Florida Power
A Progress Energy Company

Crystal River Unit 3
Docket No. 50-302
Operating License No. DPR-72

Ref: 10 CFR 50.90

July 3, 2002
3F0702-07

U.S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, DC 20555-0001

Subject: Crystal River Unit 3 - License Amendment Request #257, Revision 0, "Emergency Diesel Generator Allowed Outage Time Extension"

Dear Sir:

Pursuant to 10CFR50.90, Florida Power Corporation (FPC) hereby requests an amendment to Improved Technical Specification (ITS) 3.8.1 to extend the allowed outage time (AOT) for the emergency diesel generators (EDGs) from 72 hours to 14 days and to modify a note for two EDG ITS Surveillance Requirements (SRs). The AOT change will allow scheduled EDG maintenance to be performed while the unit is operating at power. On-line EDG outages would increase the availability of emergency onsite power during shutdown operations and allow a more focused effort on EDG preventative maintenance. This amendment would permit more economic and efficient conduct of maintenance activities and will not decrease overall plant safety.

FPC has evaluated the proposed license amendment request using both deterministic and probabilistic methodologies. These evaluations have determined that there are compensatory actions that can be taken during extended EDG maintenance that can reduce overall risk. Performance of these actions during periods of extended preplanned EDG maintenance are regulatory commitments and are listed in Attachment E. In addition, these actions have been added to the ITS Bases provided in Attachment D.

In addition to the EDG AOT change, FPC requests that two EDG SRs be modified to allow performance of the SRs at power if the SRs are required to demonstrate EDG Operability. These changes are consistent with Technical Specification Task Force (TSTF) Traveler 283, Revision 3, and NUREG 1430, Standard Technical Specifications Babcock and Wilcox Plants, Revision 2.

FPC requests approval of the proposed License Amendment by April 1, 2003, to be implemented within 60 days of the issuance of the license amendment. This date would support changing the scope of Refueling Outage 13, scheduled for October 2003, by allowing planned EDG maintenance to be moved to appropriate on-line work windows.

A001

This proposed amendment has been reviewed and approved by the CR-3 Plant Nuclear Safety Committee.

If you have any questions regarding this submittal, please contact Mr. Sid Powell, Supervisor, Licensing and Regulatory Programs at (352) 563-4883.

Sincerely,

Dale E. Young
Vice President, Crystal River Nuclear Plant

DEY/pei

Attachments:

A. Description and Assessment

B. Proposed Revised Improved Technical Specification Pages – Strikeout Version

C. Proposed Revised Improved Technical Specification Pages – Revision Line Version

D. Proposed Revised Improved Technical Specification Bases Pages – Revision Line Version

E. List of Regulatory Commitments

xc: Regional Administrator, Region II
Senior Resident Inspector
NRR Project Manager

STATE OF FLORIDA

COUNTY OF CITRUS

Dale E. Young states that he is the Vice President, Crystal River Nuclear Plant for Progress Energy; that he is authorized on the part of said company to sign and file with the Nuclear Regulatory Commission the information attached hereto; and that all such statements made and matters set forth therein are true and correct to the best of his knowledge, information, and belief.

Dale E Young

Dale E. Young
Vice President
Crystal River Nuclear Plant

The foregoing document was acknowledged before me this 3rd day of July, 2002, by Dale E. Young.

JANET SCHROEDER
MY COMMISSION # DD 126063
EXPIRES June 20, 2006
Bonded Thru Notary Public Underwriters

Janet Schroeder

Signature of Notary Public
State of Florida

Janet Schroeder

(Print, type, or stamp Commissioned
Name of Notary Public)

Personally Known ✓ -OR- Produced Identification _____

FLORIDA POWER CORPORATION

CRYSTAL RIVER UNIT 3

DOCKET NUMBER 50 - 302 / LICENSE NUMBER DPR - 72

ATTACHMENT A

LICENSE AMENDMENT REQUEST #257, REVISION 0
Emergency Diesel Generator Allowed Outage Time Extension

Description and Assessment

DESCRIPTION AND ASSESSMENT

1.0 INTRODUCTION

This letter is a request to revise Improved Technical Specifications (ITS) 3.8.1, "AC Sources - Operating," for Crystal River Unit 3 (CR-3). The proposed change would revise ITS to extend the Completion Time (referred to as Allowed Outage Time (AOT)) for one emergency diesel generator (EDG) inoperable from 72 hours to 14 days. The intent of such an extension is to allow the rescheduling of routine periodic preventative maintenance from refueling outages to periods of on-line operation. In addition, corrective maintenance activities which exceed 72 hours, but are less than 14 days in duration, would not require a plant shutdown.

Changes are also requested for notes associated with ITS Surveillance Requirements (SRs) 3.8.1.8 and 3.8.1.11 that would allow performance of these SRs in MODES 1 and 2 if they were required to reestablish OPERABILITY, and an assessment determines that the safety of the plant is maintained or enhanced.

No changes to the CR-3 Final Safety Analysis Report (FSAR) are anticipated at this time as a result of this License Amendment Request (LAR).

2.0 DESCRIPTION

The primary change proposed is to extend the AOT for the EDGs from 72 hours to 14 days. This change affects two other AOTs that involve combinations of inoperable AC sources. Additionally, a revision is requested to a Note restricting performance of two EDG SRs. This LAR proposes the following ITS changes:

The Completion Time for ITS 3.8.1, Condition A, one required offsite circuit inoperable, Required Action A.3, "Restore required offsite circuit to OPERABLE status" is to be revised from:

> "72 hours AND 6 days from discovery of failure to meet LCO"
>
> to "72 hours AND 17 days from discovery of failure to meet LCO"

The Completion Time for ITS 3.8.1, Condition B, one EDG inoperable, Required Action B.4, "Restore EDG to OPERABLE status," is to be revised from:

> "72 hours AND 6 days from discovery of failure to meet LCO"
>
> to "**14 days** AND 17 days from discovery of failure to meet LCO"

The following changes (in bold) are made to SR 3.8.1.8, Note 1, and SR 3.8.1.11, Note 2:

> "This Surveillance shall not **normally** be performed in MODE 1 or 2. However, **this Surveillance may be performed to reestablish OPERABILITY provided an assessment determines the safety of the plant is maintained or enhanced.** Credit may be taken for unplanned events that satisfy this SR."

The proposed AOT extension also indirectly affects the Completion Time for ITS 3.3.8, Emergency Diesel Generator Loss of Power Start (LOPS), Condition E, and ITS 3.8.3, Diesel Fuel Oil, Lube Oil and Starting Air, Condition G, which reference entering the applicable Condition(s) and Required Action for the EDG made inoperable by the EDG LOPS or support system. These ITS conditions will direct the operator to the revised 3.8.1 Required Action B.4, which will allow a 14-day AOT.

This LAR includes proposed associated changes to ITS Bases 3.8.1, Action A.3. The ITS Bases are revised as follows:

> "The **17** day Completion Time for Required Action A.3 establishes a limit on the maximum time allowed for any combination of required AC power sources to be inoperable during any single contiguous occurrence of failure to meet the LCO. If Condition A is entered while, for instance, an EDG is inoperable and that EDG is subsequently returned to OPERABLE status, LCO 3.8.1 may already have been not met for up to **14** days. This could lead to a total of **17 days**, since initial failure to meet the LCO, to restore the offsite circuit. At this time, an EDG could again become inoperable, the circuit restored to OPERABLE status, and an additional **14 days** (for a total of **31** days) allowed prior to complete restoration of the LCO. The **17** day Completion Time provides a limit on the time allowed in a specified condition after discovery of failure to meet the LCO. This limit is considered reasonable for situations in which Conditions A and B are entered concurrently."

The ITS Bases for 3.8.1, Action B.4, are also revised as follows:

> "In Condition B, the remaining OPERABLE EDG and offsite circuits are adequate to supply electrical power to the onsite Class 1E distribution system. The **14-day** Completion Time takes into account the capacity and capability of the remaining AC sources, a reasonable time for repairs, **the ability to perform on-line preventative maintenance,** and the low probability of a DBA occurring during this period. **During on-line preventative maintenance that is planned to take over 72 hours, the following compensatory measures will be put in place prior to initiating the activity:**
>
> **CR-3 will perform procedure CP-253, "Power Operation Risk Assessment and Management," which requires both a deterministic and probabilistic evaluation of risk for the performance of all maintenance activities. This**

procedure uses the Level 1 PSA model to evaluate the impact of maintenance activities on core damage frequency. CR-3 will not plan any maintenance that results in "Higher Risk" (Orange Color Code) during EDG maintenance.

ECCS equipment, emergency feedwater, control complex cooling and auxiliary feedwater (FWP-7 and MTDG-1) will be designated administratively as "protected" (no planned maintenance or discretionary equipment manipulation).

Prior to initiating a planned EDG outage, CR-3 will verify the availability of offsite power to the 230 kV switchyard and ensure that the capability to power both ES busses is available from each of the two ES offsite power transformers (OPT and BEST).

CR-3 will not initiate an EDG extended preventive maintenance outage if adverse weather, as designated by Emergency Preparedness procedures, is anticipated.

No elective maintenance will be scheduled in the switchyard that would challenge the availability of offsite power to the ES busses.

A periodic fire watch will be established in fire areas that are considered risk-significant by the IPEEE, affect both EDGs or have increased risk significance due to EDG maintenance. The fire areas are listed in Table B 3.8.1-1.

The **17-day** Completion Time for Required Action B.4 establishes a limit on the maximum time allowed for any combination of required AC power sources to be inoperable during any single contiguous occurrence of failure to meet the LCO. Refer to the Bases for Required Action A.3 for additional information on this Completion Time.

