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2CAN090202

September 19, 2002

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

SUBJECT: Arkansas Nuclear One, Unit 2
Docket No. 50-368
License Amendment Request
Extension of Emergency Diesel Generator Allowable Outage Time

REFERENCES:
1. Safety Evaluation by the Office of Nuclear Reactor Regulation Related to Amendment No. 234 to Facility Operating License No. NPF-6, Entergy Operations, Inc. Arkansas Nuclear One, Unit No. 2, Docket No. 50-368 dated October 15, 2001.

Dear Sir or Madam:

Pursuant to 10CFR50.90, Entergy Operations, Inc. (Entergy) hereby requests the following amendment for Arkansas Nuclear One, Unit 2 (ANO-2). Entergy proposes to amend Technical Specification (TS) 3.8.1, "A.C. Sources" to extend the allowable outage time (AOT) for the emergency diesel generators (EDGs) from 72 hours to a maximum of 14 days. The proposed changes are intended to provide flexibility in scheduling EDG maintenance activities, reduce refueling outage duration, and improve EDG availability during plant shutdowns.

The proposed change has been evaluated in accordance with 10CFR50.91(a)(1) using criteria in 10CFR50.92(c) and it has been determined that this change involves no significant hazards considerations. The bases for these determinations are included in the attached submittal. Entergy's evaluation includes deterministic engineering analysis as well as risk informed information as set forth in Regulatory Guide (RG) 1.177.

The proposed change includes new commitments as summarized in Attachment 4. The NRC has granted TS changes for other plants that allow extending the AOT to greater than 72 hours. The basis for approval of each of these amendments has varied and has relied heavily on plant specific electrical system designs and the ability to remove decay heat from the RCS.

The next ANO-2 refueling outage is scheduled for the fall of 2003. Entergy desires approval of this amendment by May 2003 to support outage work planning. Although this request is neither exigent nor emergency, your prompt review is requested.

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If you have any questions or require additional information, please contact Dana Millar at 601-368-5445.

I declare under penalty of perjury that the foregoing is true and correct. Executed on September 19, 2002.

Sincerely,

R Bernard
for
Craig Anderson

CGA/dm

Attachments:
1. Analysis of Proposed Technical Specification Change
2. Proposed Technical Specification Changes (mark-up)
3. Changes to TS Bases pages
4. List of Regulatory Commitments

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Attachment 1

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Analysis of Proposed Technical Specification Change

1.0 DESCRIPTION

This letter is a request to amend Operating License NPF-6 for Arkansas Nuclear One, Unit 2 (ANO-2).

The proposed change will revise Technical Specification (TS) 3.8.1.1, "A.C. Sources" to extend the allowable out of service time for an inoperable emergency diesel generator (EDG). This would allow greater flexibility and more efficient planning of EDG maintenance and testing activities during unit operation. The changes would also reduce plant refueling outage duration and improve EDG availability during refueling outages. In addition, the proposed changes would minimize the potential for Notice of Enforcement Discretion (NOED) requests due to unforeseen circumstances.

The next ANO-2 refueling outage is scheduled for the fall of 2003. Entergy desires approval of this amendment by May 2003 to support outage work planning.

2.0 PROPOSED CHANGE

Currently, ANO-2 TS 3.8.1.1, Action b.3 requires restoration of an inoperable EDG to an OPERABLE status within 72 hours. If restoration of the EDG cannot be accomplished in the allowable time, the unit shall be placed in HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours. The existing Note 1 provides a one time allowance for each EDG to be removed from service for an allowable outage time (AOT) of 10 days. Entergy proposes the following replacement of Note 1 and changes to TS 3.8.1.1, Action b:

b. With one diesel generator of the above required A.C. electrical power source inoperable, perform the following:

    1. Demonstrate the OPERABILITY of both the offsite A.C. circuits by performing Surveillance Requirement 4.8.1.1.1.a within 1 hour and at least once per 8 hours thereafter, and
    2. Demonstrate the OPERABILITY of the remaining OPERABLE diesel generator within 24 hours by:
        i. Determining the OPERABLE diesel generator is not inoperable due to a common cause failure; or
        ii. Perform Surveillance Requirement 4.8.1.1.2.a.4 unless:
            a. The remaining diesel generator is currently in operation, or
            b. The remaining diesel generator has been demonstrated OPERABLE within the previous 24 hours, and
    3. Restore the diesel generator to OPERABLE status within 14 days (See Note 1), or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

    Note 1-If the Alternate A.C. Diesel Generator (AACDG) is determined to be inoperable during this period, then a 72 hour restoration period is applicable until either the AACDG or the diesel generator is returned to operable status (not to exceed 14 days from the initial diesel generator inoperability).

