-6	6.1E-6
Delta LERF	<1.0E-7	1.1E-8	3.7E-9

Upper Bounds to ICCDP and ICLERP

Table 3 (below) is a presentation of the upper bounds of the ICCDP and ICLERP with each of the four safety-related DGs individually out of service. The licensee-calculated upper bound values are within the RG 1.177 guideline values except for the DG 1A ICCDP values for Units 1 and 2. However, the fact that these are upper bound values, and that the aforementioned compensatory measures are very substantial, results in the DG 1A ICCDP values being acceptable to the staff, as well as all of the other ICCDP values and ICLERP values being acceptable to the staff also, since they are within the RG 1.177 guidelines.

Table 3
Upper Bound ICCDP and ICLERP

Unit1 Impact			Unit2 Impact	
Diesel OOS	14 Days ICCDP	ICLERP	14days ICCDP	ICLERP
DG 1A	1.1E-06	5.0E-08	7.1E-07	3.9E-08
DG 1B	1.4E-07	5.7E-09	3.2E-07	1.2E-08
DG 2A	2.1E-07	8.7E-09	4.2E-07	2.4E-08
DG 2B	1.2E-07	4.3E-09	2.8E-07	9.3E-09

PRA Capability/Quality

The licensee follows general industry practice with respect to PRA quality and has stated that it has designed its PRA with a strong commitment towards completeness and accuracy. This commitment is displayed through the following elements:

- Formal qualification program for the PRA staff,
- Use of procedures to control PRA processes,
- Independent reviews (checks) of PRA documents,
- A comprehensive PRA Configuration Control Program, including:
  - Plant change monitoring program,
  - Process to control PRA quantification software,
  - Active open items list,
  - Interface with the site corrective action program,
  - Process to maintain configuration of previous risk-informed decisions.
- Peer reviews: The licensee's PRA (Revision 0) was peer reviewed as part of the Combustion Engineering Owners Group Peer Review Process in November 2001. The Revision 1 Model contains several refinement, but uses techniques and practices similar to the peer reviewed revision, and resulted in a 15% CDF reduction.
- Participation in the Westinghouse Owners Group (WOG) cross-comparison process,
- Incorporation, where applicable, of WOG PRA Technical Positions,
- Commitment to continuous quality improvement.

The licensee states that, considering the scope (internal and external events), level of detail, processes, and excellent peer review results, its PRA is sufficient to support a technically defensible and realistic evaluation of the risk associated with the present amendment request.

3.2.2 Tier 2-Avoidance of Risk-Significant Plant Configurations

Tier 2 identifies potentially high-risk configurations that could exist if equipment in addition to that associated with the TS change is taken out of service concurrently, or other risk-significant operational factors, such as concurrent system or equipment testing are involved. The objective of Tier 2 is to ensure that appropriate restrictions are placed on dominant risk-significant configurations that would be relevant to the proposed TS changes.

Station Blackout Diesel (0C DG)

If the SBO (0C DG) is out of service at the same time a DG is out of service, the DG CT will remain its present 72 hours.

Unit-to-Unit Interaction

Only one DG between the two units can be taken out-of-service for planned entry into the extended CT. If multiple DGs are out-of-service on a single unit, TS 3.0.3 applies.

Switchyard Maintenance

Existing operator instructions (OI) specify the following precautions prior to taking a safety-related DG out of service:

- Determine whether other maintenance is in progress or planned that will reduce the reliability of offsite power supplies.

- The Shift Manager determines how to minimize both the time that the DG is out of service and the time that offsite power supplies are at reduced reliability. In addition, the existing on-line risk assessment process (Tier 3) would measure the overall plant risk due to diesel unavailability concurrently with maintenance activities in the swtchyard. This risk is managed in accordance with 10 CFR 50.65(a)(4).

3.2.3 Tier 3-Risk-Informed Configuration Management

Tier 3 is defined by the development of a proceduralized program, which ensures that the risk impact of out-of-service equipment is appropriately evaluated prior to performing a maintenance activity. The program applies to Technical Specification Structures, Systems, or Components for which a risk-informed Completion Time has been granted. A viable program would be one that is able to uncover risk-significant plant equipment outage configurations in a timely manner during normal plant operation and is described in RG 1.177 as the CRMP. The need for this third tier arises from the difficulty of identifying all possible risk-significant configurations under Tier 2 that will be encountered over extended periods of plant operation.

The licensee has used integrated on-line risk assessment at Calvert Cliffs since the mid 1990s. Due to the addition of paragraph (a)(4) to the Maintenance Rule, 10 CFR 50.65, the process was updated in November 2000.

The Calvert Cliffs on-line risk assessment process helps to ensure that any decrease in plant safety due to voluntary entry into an LCO action statement is small and acceptable for the period of the maintenance or testing activity. It also helps to ensure that the removal from service of safety systems and important non-safety equipment and the general impacts of maintenance and testing are minimized. This assurance is applicable for all plant configurations and is specifically applicable to the entry into the proposed extended DG CT.

Consistent with RG 1.177, the following licensee program elements are described below:

1. On-line Risk Assessment-PRA Scope and Control,
2. On-line Risk Assessment-Tools,
3. On-line Risk Assessment-Process,
4. On-line Risk Assessment-Level 2,
5. On-line Risk Assessment-External Events.

Grid Availability (Severe Weather Conditions)

Severe weather conditions can cause damage to the grid and could result in a plant trip in conjunction with a LOOP. The licensee's Emergency Response Plan specifies actions to take in severe weather conditions. If a tornado watch, tornado warning, hurricane watch, hurricane warning, or other severe weather conditions are predicted or exist for Calvert Cliffs or any of the 500 kV line rights-of- way, the following Tier 2 restrictions are implemented:

- Ensure that the diesel generators are available for service.
- If a diesel generator is not available, expedite maintenance to ensure that the equipment becomes available.

In addition, the existing on-line risk assessment qualitatively assesses the impact of predicted severe weather against planned maintenance configurations. This risk is managed in accordance with 10 CFR 50.65(a)(4).

3.2.4 Probabilistic Conclusion

The staff acceptance of the licensee proposed 14-day DG Completion Time is based on a risk-informed assessment. The licensee's risk assessment concluded that the changes in plant CDF and LERF, as well as the ICCDP and ICLERP magnitudes, are small, including compensatory measures, and consistent with the staff's guidance as stated in RGs 1.174 and 1.177, and, therefore, are acceptable.

4.0 STATE CONSULTATION

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

5.0 ENVIRONMENTAL CONSIDERATION

The amendments change a requirement with respect to installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20. 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 (68 FR 37576). 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.

6.0 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.

Principal Contributors: O. Chopra
M. Wohl

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