Table B 3.8.1-1

FIRE ZONE	EGDG -1A	EGDG -1B	ZONE DESCRIPTION	AUTO SUPPRESSION	FIRE WRAP	ZONE IGNITION FREQUENCY
AB-119-6A	x	x	NORTH HALLWAY	Wet-Pipe Sprinkler-dual level	1 hour, 3 hour	9.73E-05
AB-119-6E	x	x	EAST HALLWAY	Wet-Pipe Sprinkler-dual level	1 hour, 3 hour	1.73E-04
AB-119-6J (3)		x	CENTRAL HALLWAY	Wet-Pipe Sprinkler	3 hour	2.36E-04

FIRE ZONE	EGDG -1A	EGDG -1B	ZONE DESCRIPTION	AUTO SUPPRESSION	FIRE WRAP	ZONE IGNITION FREQUENCY
AB-119-6K (2)	x		DECONTAMINATION ROOM	Wet-Pipe Sprinkler		1.02E-04
AB-119-7A	x	x	EMERGENCY DIESEL GENERATOR CONTROL ROOM 3B	Pre-Action Sprinkler	1 hour	1.73E-04
AB-119-7B (3)		x	EMERGENCY DIESEL GENERATOR ROOM 3B	Pre-Action Sprinkler		5.30E-03
AB-119-8A (2)	x		EMERGENCY DIESEL GENERATOR CONTROL ROOM 3A	Pre-Action Sprinkler		1.02E-04
AB-119-8B (2)	x		EMERGENCY DIESEL GENERATOR ROOM 3A	Pre-Action Sprinkler		5.30E-03
CC-108-102 (1)	x	x	HALLWAY AND REMOTE SHUTDOWN ROOM	None	3 hour	1.20E-04
CC-108-103	x	x	PLANT BATTERY ROOM 3B	None	3 hour	9.73E-05
CC-108-104	x	x	PLANT BATTERY ROOM 3A	None	3 hour	9.73E-05
CC-108-105 (1)	x	x	BATTERY CHARGER ROOM 3B	None	3 hour	4.03E-04
CC-108-106 (1)	x	x	BATTERY CHARGER ROOM 3A	None	3 hour	3.68E-04
CC-108-107 (1,3)		x	4160V ES SWITCHGEAR BUS ROOM 3B	None	3 hour	2.27E-04
CC-108-108 (1)	x	x	4160V ES SWITCHGEAR BUS ROOM 3A	None	3 hour	2.60E-04
CC-108-109 (1)	x	x	INVERTER ROOM 3B	None	3 hour	2.14E-04
CC-108-110	x	x	INVERTER ROOM 3A	None	3 hour	1.90E-04
CC-124-111 (1)	x	x	CRD & COMMUNICATION EQUIP ROOM	Wet-Pipe Sprinkler	1 hour, 3 hour	5.06E-04
CC-124-116 (3)		x	480V ES SWITCHGEAR BUS ROOM 3B	None	3 hour	1.90E-04
CC-124-117 (1,2)	x		480V ES SWITCHGEAR BUS ROOM 3A	None		2.04E-04
CC-134-118A (1)	x	x	CABLE SPREADING ROOM	Total Flooding Halon Room		9.73E-05
CC-145-118B (1)	x	x	CONTROL ROOM	None		1.24E-04

(1) Fire zone identified as risk significant per IPEEE
(2) Fire zone may have increased significance when EGDG-1B is in maintenance
(3) Fire zone may have increased significance when EGDG-1A is in maintenance"

The following text is added to the Bases of SR 3.8.1.8 and SR 3.8.1.11:

"This restriction from normally performing the Surveillance in MODE 1 or 2 is further amplified to allow the Surveillance to be performed for the purpose of reestablishing OPERABILITY (e.g., post work testing following corrective maintenance, corrective modification, deficient or incomplete

surveillance testing, and other unanticipated OPERABILITY concerns) provided an assessment determines plant safety is maintained or enhanced. This assessment shall, as a minimum, consider the potential outcomes and transients associated with a failed Surveillance, a successful Surveillance, and a perturbation of the offsite or onsite system when they are tied together or operated independently for the Surveillance; as well as the operator procedures available to cope with these outcomes. These shall be measured against the avoided risk of a plant shutdown and startup to determine that plant safety is maintained or enhanced when the Surveillance is performed in MODE 1 or 2. Risk insights or deterministic methods may be used for this assessment."

3.0 BACKGROUND

This proposed license amendment extends the AOT for a single inoperable EDG from 72 hours to 14 days. This change supports both corrective and preventative maintenance.

Many plants, including CR-3, limit planned equipment unavailability to approximately half of the applicable AOT. Thus, a 72-hour AOT only provides a work and test window of approximately 35 to 40 hours. Whether the maintenance is of an emergent nature or there is opportunity for pre-planning, this is a very tight work window. This limited work window can create time pressure that is inconsistent with good human performance. The proposed 14-day AOT provides a 7-day work window, which is long enough to accomplish all planned preventative maintenance activities. In addition, performing a scope of work in a single work window reduces overall unavailability compared with breaking the work scope into several smaller jobs. Each work activity requires a certain amount of unavailability "overhead" due to processes such as removal from service/return to service, equipment staging, equipment assembly/disassembly, etc.

The current 72-hour completion time for this condition is insufficient in duration to support extensive preventive maintenance. Such maintenance is required on a periodic basis. Generally, this has required that one or both EDGs be removed from service during refueling outages. This greatly complicates and can lengthen outages unnecessarily. Further, it is generally accepted that higher quality work can often be accomplished during on-line system outages where the focus of support organizations and management can be more clearly directed at a single ongoing activity. Finally, it has been recognized that shutdown conditions also pose risks even though the likely consequences are less severe and the events are generally slower moving. Therefore, the risk of performing EDG maintenance on-line is at least partially, if not completely, offset by the risk averted by removing the work from outages.

The 72-hour completion time is often very limiting in terms of corrective maintenance that can be accomplished without a plant shutdown. CR-3 has experienced several situations where

corrective maintenance has challenged the 72-hour window. On these occasions, CR-3 has begun the process of requesting enforcement discretion to avoid an unnecessary shutdown. The longer AOT will reduce the probability that enforcement discretion will be needed in the future and minimize the potential for requiring relief where there would not be an opportunity for public comment. Therefore, this change would reduce the potential administrative burden associated with the enforcement discretion process for both the utility and the NRC.

4.0 TECHNICAL ANALYSIS

4.1 Deterministic Evaluation

Offsite Power System

CR-3 is a single nuclear unit located on a site with four fossil units. Units 1 and 2 are immediately adjacent and supply auxiliary steam, water purification and other support services to CR-3. Units 4 and 5 are approximately a thousand yards north of CR-3. Units 1, 2 and 4 deliver power to a shared 230 kV switchyard located between the north and south plants. Units 3 and 5 deliver power to a shared 500 kV switchyard (Figure 1) located east of the 230 kV yard (Figure 2). Seven transmission lines carry power to and from the site and inter-tie with the state grid at four different points. Five of these offsite transmission lines (Newberry, Central Florida, Holder, CR East and Brookridge) carry power to and from the 230 kV switchyard. Two 500 kV lines (Brookridge and Central Florida) carry power to and from the 500 kV switchyard. CR-3 receives offsite power from the 230 kV switchyard through two independent, dedicated transformers, the Offsite Power Transformer (OPT) and the Backup Engineered Safeguards Transformer (BEST), each capable of supplying either or both trains of Engineered Safeguards (ES) buses (Reference Figure 3 and FSAR Figure 8-1). The normal operating alignment is that the BEST is aligned to the "B" ES train and the OPT is aligned to the "A" ES train. Each individual circuit feeder breaker (4900 and 4902 for the OPT, 1691 and 1692 for the BEST) is capable of handling the required transformer loading. Therefore, it is only required to have one of the two circuit breakers closed to maintain the circuit available, however, the normal lineup is to have both breakers closed for redundancy.

The CR-3 main generator delivers power to the 500 kV switchyard. This design feature provides independence between CR-3's electrical output and its source of offsite AC power (230 kV switchyard). Therefore, CR-3 is not susceptible to a loss of offsite power resulting from a grid disturbance due to a reactor trip. On December 21, 2000, the NRC released Regulatory Issue Summary (RIS) 2000-24, "Concerns About Offsite Power Voltage Inadequacies and Grid Reliability Challenges Due to Industry Deregulation." In this RIS, it was stated that a plant transient was complicated by an undervoltage condition that occurred in the switchyard due to large power flow combined with the loss of generation from the nuclear unit. The nearby multiple generating units and independent grid connections support the 230 kV switchyard, thereby reducing CR-3's vulnerability to such conditions. The loss of CR-3's

generation does not impact the voltage of the offsite power supplied to CR-3's non-safety or ES busses.

System voltage is monitored and controlled per SP-321, "Power Distribution Breaker Alignment and Power Availability Verification." Procedure AI-1300, "Engineering, Maintenance and Support Interfaces," provides administrative controls between CR-3 and other Florida Power Corporation (FPC) organizations that impact grid voltage and reliability. Energy Control Center (ECC) Operating Instruction 1 (OI-1) establishes detailed controls concerning transmission grid and substation interfaces with CR-3. If the system load is at, or is expected to exceed, a level such that reserve margins are less than the largest operating unit, ECC enters a "Red Light Condition" and notifies all plants in the system. In the Red Light Condition, all plants are directed to suspend the performance of elective maintenance that could jeopardize the output of their units.

The Crystal River 230 kV substation voltage is continuously monitored and maintained between 238 kV and 242 kV. This voltage range protects the CR-3 Class 1E distribution system from a degraded bus voltage as sensed by the Second Level Undervoltage Relaying (SLUR). Audible and visual alarms are provided to the transmission system operator when these limits are exceeded. The transmission system operator notifies the CR-3 control room supervisor of any unanticipated alarms or potential grid instabilities.

Although CR-3 can not be powered from the 500kV switchyard during power operation, a manual connection to this switchyard can be made with the generator off-line. This process removes links between the switchyard and the main generator and can connect all station busses (within loading limits) to the 500kV switchyard by backfeeding through the step-up and unit auxiliary transformers. Establishing backfeed operation takes approximately 8 hours and is accomplished using procedure OP-703A, "Establishing, Maintaining and Removing 500 kV Electrical Power Backfeed." This procedure could be implemented to provide offsite power if the 230 kV switchyard were to become deenergized and the 500 kV switchyard was still available.

Reliability and Performance Monitoring

All equipment relied upon for supplying electric power and mitigating loss of power events is included in the CR-3 Maintenance Rule Program and is monitored for equipment unavailability. If the performance or condition of these systems does not meet established performance criteria, appropriate corrective action is taken.

CR-3 participates in the Florida Reliability Coordinating Council (FRCC) stability studies for the state of Florida and Southern Company interconnected system performance during transient disturbances. These studies are conducted and evaluated every two years.

It is important to note FPC's expectation that the extended AOT will not be utilized on a frequent basis. Frequent use of the extended AOT would adversely impact the system availability and likely cause the EDGs to become "(a)(1)" per the CR-3 Maintenance Rule program. The CR-3 Maintenance Rule program would identify such activities and minimize scheduling of unnecessary, non-corrective maintenance. Equipment availability is managed by CR-3 procedure CP-153B, "Monitoring The Performance Of Systems Structures and Components Under The Maintenance Rule." If the pre-established reliability or availability goals are not met for the EDGs, the procedure will require corrective actions and increased management attention to restore EDG performance. Frequent use of the extended AOT would also become evident through the "Emergency AC Power" NRC Performance Indicator crossing the threshold from "Green" to "White."

In addition, CR-3 committed to an EDG reliability of 97.5% as part of compliance with the Station Blackout (SBO) Rule, 10 CFR 50.63 (FPC to NRC letter, 3F1090-08, dated October 22, 1990). CR-3 Procedure PT-354, "EDG Reliability and Unavailability Program," utilizes guidance from NUMARC 87-00, Appendix D, and Regulatory Guide 1.155, "Station Blackout," to ensure that the assumptions in CR-3's SBO Coping Assessment are maintained.