Currently ANO-2 TS 3.8.1.1, Actions c.4 and e.3 address the requirements to restore both EDGs to OPERABLE status within 72 hours with the allowance to use Note 1, which is associated with Action b.3. New wording will be added to these Actions that will allow the inoperable EDG to be restored to an operable status with the proposed 14 day AOT extension for the single inoperable EDG. Actions c.4 and e.3 will be reworded as follows:

c.4 Restore the remaining inoperable A.C. Source to an OPERABLE status (offsite A.C. circuit within 72 hours or diesel generator within 14 days (see b.3, Note1)) based on the time of the initiating event that caused the inoperability or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours. .

e.3 Restore the remaining inoperable diesel generator within 14 days (see b.3, Note 1) of the initiating event or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

Standard Technical Specifications Combustion Engineering Plants (NUREG-1432), TS 3.8.1, Action b includes a requirement to declare required features inoperable when supported by the inoperable EDG and its redundant required feature is inoperable. This is accomplished at ANO-2 through the use of TS 3.0.5. This specification (TS 3.0.5) allows that a system, subsystem, train, component, or device to be considered operable when either its emergency power source or its normal power source is inoperable, provided 1) its corresponding normal or emergency power source is OPERABLE; and 2) all of its redundant system(s), subsystem(s), train(s), component(s), or device(s) are OPERABLE. Both conditions 1 and 2 must be satisfied; otherwise the unit must in at least HOT STANDBY within 6 hours, in at least HOT SHUTDOWN within the next 6 hours, and in at least COLD SHUTDOWN within the following 24 hours. ANO-2 will not adopt the standard format contained in the NUREG-1432 since requirements consistent with the NUREG are contained in ANO-2 TS 3.0.5.

ANO-2 TS 3.8.1.1 Action b.3 allows the extension of the current 72 hour AOT up to 14 days with the use of Note 1. The extended AOT would typically be used for voluntary planned maintenance or inspections but can also be used for corrective maintenance. Entergy intends to limit use of the extended AOT for voluntary planned overhaul maintenance and vendor recommended inspections to once within an operating cycle for each EDG. Any additional EDG unavailability is monitored and evaluated in relationship to Maintenance Rule goals to ensure that EDG outage times do not degrade operational safety over time. A markup of the TS pages is included in Attachment 2.

In addition to the above changes, the following administrative changes are proposed:

- The font used on these pages will be changed to Arial 11 and additional spacing added.
- Action b will be moved to a newly created page 8-1a
- Action e will be moved to a new page 8-2a.
- The current page 8-2a which contains Surveillance Requirements 4.8.1.1.1, 4.8.1.1.2, and Notes 1, 2, 3 and 4 will be renumbered from its current page number of 8-2a to 8-2b. No changes are proposed to the technical content of this page.

The movement of actions or surveillance requirements to a new page will be marked with revision bars. Otherwise, no revisions bars are proposed for the changes in font and spacing.

Changes are also proposed to the TS Bases to reflect the risk informed nature of the extended AOT and to note that use of the extended AOT for voluntary planned maintenance or

inspections should be limited to once within an operating cycle for each EDG. A markup of the TS Bases pages is included in Attachment 3. The font on these pages will be changed to Arial 11 and the order of the information changed to group the bases associated with each electrical specification together.

3.0 BACKGROUND

The proposed change to TS 3.8.1.1, Action b and the associated Note will revise the current 72-hour AOT to allow a maximum AOT of 14 days. The purpose of the proposed change is to provide Entergy with needed flexibility in performing maintenance during power operation. The proposed change to the AOT is based on deterministic and probabilistic risk assessment (PRA) evaluations.