Loss of Offsite Power/Station Blackout

Upon loss of the sources of offsite power described above, power will be supplied from two automatic, fast start-up EDG units. These are sized so that either one can carry the required ES load. Each EDG unit will feed its designated ES 4160 volt bus. A detailed description of the EDGs is included in FSAR Section 8.2.3.1.3.

In an SBO event, both EDGs are assumed not to function. The increased EDG AOT is not expected to increase the overall EDG unavailability due to process efficiencies and a reduction in corrective maintenance. Therefore, the probability of an SBO event is not expected to be increased due to this proposed change. CR-3 addressed the SBO rule, 10 CFR 50.63, which postulates the loss of all AC power, by demonstrating the ability to cope without any AC power for 4 hours and did not add alternate AC capability (Supplemental Safety Evaluation, dated May 29, 1992). In August 2001, the NRC completed a safety system design and performance capability inspection of the Loss of Offsite Power with a Station Blackout scenario at CR-3. Inspection Report 50-302/01-06, dated September 10, 2001, documented that no findings of significance were identified.

The primary safety challenge caused by a SBO is loss of normal decay heat removal capability due to the interruption of forced Reactor Coolant System (RCS) flow and normal primary to secondary heat removal capability supported by main feedwater. CR-3 has four readily available and fully capable alternate means of supplying feedwater, three of which are independent of normal offsite or emergency onsite AC power. The three independently powered feedwater sources are: 1) a safety-related ITS-required turbine driven emergency feedwater (EFW) pump (EFP-2), 2) a safety-related ITS-required direct diesel-driven EFW

pump (EFP-3) (both pumps are on FSAR Figure 10-3), and 3) an auxiliary feedwater (AFW) pump (FWP-7) (FSAR Figure 10-2, sheet 4) supplied by a non-safety back-up diesel generator (MTDG-1). The fourth method for supplying feedwater is a motor-driven safety-grade EFW pump which requires AC Power from the "A" train ES bus. Any of the four pumps can supply 100% of the feedwater flow required for natural circulation. Over a million gallons of water is stored onsite and is available for the emergency and auxiliary feedwater pumps (FSAR Table 10-2). A simplified diagram of the EFW, AFW systems and water sources is included in Figure 4.

Because of the diversity and independence of the emergency and auxiliary feedwater systems, CR-3 can provide adequate feedwater to the Once-Through Steam Generators (OTSGs) in an SBO event with a very high degree of certainty. Therefore, CR-3 can maintain natural circulation in an SBO condition for an extended period of time (approximately 72 hours) as long as the RCS inventory can be adequately maintained. NUMARC 87-00, "Guidelines and Technical Bases for NUMARC Initiatives Addressing Station Blackout at Light Water Reactors," stated that the SBO analysis should assume 111 gpm RCS leakage, 11 gpm ITS identified and unidentified leakage plus 25 gpm from each reactor coolant pump (RCP) through the seals. With this RCS leakage rate, CR-3 was able to cope with an SBO for at least 4 hours. However, testing of the Byron Jackson N-9000 RCP seal package under simulated SBO conditions indicates that actual leakage through the seals after 7 hours was negligible (0.07 gpm) and increased to approximately 1.75 gpm at 7.5 hours due to O-ring degradation. The test was terminated at 8 hours with the leakage rate stabilized. The test was performed with the controlled bleedoff (CBO) valve closed at 30 minutes, which is consistent with the required operator action per EOP-12, "Station Blackout," (Reference 1). With these lower leakage rates (approximately one-tenth the leakage assumed in the SBO analysis), natural circulation could be maintained for an extended period of time. The robustness of the RCP seal design and the emergency and auxiliary feedwater systems provide defense in depth and reduce the potential consequences of an SBO event.

Surveillance Changes

In addition to the EDG AOT extension, FPC requests that Notes for two EDG SRs be modified to allow performance of the SR at power if the SR is required to demonstrate EDG OPERABILITY and an assessment determines that plant safety is maintained or enhanced. These changes are consistent with Technical Specification Task Force (TSTF) Traveler 283, Revision 3, and NUREG 1430, Standard Technical Specifications Babcock and Wilcox Plants, Revision 2. FPC has evaluated TSTF-283 and determined that the TSTF justification for the modified note applies to CR-3 SR 3.8.1.8 (SR 3.8.1.9 in the TSTF) and SR 3.8.1.11 (SR 3.8.1.14 in the TSTF). The modified note will provide the flexibility to perform the SRs following corrective maintenance (or other conditions described in the Bases for the SRs). This flexibility could prevent the need for a plant shutdown for certain EDG corrective maintenance activities such as a governor repair or replacement.