Offsite A.C. Power Sources

Typically, power is supplied to the Unit 2 A.C. electrical buses via the unit auxiliary transformer (UAT). Two offsite power sources, startup transformer #3 (SU3) and startup transformer #2 (SU2), are available to supply power to the unit when the UAT is not available. SU3 is identical to the UAT except it is powered from offsite. SU2 is capable of supplying both ANO-1 and ANO-2. With the UAT supplying house loads, if a main turbine trip were to occur, the house loads transfer automatically to SU3.

Emergency Diesel Generators

ANO-2 is equipped with two seismically qualified, Class 1E, diesel engine driven generators that supply backup electrical power to the 4160 volt (V) vital A.C. buses. Each engine is designed to automatically start and tie-on to its respective 4160 V engineered safety features (ESF) bus in the event of a bus undervoltage condition on either the 4160 V bus or its associated 480 V motor control center.

Each EDG also receives an automatic start command on a safety injection actuation signal, but will not load unless a bus under-voltage condition exists. Upon receipt of a start demand, the EDG attains rated speed and voltage within 15 seconds, and sequentially accepts ESF loads if an under-voltage condition exists. Each EDG is sized to accommodate loading all anticipated ESF actuated equipment with a continuous load rating of 2850 kilowatts (kW) and a 7-day rating of 3250 kW. Under procedurally controlled conditions, the EDGs may be aligned to supply the adjacent ESF bus via cross-tie breakers.

The EDGs are designed for manual operation from either the local control panel or the operating panel in the control room. This provision allows operation for surveillance testing and manual start and load operations, as well as local operations, if an event were to render the control room inaccessible. The EDGs are described in section 8.3.1.1.7 of the ANO-2 Safety Analysis Report (SAR).

Alternate A.C. Diesel Generator (AACDG)

In addition to the EDGs, Entergy has installed a diesel generator pursuant to the requirements of 10CFR50.63, "Loss of All Alternating Current Power," paragraph (c)(2), Alternate A.C.

Source. The AACDG is rated at 4400 kW continuous output and 5320 kW overload. It is sized well in excess of that required to support the station blackout mission of 3100 kW and is capable of supplying the licensing basis loss of offsite power (LOOP) loads of any one of the four vital buses (ANO-1 vital buses A3 or A4 or ANO-2 vital buses 2A3 or 2A4). It can also supply non-vital 4160V buses A1 for ANO-1 or 2A1 for ANO-2. The buses can be supplied in any combination as long as the total load does not exceed the engine load rating. The design considerations for the AACDG assumed the engine would be started from the control room and available to power the safety buses within 10 minutes of the diagnosis of a station blackout condition. The 10 minute criterion is a bounding value from Section 3.2.5 of NRC Regulatory Guide (RG) 1.155, Station Blackout, and 10CFR50.63(c)(2) such that, if demonstrated, precludes the necessity for performing a specific coping analysis. The AACDG output was tied to an ANO-1 vital bus (A3) during testing on March 22, 1995 and to an ANO-2 vital bus on October 11, 1995. During these tests, an actual blackout event was simulated and the time to energize the buses was recorded. In each case the time was less than the 10-minute criterion.

The AACDG is completely independent from off-site power and the EDGs, with the exception of the bulk fuel oil storage system. The AACDG, all support systems, and attendant electrical buses are housed in a dedicated building located outside the power block, inside the protected area fence. The AACDG is discussed in section 8.3.3 of the ANO-2 SAR.

The AACDG is a non-Q, manually started and loaded alternate source of A.C. power. Operation and loading of the AACDG is possible from the ANO-2 control room or locally. An existing operating procedure contains instructions for operating the AACDG under various circumstances such as starting, loading, unloading, aligning to electrical buses, emergency starting/loading, and starting/loading with failure of both controlling computers. The procedure also contains instructions for a quarterly full load test and an 18-month test that verifies starting and loading in less than 10 minutes.

The requested changes are sought to provide needed flexibility in the performance of selected corrective and preventative maintenance activities during power operations. The approval of the proposed change will allow the following:

- An increased flexibility in the scheduling and performance of preventative maintenance.