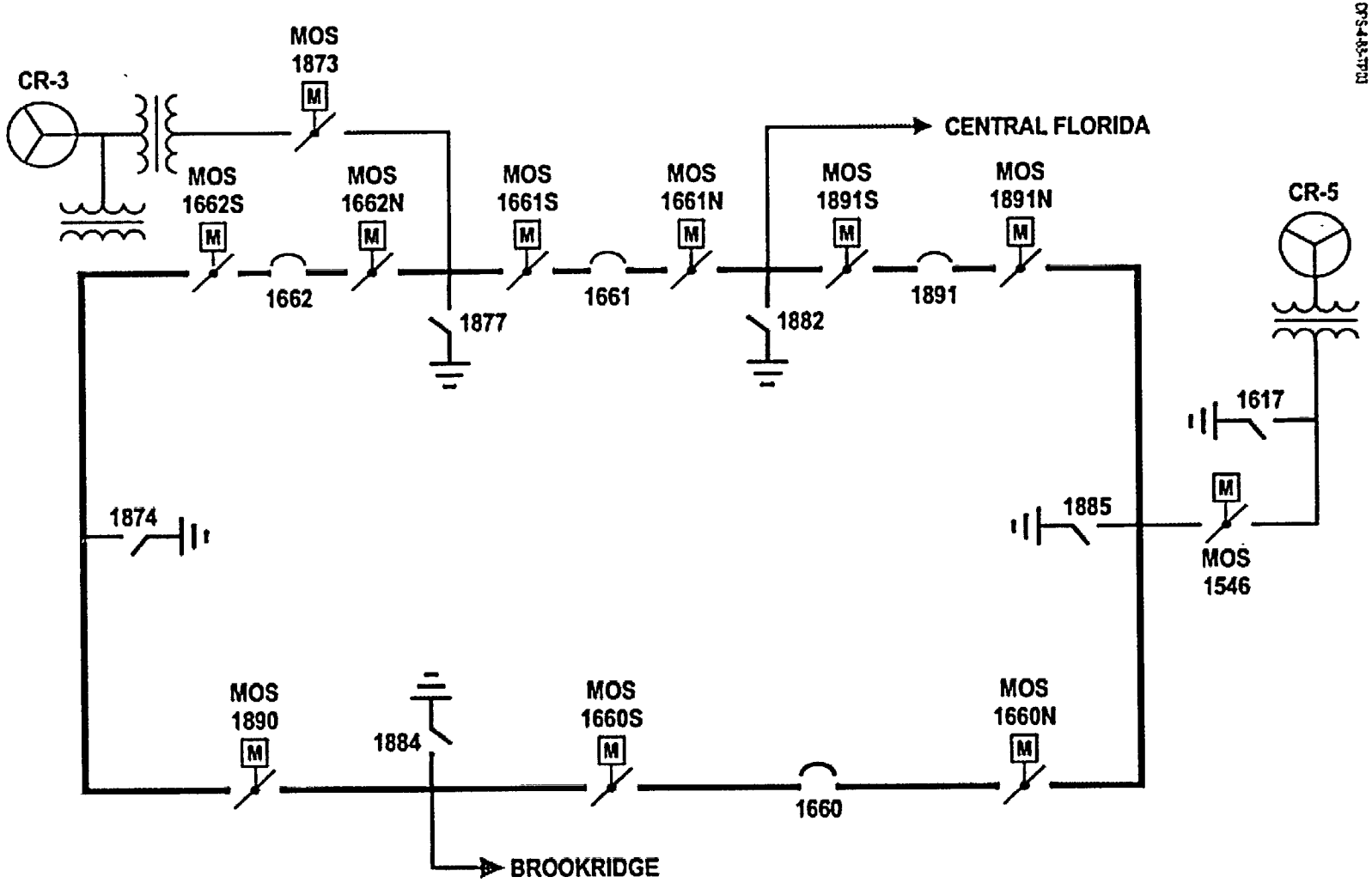

Figure 1 - Crystal River 500KV Switchyard

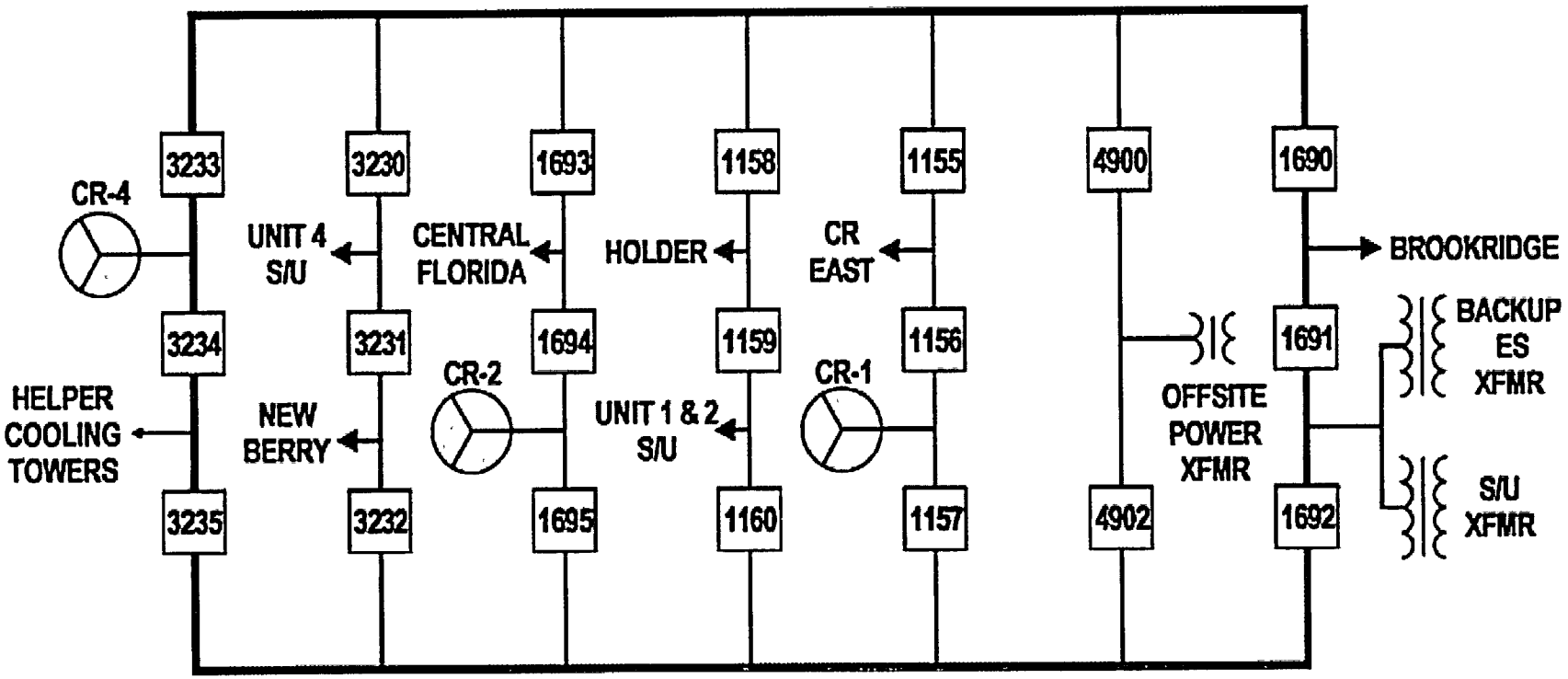

Figure 2 - 230KV Switchyard

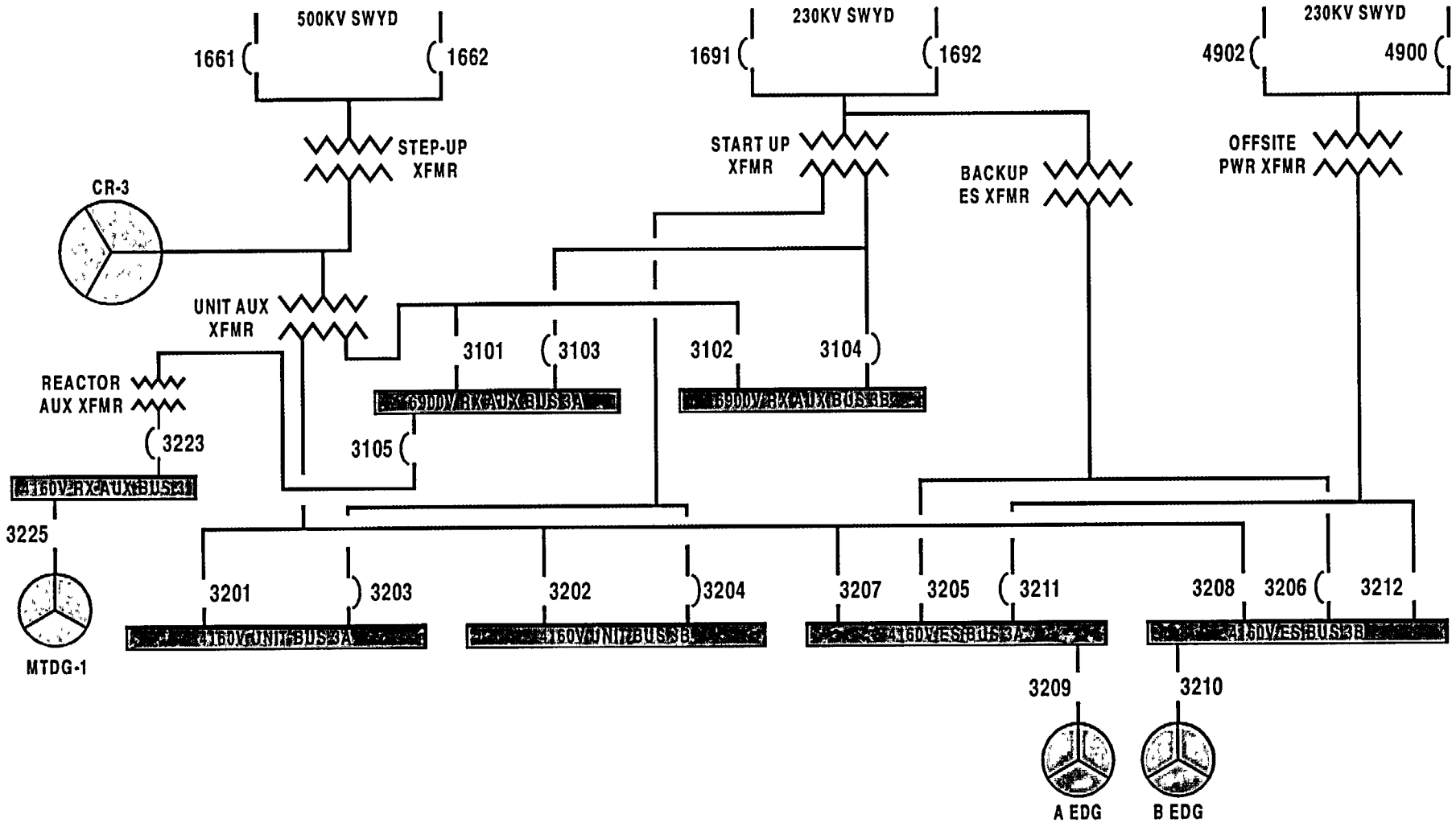

Figure 3 - AC ELECTRICAL DISTRIBUTION SYSTEM

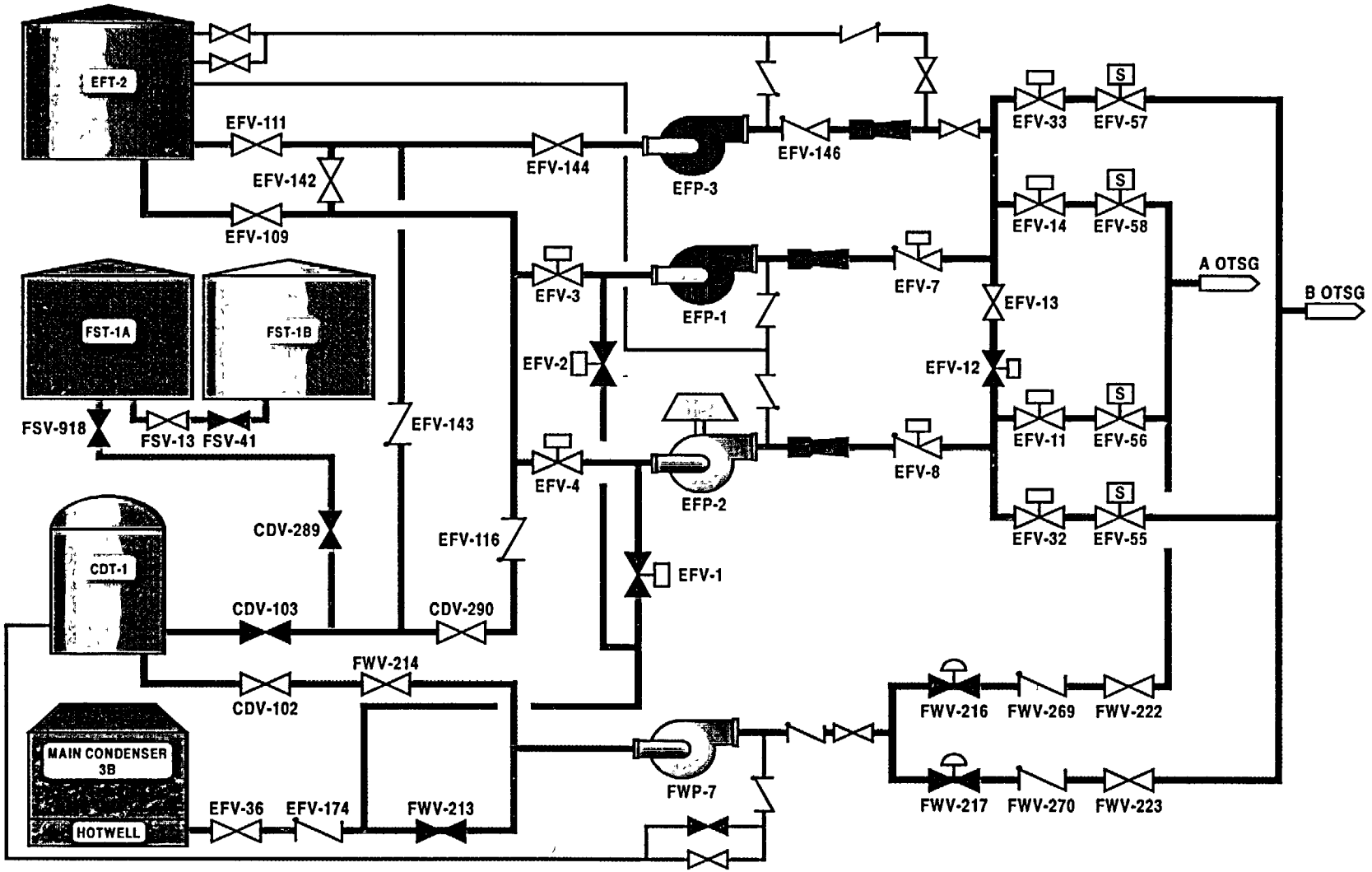

FIGURE 4 - EMERGENCY AND AUXILIARY FEEDWATER

4.2 Risk Informed Evaluation

An analysis (Reference 2) was performed in a manner consistent with NRC Regulatory Guide 1.177 (RG 1.177), "An Approach for Plant-Specific, Risk-Informed Decisionmaking: Technical Specifications." This analysis calculates a risk-informed quantitative impact of the proposed permanent ITS change in the AOT for a single EDG train from 72 hours to 14 days (336 hours). This evaluation is plant-specific using the CR-3 Probabilistic Safety Assessment (PSA) model for on-line operation.

The risks associated with EDG maintenance are largely coupled with the reliability of offsite power. The CR-3 PSA includes two loss of offsite power initiators, IE_T3 and IE_T15. IE_T3 is a loss of the 230kV switchyard. This event results in a loss of all normal offsite power and a plant trip. IE_T15 is a loss of offsite power to the Startup Transformer (SUT) and BEST. This event results in a plant trip and a loss of offsite power to the aligned ES Bus (normally "B" Train). Following an IE_T15 event, offsite power is still available to the "A" ES Bus from the OPT. A loss of the feed from the OPT alone does not cause a plant trip or a significant challenge to normal power production. This assumption was validated by an event on June 17, 2002, when the feed from the OPT was lost. The plant remained online throughout the event and the restoration of the OPT feed. Therefore, loss of the OPT feed alone is not modeled as an initiating event in the PSA because it does not result in a significant plant transient.