- A reduction in the number of individual entries into limiting conditions for operation Action Statements by providing sufficient time to perform related maintenance tasks within a single entry.

- Better control of resource allocation. During outage maintenance windows, plant personnel and resources are spread across a large number and wide variety of maintenance tasks. Allowing on-line maintenance gives the plant the flexibility to focus dedicated resources on required or elective EDG maintenance.

- Unplanned plant shutdowns will be averted and the potential for requests for notice of enforcement discretion will be minimized. Risks incurred by unexpected plant shutdowns can be comparable to and often exceed those associated with continued power operation.

- Improved EDG availability during shutdown modes.

Currently, corrective maintenance and preventative maintenance activities are performed on each EDG during every refueling outage (18-month frequency). These activities are worked around the clock and can take four to five days, depending largely upon the amount of corrective maintenance. Vendor recommended inspections and maintenance activities may take longer. The amount of corrective maintenance will vary from cycle to cycle, based on equipment conditions, industry issues, etc.

4.0 TECHNICAL ANALYSIS

Entergy has evaluated the proposed changes using traditional engineering analyses as well as a risk-informed approach as set forth in Regulatory Guide (RG) 1.177, *"An Approach for Plant-Specific, Risk-Informed Decisionmaking: Technical Specifications."* RG 1.177 prescribes an acceptable approach for requesting TS changes that go beyond current staff positions, especially for those such as relaxation of AOTs or surveillance test intervals. These evaluations and conclusions are also consistent with the guidance of RG 1.174, *"An Approach For Using Probabilistic Risk Assessment In Risk Informed Decisions on Plant-Specific Changes to The Licensing Basis."*

4.1 Deterministic Assessment of EDG AOT Extension

The function of the EDGs is to provide emergency electrical power to safety related equipment required for 1) safe shutdown of the facility, and 2) the mitigation and control of accident conditions within the facility. Typically, safety related equipment is powered by the offsite transmission network and the onsite Class 1E distribution systems.

There are two EDGs which supply emergency power to safety related equipment. The safety related equipment supplied by each EDG is redundant with the exception of the emergency feed water (EFW) pump. There are two emergency feedwater pumps, one is steam driven and one is electrically driven. Throughout any maintenance activities on either EDG, the steam driven EFW pump will be protected.

In addition to the two EDGs, ANO has a station blackout EDG, the alternate A.C. diesel generator (AACDG). The AACDG is sized such that it is capable of supplying power to either train of safety related equipment or a combination of both as needed as long as the total load does not exceed the engine loading rate.

4.1.1 Defense in Depth

The design and operation of the EDGs is not being modified as a result of the proposed change. However, the proposed change will allow flexibility when a system can be removed from service to perform maintenance activities. The amount of time the EDG can be removed from service only affects the period of time that the EDG may be unavailable and not the design requirements or philosophy of the system.

The function of the EDGs is to provide emergency power to safety related equipment in the event of a loss of offsite power. The following precautions will be taken to assure the function of the system is maintained and the philosophy of defense in depth as defined in RG 1.177 is maintained.

- The AACDG will be confirmed to be available once per 8 hours while the EDG is out of service (OOS). This is consistent with the TS requirement to verify the off-site power sources are operable. In addition, quarterly surveillance testing of the AACDG will be verified satisfactorily completed within its scheduled frequency. The quarterly test includes connecting the AACDG to the in-house power system.

- The AACDG will be treated as a backup to the inoperable EDG and as a protected train component. The AACDG and the operable EDG will be posted and controlled as "protected equipment."

- Operations personnel on ANO-1 will be notified of the EDG maintenance and the dedication of the AACDG to ANO-2.

- The AACDG will not be used for non-safety functions (i.e., power peaking to the grid).

- No discretionary switchyard testing or maintenance will be allowed. In addition, no discretionary maintenance will be allowed on the main, auxiliary, or startup transformers associated with the unit. Both the transformers and the switchyard remain posted year-round, preventing unauthorized access. This exclusion does not apply to non-intrusive routine walk-downs.