Results/Conclusions

RG 1.177 provides the following acceptance guidelines for AOT changes: "The licensee has demonstrated that the TS AOT change has only a small quantitative impact on plant risk. An ICCDP of less than 5.0E-7 is considered small for a single TS AOT change. An ICLERP of 5.0E-08 or less is also considered small." The incremental conditional core damage probability (ICCDP) calculated for an EDG AOT of 14 days, assuming the entire AOT is used for corrective maintenance (CM), is 4.64E-07 for the limiting EDG out of service. If it is assumed that the entire AOT is used for preventive maintenance (PM), the ICCDP is 4.41E-07 for the limiting case (CM ICCDP is higher than that for PM because an increased probability of common cause failure is assumed). Both the CM and PM ICCDPs are less than the "small" threshold ICCDP referred to in RG 1.177. The incremental conditional large early release probability (ICLERP) calculated for the EDG AOT increase, assuming the entire AOT is used for corrective maintenance, is 2.30E-10 for the limiting case. The preventive maintenance case yields the same ICLERP result of 2.30E-10. These ICLERPs are well below the "small" threshold ICLERP of 5.0E-08 referred to in RG 1.177.

RG 1.177 also recommends that the ΔCDF and ΔLERF associated with the AOT extension be calculated. Two cases were examined: a best-estimate case and an upper-bound case. For the best-estimate case, the calculated increase in core damage frequency (CDF) and large early release frequency (LERF) are unchanged from the base case because the increased AOT is

expected to offset historical corrective maintenance. For the upper-bound case, the calculated increase in CDF is 9E-08, or 1.32%, and the increase in LERF is less than 1E-9. Comparing these values to the acceptance guidelines in Regulatory Guide 1.174 (RG 1.174), "An Approach for Using Probabilistic Risk Assessment in Risk-Informed Decisions on Plant-Specific Changes to the Licensing Basis," Figures 3 and 4, all are below Region III (the least risk-significant region) of the appropriate figure.

The increases in CDF and LERF associated with the best-estimate maintenance unavailabilities for the EDGs, post-AOT-extension, fall below Region III of RG 1.174, Figures 3 and 4, respectively, and are thus considered very small.

The following table summarizes the results used to support the conclusions of this analysis for a 14-day AOT. EGDG-1B ("B" Train EDG) was determined to be the limiting EDG and bounds the risks associated with EGDG-1A ("A" Train EDG). A summary of the results of the PSA analysis is given in Table 1 below:

Table 1: Summary of Results

Description	CDF	LERF	ICCDP (1)	ICLERP (2)	ΔCDF (3)	ΔLERF (4)
Baseline	6.83E-06	3.59E-07	Not applicable	Not applicable		
EGDG-1A (PM)	8.98E-06	Bounded by EGDG-1B	8.25E-08	Bounded by EGDG-1B		
EGDG-1B (PM)	1.83E-05	3.65E-07	4.41E-07	2.30E-10		
EGDG-1B (CM)	1.89E-05	3.65E-07	4.64E-07	2.30E-10		
Expected EDG unavailability	6.83E-06	3.59E-07			0	0
Upper bound expected EDG unavailability given 14-day AOT (5)	6.92E-06	3.59E-07			9E-08	Less than 1E-09

(1) RG 1.177 defines an incremental conditional core damage probability (ICCDP) less than 5E-7 as small
(2) RG 1.177 defines an incremental conditional large early release probability (ICLERP) less than 5E-8 as small
(3) RG 1.174 defines a delta core damage frequency (ΔCDF) less than 1E-6 as very small – Region III
(4) RG 1.174 defines a delta large early release frequency (ΔLERF) less than 1E-7 as very small – Region III
(5) Assumes current availability plus 280 hours (two 140-hour EDG PM outages)

Individual Plant Examination of External Events (IPEEE) Evaluation

A review of the databases used for the IPEEE identified the fire zones which contained equipment that could, if damaged, disable the EDGs. Proposed ITS Bases, Table B 3.8.1-1, lists these fire zones and the impacted EDG(s). The presence of automatic suppression, fire wrap, and the total zone ignition frequency is also listed. As a means to provide additional protection for the EDG that is operable during maintenance on the opposite train, a periodic fire watch will be established during extended EDG maintenance outages for fire areas that are considered risk-significant by the IPEEE, affect both EDGs or have increased risk significance due to EDG maintenance.

4.3 Quality of the Crystal River-3 PSA

The models used for this application were generated using updated Individual Plant Examination (IPE) models developed in response to Generic Letter 88-20, "Individual Plant Examination for Severe Accident Vulnerabilities," and associated supplements. The original development work was a level one Probabilistic Risk Assessment (PRA) study completed in 1987 (Crystal River Unit 3 Probabilistic Risk Assessment, Florida Power Corporation, Science Applications Intl. Corporation, July 1987), which was submitted to the NRC and reviewed by Argonne National Laboratory (NUREG/CR-5245). This study was subsequently updated for the Generic Letter 88-20 IPE submittal to include a level two containment analysis and an internal flooding analysis. The study was subjected to reviews by the relevant CR-3 system engineers, and review of the event sequence analysis, quantification, and recovery analysis by the Nuclear Safety Supervisor at CR-3, a former Senior Reactor Operator.

Revisions to the models have been made to maintain the models consistent with plant design changes and operational changes. These changes have been made by individuals knowledgeable in risk assessment techniques and methods, and reviewed by plant Engineering and Operations personnel familiar with the plant design and operation. The current PSA model and the risk assessment performed for this application have been documented as a calculation.

Current administrative controls include written procedures and review of all model changes, data updates, and risk assessments performed using PSA methods and models. Risk assessments are performed by a PSA engineer, reviewed by another PSA engineer, and approved by the PSA Supervisor or designee. Procedures, PSA model documentation, and associated records for applications of the PSA models, are controlled documents.

Since the submittal of the original PRA study in 1987, the PSA models have been maintained consistent with the current plant configuration such that they are considered "living" models which reasonably reflect the as-built, as-operated plant. The PSA models are updated for different reasons, including plant changes and modifications, procedure changes, accrual of new plant data, discovery of modeling errors, and advances in PSA technology. The update process ensures that the applicable changes are implemented and documented in a timely

manner so that risk analyses performed in support of plant operations reflect the current plant configuration, operating philosophy, and transient and component failure history. The PSA maintenance and update process is described in administrative procedure ADM-NGGC-0004, "Updates to PSA Models." Model updates are performed at a frequency dependent on the estimated impact of the accumulated changes. Guidance to determine the need for a model update is provided in the procedure. Prior to startup from a refueling outage, known outstanding changes, including identified model errors and enhancements, are reviewed, and either model changes are implemented, or the outstanding item is dispositioned to be deferred for a future model update.

PSA Software

Computer programs that process PSA model inputs are verified and validated in accordance with administrative procedure CSP-NGGC-2505, "Software Quality Assurance and Configuration Control of Business Computer Systems." This procedure provides for software verification and validation to ensure the software meets the software requirement specifications and functional requirements, and typically includes a comparison of results generated to the results generated from previously approved software.

Validation requirements for each quality related PSA computer program are documented in the Software Life Cycle document, which consists of a Software Verification/Validation Plan (SVVP) and Report (SVVR). These requirements include the method of validation, the frequency of validation, the documentation required and the acceptance criteria. Actual validation benchmark problems can exercise more than one program, but a separate SVVR must be submitted for each program. Each SVVP and SVVR is reviewed, and then approved by the software owner, who is the PSA supervisor. Software validation tests both the software and the hardware. Validation tests are also performed following any significant change in the hardware, operating system, or program, or if the validation period established in the SVVP procedure expires.

Model Changes Since Submittal of the IPE

Since the submittal of the IPE, there have been several significant plant design changes incorporated into the PSA model which have resulted in a reduction in the core damage frequency. A summary of significant model changes incorporated due to these plant changes follows:

- BEST added ("A" and "B" safeguards trains powered from separate transformers)
- FWP-7 with dedicated diesel generator MTDG-1 installed
- Appendix R chiller installed
- EFP-3 installed
- Low pressure injection suction valves changed to be normally open
- High pressure injection discharge throttle valves and cross-ties added

- Revision of emergency operating procedures reflected in human action probabilities

In addition to these plant changes, updates have been made to plant-specific data (through 1999) and initiating events data, as well as updates to the methods used for human reliability, common cause, internal flooding, and level two analyses.

As of the date of this submittal, there are no outstanding plant changes which would require a change to the PSA model, and no planned plant changes which would be implemented prior to the fall 2003 refueling outage which would require a change to the PSA model.

PSA Reviews

As discussed above, the original CR-3 PRA study was reviewed by Argonne National Laboratory as documented in NUREG/CR-5245. For the IPE submittal, multiple levels of review were used, including an assessment by Engineering and Operations personnel familiar with the plant design and operation. Subsequent revisions to the PSA models were performed by qualified individuals with knowledge of PSA methods and plant systems. Involvement by Engineering and Operations personnel in providing input and review of results was obtained when required based on the scope of the changes being implemented.

The CR-3 PSA model and documentation was subjected to the industry peer certification review process in September 2001. In preparation for this review, an external consultant was hired to develop system notebook documentation. This required a review of the system models against plant drawings and procedures, and identification of any inconsistencies with the models. Items identified from this review were considered and dispositioned. The internal flooding and common cause failure analyses were updated to current industry methodologies and data sources. An internal review of the PSA model elements and their corresponding documentation was conducted to assure the model and documentation reflected the plant design.

The industry peer certification review was conducted by a diverse group of PSA engineers from other B&W plants, industry PSA consultants familiar with the B&W plant design, and a representative from INPO. The certification review covered all aspects of the PSA model and the administrative processes used to maintain and update the model. This review generated specific recommendations for model changes to correct errors, as well as guidance for improvements to processes and methodologies used in the CR-3 PSA model, and enhancements to the documentation of the model and the administrative procedures used for model updates.

Following completion of this review, the CR-3 PSA model was revised to address each issue identified which affected the model. The significant changes identified included:

- Update of plant-specific thermal-hydraulic analyses which provide the bases for accident sequences, system success criteria, and timing for operator actions

- Revision of accident sequence logic for steam generator tube rupture (SGTR) and anticipated transient without scram (ATWS) mitigation
- Development of an initiating event to address the loss of all raw water pumps (loss of ultimate heat sink)
- Update of the interfacing systems loss of coolant accident (ISLOCA) analyses
- Update of the human reliability analysis including the dependency analysis for multiple operator action responses to an event, and
- Update of the level two analysis

Issues involving model documentation are being addressed as each individual PSA document is reviewed and approved under Progress Energy corporate procedures. Other changes involving guidance documents and administrative processes used for model updates are planned to be addressed by Progress Energy corporate procedures, once the peer review process has been completed for all PSA models (including the Robinson Nuclear Plant, Brunswick Nuclear Plant, and Harris Nuclear Plant). The issues identified by the peer review in these areas have been reviewed and determined not to have any impact on this submittal, and so deferral of completion of these items is acceptable for this application of the PSA model. All other peer review items which impact the PSA model have been addressed and are reflected in this submittal.

At the time of the peer review, the level two model was not yet completed, and only a preliminary draft version, along with the original IPE level two results, were available for review. The level two model is now complete, and the findings identified from the peer certification review of the preliminary results and the IPE model have been addressed.

4.4 Compensatory Measures

During the performance of extended maintenance on the EDGs, CR-3 will take additional precautions to minimize risk. These precautions include the following:

(1) CR-3 will perform procedure CP-253, "Power Operation Risk Assessment and Management," which requires both a deterministic and probabilistic evaluation of risk for the performance of all maintenance activities. This procedure uses the Level 1 PSA model to evaluate the impact of maintenance activities on CDF. CR-3 will not plan maintenance that results in "Higher Risk" (Orange Color Code) during extended (greater than 72 hours) EDG maintenance.

(2) ECCS equipment, emergency feedwater, control complex cooling and auxiliary feedwater (FWP-7 and MTDG-1) will be designated administratively as "protected" (no planned maintenance or discretionary equipment manipulation).

(3) Prior to initiating a planned EDG outage, CR-3 will verify the availability of offsite power to the 230 kV switchyard and ensure that the capability to power both ES busses is available from each of the two ES offsite power transformers (OPT and BEST).

(4) CR-3 will not initiate an EDG extended preventive maintenance outage if adverse weather, as designated by Emergency Preparedness procedures, is anticipated.

(5) No elective maintenance will be scheduled in the switchyard that would challenge the availability of offsite power to the ES busses.

(6) A periodic fire watch will be established in fire areas that are considered risk-significant by the IPEEE, affect both EDGs or have increased risk significance due to EDG maintenance.

5.0 REGULATORY ANALYSIS

5.1 No Significant Hazards Determination

Crystal River Unit 3 (CR-3) proposes to revise Improved Technical Specifications (ITS) 3.8.1, "AC Sources – Operating," by increasing the Completion Times for Required Actions A.3 from "72 hours AND 6 days from discovery of failure to meet LCO" to "72 hours AND 17 days from discovery of failure to meet LCO" and B.4 from "72 hours AND 6 days from discovery of failure to meet LCO," to "14 days AND 17 days from discovery of failure to meet LCO." Bases Section B 3.8.1 will also be revised to reflect the proposed changes. In addition, Notes to two emergency diesel generator (EDG) surveillance requirements (SRs) are modified to allow performance of the SRs at power if they are required to reestablish OPERABILITY and an assessment determines that plant safety is maintained or enhanced.

Florida Power Corporation (FPC) has reviewed the proposed revisions to ITS 3.8.1 and associated Bases Section B 3.8.1 against the requirements of 10 CFR 50.92(c). The proposed changes do not involve a significant hazards consideration. In support of this conclusion, the following analysis is provided:

(1) Does not involve a significant increase in the probability or consequences of an accident previously analyzed.

The proposed license amendment extends the Completion Time for restoring an inoperable EDG to OPERABLE status and permits performance of certain SRs at power under specified conditions. The EDGs are designed to supply backup AC power to equipment in essential safety systems in the event of a loss of offsite power, and as such, the EDGs are not initiators of any design basis accident.

The design functions, operational characteristics, and interfaces between the EDGs and other plant systems will not be affected by the change. In addition, the initial conditions and assumptions for accidents that require the EDGs will remain unchanged. Defense in depth will be maintained by the redundant OPERABLE EDG, diverse 1E offsite power sources, and the availability of multiple emergency feedwater (EFW) and auxiliary feedwater (AFW) equipment capable of operating independently of both offsite power and the EDGs.

A Probabilistic Safety Assessment (PSA) has been performed to quantitatively assess the risk impact of an increase in Completion Times. Although the proposed changes result in slight increases in core damage frequency (CDF) and incremental conditional core damage probability (ICCDP), and large early release frequency (LERF) and incremental conditional large early release probability (ICLERP), these increases are well below values that are considered risk significant in accordance with current regulatory guidance.

Based on the above, the proposed changes will not significantly increase the probability or consequences of an accident previously evaluated.

(2) Does not create the possibility of a new or different kind of accident from any accident previously analyzed.

The proposed amendment extends the Completion Time for restoring an inoperable EDG to OPERABLE status and permits performance of certain SRs at power under specified conditions. The proposed amendment will not result in changes to the design, physical configuration or operation of the plant or the assumptions made in the safety analysis for accidents that require the EDGs. In addition, the proposed amendment will not result in changes to corrective or preventive maintenance activities associated with the EDGs, plant operating procedures, or the procedures used to respond to abnormal or emergency conditions. Assumptions made in the safety analysis related to EDG availability will also remain unchanged. Performance of certain SRs at power requires an evaluation to assure plant safety is maintained or enhanced, which would include evaluation for new or different plant conditions. As such, no new failure modes are being introduced. Therefore, the proposed change will not create the possibility of a new or different kind of accident from any accident previously evaluated.

(3) Does not involve a significant reduction in the margin of safety.

The proposed license amendment increases the Completion Times for restoring an inoperable EDG to OPERABLE status and permits performance of certain SRs at power under specified conditions. The proposed changes will improve EDG reliability by providing flexibility in scheduling and performing EDG preventive and corrective maintenance activities. This flexibility will reduce the probability (and associated risk)

of a plant shutdown to repair an inoperable EDG that cannot be restored within the current ITS 3.8.1 Completion Times. Performance of the proposed SRs at power requires an evaluation to assure plant safety is maintained or enhanced. The proposed change will also increase the availability of the EDGs during MODE 5 and 6 outages, thus reducing shutdown risk.

The proposed amendment will not change the plant design, safety analysis, or the design, configuration or operation of the EDGs. The EDGs are designed to supply backup AC power to equipment in essential safety systems in the event of a loss of offsite power. Either EDG is capable of performing this function; therefore, as long as one train is available, the margin of safety is maintained. Defense in depth will be provided by the redundant OPERABLE EDG, the availability of diverse offsite circuits capable of supplying power to plant emergency loads, and EFW and AFW equipment that can perform their design function independently of both offsite power and the EDGs.

To ensure these defense in depth capabilities are maintained during required EDG maintenance, maintenance and surveillance activities that have the ability to impact the availability of the redundant EDG, required support systems and/or backup systems, the EFW and AFW systems and the 1E offsite power circuits will be controlled in accordance with the normal work controls process. As part of this process, weekly qualitative and quantitative risk assessments of scheduled on-line maintenance activities, and additional risk assessments of emergent work activities, will be performed in accordance with the guidance provided in CR-3 Compliance Procedure CP-253, "Power Operation Risk Assessment and Management." If the results of these assessments indicate an increase in risk, appropriate actions to control temporary and aggregate risk increases and minimize risk increases above the overall plant baseline will be implemented in accordance with CP-253.

Additional measures to minimize risk will include increased administrative controls related to switchyard access, and increased inspection of identified risk significant fire areas within the plant. A Tier 2 analysis has also been performed to identify the dominant risk significant plant configurations during the time that an EDG is inoperable due to required corrective or preventive maintenance, and appropriate configuration controls/restrictions will be established prior to extended EDG maintenance.

As discussed in question (1) above and in the submittal, the slight increases in CDF, ICCDP, LERF and ICLERP resulting from the proposed amendment are all below values that are considered risk significant in accordance with the guidance provided in Regulatory Guide 1.174, "An Approach for Using Probabilistic Risk Assessment in Risk-Informed Decisions on Plant-Specific Changes to the Licensing Basis," for changes to the plant, and Regulatory Guide 1.177, "An Approach for Plant-Specific,

Risk-Informed Decisionmaking: Technical Specifications," for proposed increases in ITS Completion Times.

Based on the above, this proposed change does not involve a significant reduction in the margin of safety.

6.0 ENVIRONMENTAL EVALUATION

10 CFR 51.22(c)(9) provides criteria for and identification of licensing and regulatory actions eligible for categorical exclusion from performing an environmental assessment. A proposed amendment to an operating license for a facility requires no environmental assessment if operation of the facility in accordance with the proposed amendment would not: (1) involve a significant hazards consideration, (2) result in a significant change in the types or significant increase in the amounts of any effluents that may be released offsite, or (3) result in a significant increase in individual or cumulative occupational radiation exposure.

Florida Power Corporation (FPC) has reviewed this license amendment request and has determined that it meets the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Pursuant to 10 CFR 51.22(c), no environmental impact statement or environmental assessment needs to be prepared in connection with the issuance of the proposed license amendment. The basis for this determination is as follows:

1. The proposed license amendment does not involve a significant hazards consideration as described previously in the no significant hazards evaluation for this License Amendment Request (LAR).

2. The proposed change revises the Completion Times specified in Improved Technical Specifications (ITS) 3.8.1, "AC Sources - Operating," for restoring an inoperable Emergency Diesel Generator (EDG) to OPERABLE status. The proposed change increases the Completions Times for Required Action A.3 from "72 hours AND 6 days from discovery of failure to meet LCO" to "72 hours AND 17 days from discovery of failure to meet LCO," and B.4 from "72 hours AND 6 days from discovery of failure to meet LCO" to "14 days AND 17 days from discovery of failure to meet LCO." The change also permits the performance of some surveillance requirements at power under certain conditions.

   The EDGs do not interface with any plant systems that are involved in the generation or processing of radioactive fluids. The proposed changes will not result in changes in the operation or design of the gaseous, liquid or solid waste systems, will not result in an increase in the amounts of solid, liquid or gaseous wastes generated, and will not create any new or different radiological release pathways. Therefore, the proposed license

amendment will not result in a significant change in the types or increase in the amounts of any effluents that may be released offsite.

3. The proposed change is limited to extending the Completion Times for restoring an inoperable EDG to OPERABLE status and the operational mode restrictions for the performance of some EDG surveillance requirements. The proposed change does not involve equipment that interfaces with radiologically contaminated systems, does not involve changes in the physical configuration of the facility, will not result in any change in the normal radiation levels in the plant, and does not require new or different actions by operations, maintenance, or other plant personnel that could increase occupational radiation exposure. Therefore, the proposed license amendment will not result in a significant increase to the individual or cumulative occupational radiation exposure.

7.0 REFERENCES

1. Babcock and Wilcox Document 51-1172516-00, "N-9000 Seal Appendix R Eval," dated June 24, 1988

2. FPC Calculation, N02-0001, Revision 0, "Risk Evaluation of an Increased Emergency Diesel Generator AOT," dated June 5, 2002

8.0 PRECEDENTS

Numerous plants have been granted greater than 72 hours for EDG AOTs. The basis for approval of each of these amendments has varied and has relied heavily on plant specific electrical system designs and ability to remove decay heat from the RCS. The most significant unique design features at CR-3 are the two independent high voltage switchyards and the number and diversity of EFW sources. No comparable plant design features were found among other plants with extended EDG AOTs. However, there are similarities between this submittal and the request made by the Clinton Power Station (CPS) which was approved as Amendment 141 issued November 8, 2001. CPS is also a single unit SBO coping plant without an alternate AC power source. CPS has two redundant EDGs and a third emergency diesel generator that primarily supports a high pressure core spray pump. CR-3 has two redundant EDGs and a third diesel generator that primarily supports an auxiliary feedwater pump.

The modification to the mode restriction note, which allows the performance of two EDG SRs at power under certain conditions, is consistent with Technical Specification Task Force (TSTF) Traveler 283, Revision 3, and NUREG 1430, Standard Technical Specifications Babcock and Wilcox Plants, Revision 2.

FLORIDA POWER CORPORATION

CRYSTAL RIVER UNIT 3

DOCKET NUMBER 50 - 302 / LICENSE NUMBER DPR - 72

ATTACHMENT B

LICENSE AMENDMENT REQUEST #257, REVISION 0
Emergency Diesel Generator Allowed Outage Time Extension

Proposed Revised Improved Technical Specification Pages
- Strikeout Version

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. (continued)	A.3 Restore required offsite circuit to OPERABLE status	72 hours AND ~~6~~ 17 days from discovery of failure to meet LCO
B. One EDG inoperable.	B.1 Perform SR 3.8.1.1 for OPERABLE offsite circuit(s). AND B.2 Declare required feature(s), supported by the inoperable EDG, inoperable when its redundant required feature(s) are inoperable. AND	1 hour AND Once per 8 hours thereafter 4 hours from discovery of Condition B concurrent with inoperability of redundant required feature(s)

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. (continued)	B.3.1 Determine OPERABLE EDG is not inoperable due to common cause failure. OR B.3.2 Perform SR 3.8.1.2 for OPERABLE EDG. AND B.4 Restore EDG to OPERABLE status	24 hours 24 hours ~~72 hours~~14 days AND ~~6~~ 17 days from discovery of failure to meet LCO
C. Two required offsite circuits inoperable.	C.1 Declare required feature(s) inoperable when its redundant required feature(s) are inoperable. AND C.2 Restore one required offsite circuit to OPERABLE status.	12 hours from discovery of Condition C concurrent with Inoperability of redundant Required feature(s) 24 hours

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.8.1.8	----------NOTES---------- 1. This Surveillance shall not normally be performed in MODE 1 or 2. However, this Surveillance may be performed to reestablish OPERABILITY provided an assessment determines the safety of the plant is maintained or enhanced. Credit ~~credit~~ may be taken for unplanned events that satisfy this SR. 2. Power factor limit only applicable when Surveillance is performed with EDG paralleled with offsite power. ---------- Verify each EDG operating at a power factor ≤ 0.9 rejects a load greater than or equal to the single largest post-accident load, and: a. Following load rejection, the frequency is ≤ 66.75 Hz; b. Within 3 seconds following load rejection, the voltage is ≥ 3744 V and ≤ 4576 V; and c. Within 4 seconds following load rejection, the frequency is ≥ 58.8 Hz and ≤ 61.2 Hz.	24 months
SR 3.8.1.9	Verify interval between each sequenced load block is within ± 10% of design interval for each emergency load sequencing relay.	24 months

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.8.1.11	----------NOTES---------- 1. Momentary transients outside the load range do not invalidate this test. 2. This Surveillance shall not normally be performed in MODE 1 or 2. However, this Surveillance may be performed to reestablish OPERABILITY provided an assessment determines the safety of the plant is maintained or enhanced. Credit ~~credit~~ may be taken for unplanned events that satisfy this SR. ---------- Verify each EDG operates for ≥ 60 minutes at a load ≥ 3300 kW and ≤ 3400 kW.	24 months

FLORIDA POWER CORPORATION

CRYSTAL RIVER UNIT 3

DOCKET NUMBER 50 - 302 / LICENSE NUMBER DPR - 72

ATTACHMENT C

LICENSE AMENDMENT REQUEST #257, REVISION 0
Emergency Diesel Generator Allowed Outage Time Extension

Proposed Revised Improved Technical Specification Pages – Revision Line Version

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. (continued)	A.3 Restore required offsite circuit to OPERABLE status	72 hours AND 17 days from discovery of failure to meet LCO
B. One EDG inoperable.	B.1 Perform SR 3.8.1.1 for OPERABLE offsite circuit(s). AND	1 hour AND Once per 8 hours thereafter
	B.2 Declare required feature(s), supported by the inoperable EDG, inoperable when its redundant required feature(s) are inoperable. AND	4 hours from discovery of Condition B concurrent with inoperability of redundant required feature(s)

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. (continued)	B.3.1 Determine OPERABLE EDG is not inoperable due to common cause failure. OR B.3.2 Perform SR 3.8.1.2 for OPERABLE EDG. AND B.4 Restore EDG to OPERABLE status	24 hours 24 hours 14 days AND 17 days from discovery of failure to meet LCO
C. Two required offsite circuits inoperable.	C.1 Declare required feature(s) inoperable when its redundant required feature(s) are inoperable. AND C.2 Restore one required offsite circuit to OPERABLE status.	12 hours from discovery of Condition C concurrent with Inoperability of redundant Required feature(s) 24 hours

(continued)

SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE	FREQUENCY
SR 3.8.1.8	----------NOTES---------- 1. This Surveillance shall not normally be performed in MODE 1 or 2. However, this Surveillance may be performed to reestablish OPERABILITY provided an assessment determines the safety of the plant is maintained or enhanced. Credit may be taken for unplanned events that satisfy this SR. 2. Power factor limit only applicable when Surveillance is performed with EDG paralleled with offsite power. ---------- Verify each EDG operating at a power factor ≤ 0.9 rejects a load greater than or equal to the single largest post-accident load, and: a. Following load rejection, the frequency is ≤ 66.75 Hz; b. Within 3 seconds following load rejection, the voltage is ≥ 3744 V and ≤ 4576 V; and c. Within 4 seconds following load rejection, the frequency is ≥ 58.8 Hz and ≤ 61.2 Hz.	24 months
SR 3.8.1.9	Verify interval between each sequenced load block is within ± 10% of design interval for each emergency load sequencing relay.	24 months

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.8.1.11	----------NOTES---------- 1. Momentary transients outside the load range do not invalidate this test. 2. This Surveillance shall not normally be performed in MODE 1 or 2. However, this Surveillance may be performed to reestablish OPERABILITY provided an assessment determines the safety of the plant is maintained or enhanced. Credit may be taken for unplanned events that satisfy this SR. ---------- Verify each EDG operates for ≥ 60 minutes at a load ≥ 3300 kW and ≤ 3400 kW.	24 months

FLORIDA POWER CORPORATION

CRYSTAL RIVER UNIT 3

DOCKET NUMBER 50 - 302 / LICENSE NUMBER DPR - 72

ATTACHMENT D

LICENSE AMENDMENT REQUEST #257, REVISION 0
Emergency Diesel Generator Allowed Outage Time Extension

Proposed Revised Improved Technical Specification Bases Pages – Revision Line Version

ACTIONS

A.2 (continued)

If at any time during the existence of Condition A (one offsite circuit inoperable) both 'a' and 'b' above become met, this Completion Time begins to be tracked.

The remaining OPERABLE offsite circuit and EDGs are adequate to supply electrical power to Train A and Train B of the onsite Class 1E distribution system. The 24 hour Completion Time takes into account the component OPERABILITY of the redundant counterpart to the inoperable required feature. Additionally, the 24 hour Completion Time takes into account the capacity and capability of the remaining AC sources, a reasonable time for repairs, and the low probability of a DBA occurring during this period.

A.3

According to the recommendations of Regulatory Guide 1.93 (Ref. 6), operation with one required offsite circuit inoperable should be limited to a period of time not to exceed 72 hours. In this condition, the reliability of the offsite system is degraded, and the potential for a loss of offsite power is increased, with attendant potential for a challenge to the unit safety systems. However, the remaining OPERABLE offsite circuit and EDGs are adequate to supply electrical power to the onsite Class 1E distribution system.

The 72 hour Completion Time takes into account the capacity and capability of the remaining AC sources, a reasonable time for repairs, and the low probability of a DBA occurring during this period.

The 17 day Completion Time for Required Action A.3 establishes a limit on the maximum time allowed for any combination of required AC power sources to be inoperable during any single contiguous occurrence of failure to meet the LCO. If Condition A is entered while, for instance, an EDG is inoperable and that EDG is subsequently returned to OPERABLE status, LCO 3.8.1 may already have been not met for up to 14 days. This could lead to a total of 17 days, since initial failure to meet the LCO, to restore the offsite circuit. At this time, an EDG could again become inoperable, the circuit restored to OPERABLE status, and an

(continued)

BASES

ACTIONS

A.3 (continued)

additional 14 days (for a total of 31 days) allowed prior to complete restoration of the LCO. The 17 day Completion Time provides a limit on the time allowed in a specified condition after discovery of failure to meet the LCO. This limit is considered reasonable for situations in which Conditions A and B are entered concurrently.

As in Required Action A.2, the Completion Time allows for an exception to the normal "time zero" for beginning the allowed outage time "clock." This will result in establishing the "time zero" at the time that the LCO was initially not met, instead of at the time Condition A was entered.

B.1

To ensure a highly reliable power source in the event one EDG is inoperable, it is necessary to verify the availability of the OPERABLE offsite circuits on a more frequent basis. Since the Required Action only specifies "perform," a failure of SR 3.8.1.1 acceptance criteria does not result in a Required Action being not met (Condition F). However, if a circuit fails to pass SR 3.8.1.1, it is inoperable. Upon offsite circuit inoperability, additional Conditions and Required Actions must then be entered.

B.2

Required Action B.2 is intended to provide assurance that a loss of offsite power, during the period that a EDG is inoperable, does not result in a complete loss of safety function of critical redundant required features. These features are designed with redundant safety related trains. Redundant required feature failures consist of inoperable features associated with a train, redundant to the train that has an inoperable EDG. Single train systems (from an electrical perspective), such as the turbine driven emergency feedwater pump, are not included.

(continued)

ACTIONS

B.3.1 and B.3.2

Required Action B.3.1 provides an option to testing the OPERABLE EDG in order to avoid unnecessary testing. If it can be determined that the cause of the inoperable EDG does not exist on the OPERABLE EDG, SR 3.8.1.2 does not have to be performed. If the cause of inoperability exists on the other EDG, the other EDG would be declared inoperable upon discovery and Condition E of LCO 3.8.1 would be entered. If the common cause failure evaluation is indeterminate (the cause of the initial inoperable EDG cannot be confirmed not exist on the remaining EDG), performance of SR 3.8.1.2 is adequate to provide assurance of continued OPERABILITY of that EDG.

The Completion Time of 24 hours is reasonable to confirm that the OPERABLE EDG is not affected by the same problem as the inoperable EDG and is based on the recommendations of Generic Letter 84-15 (Ref. 7).

B.4

In Condition B, the remaining OPERABLE EDG and offsite circuits are adequate to supply electrical power to the onsite Class 1E distribution system. The 14-day Completion Time takes into account the capacity and capability of the remaining AC sources, a reasonable time for repairs, the ability to perform on-line preventative maintenance, and the low probability of a DBA occurring during this period.

During on-line preventative maintenance that is planned to take over 72 hours, the following compensatory measures will be put in place prior to initiating the activity:

CR-3 will perform procedure CP-253, "Power Operation Risk Assessment and Management" which requires both a deterministic and probabilistic evaluation of risk for the performance of all maintenance activities. This procedure uses the Level 1 PSA model to evaluate the impact of maintenance activities on CDF. CR-3 will not plan any maintenance that results in "Higher Risk" (Orange Color Code) during EDG maintenance.

ECCS equipment, emergency feedwater, Control Complex Cooling and auxiliary feedwater (FWP-7 and MTDG-1) will be designated administratively as "protected" (no planned maintenance or discretionary equipment manipulation).

(continued)

BASES

ACTIONS (continued)

B.4 (continued)

Prior to initiating a planned EDG outage, CR-3 will verify the availability of offsite power to the 230 kV switchyard and ensure that the capability to power both ES busses is available from each of the two ES offsite power transformers (OPT and BEST).

CR-3 will not initiate an EDG extended preventive maintenance outage if adverse weather, as designated by Emergency Preparedness procedures, is anticipated.

No elective maintenance will be scheduled in the switchyard that would challenge the availability of offsite power to the ES busses.

A periodic fire watch will be established in fire areas that are considered risk-significant by the IPEEE, affect both EDGs or have increased risk significance due to EDG maintenance. The fire areas are listed in Table B 3.8.1-1

The 17-day Completion Time for Required Action B.4 establishes a limit on the maximum time allowed for any combination of required AC power sources to be inoperable during any single contiguous occurrence of failure to meet the LCO. Refer to the Bases for Required Action A.3 for additional information on this Completion Time.

(continued)

Table B 3.8.1-1

FIRE ZONE	EGDG -1A	EGDG -1B	ZONE DESCRIPTION	AUTO SUPPRESSION	FIRE WRAP	ZONE IGNITION FREQUENCY
AB-119-6A	x	x	NORTH HALLWAY	Wet-Pipe Sprinkler-dual level	1 hour, 3 hour	9.73E-05
AB-119-6E	x	x	EAST HALLWAY	Wet-Pipe Sprinkler-dual level	1 hour, 3 hour	1.73E-04
AB-119-6J (3)		x	CENTRAL HALLWAY	Wet-Pipe Sprinkler	3 hour	2.36E-04
AB-119-6K (2)	x		DECONTAMINATION ROOM	Wet-Pipe Sprinkler		1.02E-04
AB-119-7A	x	x	EMERGENCY DIESEL GENERATOR CONTROL ROOM 3B	Pre-Action Sprinkler	1 hour	1.73E-04
AB-119-7B (3)		x	EMERGENCY DIESEL GENERATOR ROOM 3B	Pre-Action Sprinkler		5.30E-03
AB-119-8A (2)	x		EMERGENCY DIESEL GENERATOR CONTROL ROOM 3A	Pre-Action Sprinkler		1.02E-04
AB-119-8B (2)	x		EMERGENCY DIESEL GENERATOR ROOM 3A	Pre-Action Sprinkler		5.30E-03
CC-108-102 (1)	x	x	HALLWAY AND REMOTE SHUTDOWN ROOM	None	3 hour	1.20E-04
CC-108-103	x	x	PLANT BATTERY ROOM 3B	None	3 hour	9.73E-05
CC-108-104	x	x	PLANT BATTERY ROOM 3A	None	3 hour	9.73E-05
CC-108-105 (1)	x	x	BATTERY CHARGER ROOM 3B	None	3 hour	4.03E-04
CC-108-106 (1)	x	x	BATTERY CHARGER ROOM 3A	None	3 hour	3.68E-04
CC-108-107 (1,3)		x	4160V ES SWITCHGEAR BUS ROOM 3B	None	3 hour	2.27E-04
CC-108-108 (1)	x	x	4160V ES SWITCHGEAR BUS ROOM 3A	None	3 hour	2.60E-04
CC-108-109 (1)	x	x	INVERTER ROOM 3B	None	3 hour	2.14E-04
CC-108-110	x	x	INVERTER ROOM 3A	None	3 hour	1.90E-04
CC-124-111 (1)	x	x	CRD & COMMUNICATION EQUIP ROOM	Wet-Pipe Sprinkler	1 hour, 3 hour	5.06E-04
CC-124-116 (3)		x	480V ES SWITCHGEAR BUS ROOM 3B	None	3 hour	1.90E-04
CC-124-117 (1,2)	x		480V ES SWITCHGEAR BUS ROOM 3A	None		2.04E-04
CC-134-118A (1)	x	x	CABLE SPREADING ROOM	Total Flooding Halon Room		9.73E-05
CC-145-118B (1)	x	x	CONTROL ROOM	None		1.24E-04

(1) Fire zone identified as risk significant per IPEEE
(2) Fire zone may have increased significance when EGDG-1B is in maintenance
(3) Fire zone may have increased significance when EGDG-1A is in maintenance

(continued)

SURVEILLANCE REQUIREMENTS

SR 3.8.1.8 (continued)

In order to ensure that the EDG is tested under load conditions that are as close to design basis conditions as possible, testing must be performed using a power factor ≤ 0.9. This power factor is chosen to be representative of the actual design basis inductive loading that the EDG would experience.

This SR is modified by two Notes. The reason for Note 1 is that during power operation, performance of this SR could cause perturbations to the electrical distribution systems that could challenge continued steady state operation and, as a result, safety systems. This restriction from normally performing the Surveillance in MODE 1 or 2 is further amplified to allow the Surveillance to be performed for the purpose of reestablishing OPERABILITY (e.g., post work testing following corrective maintenance, corrective modification, deficient or incomplete surveillance testing, and other unanticipated OPERABILITY concerns) provided an assessment determines plant safety is maintained or enhanced. This assessment shall, as a minimum, consider the potential outcomes and transients associated with a failed Surveillance, a successful Surveillance, and a perturbation of the offsite or onsite system when they are tied together or operated independently for the Surveillance; as well as the operator procedures available to cope with these outcomes. These shall be measured against the avoided risk of a plant shutdown and startup to determine that plant safety is maintained or enhanced when the Surveillance is performed in MODE 1 or 2. Risk insights or deterministic methods may be used for this assessment. However, the Note recognizes that should an unplanned event occur in MODES 1 or 2, following verification that the acceptance criteria of the SR are met, the event can be credited as a successful performance of this SR. Note 2 acknowledges this SR may be performed using component loads or it may be performed by paralleling the EDG with offsite power. When the SR is performed with the EDG carrying the 4160 Volt ES bus, the power factor of the EDG is a function of the reactive component of the loads powered from it, and as such, is not under direct control of the operator.

SR 3.8.1.9

Per the recommendations of Regulatory Guide 1.108 (Ref. 9), paragraph 2.a.(2), each EDG is required to demonstrate

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.8.1.11 (continued)

This Surveillance is modified by two Notes. Note 1 states that momentary transients due to changing bus loads do not invalidate this test. The reason for Note 2 is that during operation with the reactor critical, performance of this Surveillance could cause perturbations to the electrical distribution systems that could challenge continued steady state operation and, as a result, plant safety systems. This restriction from normally performing the Surveillance in MODE 1 or 2 is further amplified to allow the Surveillance to be performed for the purpose of reestablishing OPERABILITY (e.g., post work testing following corrective maintenance, corrective modification, deficient or incomplete surveillance testing, and other unanticipated OPERABILITY concerns) provided an assessment determines plant safety is maintained or enhanced. This assessment shall, as a minimum, consider the potential outcomes and transients associated with a failed Surveillance, a successful Surveillance, and a perturbation of the offsite or onsite system when they are tied together or operated independently for the Surveillance; as well as the operator procedures available to cope with these outcomes. These shall be measured against the avoided risk of a plant shutdown and startup to determine that plant safety is maintained or enhanced when the Surveillance is performed in MODE 1 or 2. Risk insights or deterministic methods may be used for this assessment. However, the Note acknowledges that credit may be taken for unplanned events that satisfy this SR.

(continued)

FLORIDA POWER CORPORATION

CRYSTAL RIVER UNIT 3

DOCKET NUMBER 50 - 302 / LICENSE NUMBER DPR - 72

ATTACHMENT E

LICENSE AMENDMENT REQUEST #257, REVISION 0
Emergency Diesel Generator Allowed Outage Time Extension

List of Regulatory Commitments

List of Regulatory Commitments

The following table identifies those actions committed to by Florida Power Corporation (FPC) in this document. Any other actions discussed in the submittal represent intended or planned actions by FPC. They are described to the NRC for the NRC's information and are not regulatory commitments. Please notify the Supervisor, Licensing and Regulatory Programs of any questions regarding this document or any associated regulatory commitments.

Commitment	Due Date
CR-3 will perform procedure CP-253, "Power Operation Risk Assessment and Management" which requires both a deterministic and probabilistic evaluation of risk for the performance of all maintenance activities. This procedure uses the Level 1 PSA model to evaluate the impact of maintenance activities on core damage frequency. CR-3 will not plan any maintenance that results in "Higher Risk" (Orange Color Code) during extended EDG maintenance.	During extended (greater than 72 hours) preplanned Emergency Diesel Generator maintenance
ECCS equipment, emergency feedwater, control complex cooling and auxiliary feedwater (FWP-7 and MTDG-1) will be designated administratively as "protected" (no planned maintenance or discretionary equipment manipulation).	During extended preplanned Emergency Diesel Generator maintenance
Prior to initiating a planned EDG outage, CR-3 will verify the availability of offsite power to the 230 kV switchyard and ensure that the capability to power both ES busses is available from each of the two ES offsite power transformers (OPT and BEST).	During extended preplanned Emergency Diesel Generator maintenance
CR-3 will not initiate an EDG extended preventive maintenance outage if adverse weather, as designated by Emergency Preparedness procedures, is anticipated.	During extended preplanned Emergency Diesel Generator maintenance
No elective maintenance will be scheduled in the switchyard that would challenge the availability of offsite power to the ES busses.	During extended preplanned Emergency Diesel Generator maintenance
A periodic fire watch will be established in fire areas that are considered risk-significant by the IPEEE, affect both EDGs or have increased risk significance due to extended EDG maintenance.	During extended preplanned Emergency Diesel Generator maintenance