- The system dispatcher will be contacted once per day and informed of the EDG status along with the power needs of the facility.

- Although satisfactory grid stability is expected, should a tornado or thunderstorm warning be issued for the local area, an operator will be available should local operation of the AACDG be required as a result of on-site weather-related damage.

- Weather conditions are assessed prior to removing a diesel from service during planned maintenance activities.

- The steam-driven emergency feedwater pump will not be taken out of service for planned maintenance activities and will be controlled as "protected equipment."

- The ANO-2 On-Shift Operations crew will discuss and review appropriate normal and emergency operating procedures upon or prior to assuming the watch for the first time after having scheduled days off while the AOT is in effect.

- The ANO-2 Operations crews will be briefed concerning the ANO-2 EDG activities, including compensatory measures established and the importance of promptly starting and aligning the AACDG following instruction of the ANO-2 Shift Manager upon the loss of power event. This briefing will be performed upon or prior to assuming the watch for the first time after having scheduled days off while the AOT is in effect.

- No maintenance or testing that affects reliability of the ANO-2 train associated with the operable EDG will be scheduled during the maintenance on the out of service EDG. Testing and maintenance of other ANO-2 safety-related components will be minimized.

Testing or maintenance on the safety-related ANO-2 systems or components that must be performed while the AOT is in effect will be evaluated as required by 10CFR50.65(a)(4). Tests on safety-related equipment that are scheduled during the EDG maintenance window will be reviewed and the risk impact assessed prior to performance, when possible. Typically these tests will be completed prior to removing the EDG from service while maintaining the TS specified surveillance interval described in TS 4.0.2.

- Unless sufficient evidence is discovered to indicate the potential for common cause failure of the EDG, no additional surveillance testing will be performed on the operable EDG. This reduces the risk of introducing unnecessary perturbations on safety-related equipment.

- Maintenance activities on the ANO-1 EDGs will typically not be scheduled simultaneously with maintenance activities on an ANO-2 EDG.

Checklists to ensure the above defense in depth philosophy are in place have been created and were used during performance of at-power maintenance activities allowed by the one time AOT extension (TS Amendment 234, Reference 1).

4.1.2 Safety Margins

The operability of the power sources is consistent with the initial condition assumptions of the accident analyses. The initial condition assumptions were based upon maintaining at least one set of onsite A.C. power and D.C. power sources and associated distribution systems operable during accident conditions coincident with an assumed loss of offsite power and single failure of the other onsite A.C. source.

EDG and AACDG reliability will not be reduced by the proposed change. The current EDG reliability is 0.99 with a site goal of 0.95 based on the criteria set forth in NSAC 108, "*The Reliability of Emergency Diesel Generators at US Nuclear Power Plants.*" The 0.99 reliability value is based on the last 100 starts and load runs. The AACDG reliability is tracked using the same criteria utilized to monitor EDG reliability, NSAC 108. The reliability of the AACDG is based on its total run history, 100 starts and 70 load runs. Presently, the AACDG has proven to have a reliability factor of 0.97. The ANO site goal is 0.95.

ANO-2 TS 3.0.5 allows for a system, subsystem, train, component or device to be considered operable for the purpose of satisfying the requirements of its applicable Limiting Condition for Operation when either the EDG or its normal power source is inoperable provided the following conditions are met: 1) the corresponding normal or emergency power source shall be operable; and 2) all of its redundant systems, subsystems, trains, components and devices shall be operable. The proposed change will utilize the allowances of TS 3.0.5 to ensure safety function is maintained.

4.2 Evaluation of Risk Impact

To assess the overall impact on plant safety, a probabilistic safety analysis (PSA) was performed consistent with the guidance specified in RG 1.177. The change in average Core Damage Frequency (CDF) and average Large Early Release Frequency (LERF) resulting from

the increased AOT for the EDGs was evaluated. This evaluation included consideration of the Maintenance Rule (a)(4) Program established pursuant to 10CFR50.65 to control performance of other potentially high-risk tasks during an EDG outage and consideration of specific compensatory measures to minimize risk. All of these elements were included in a risk evaluation performed using the three-tiered approaches suggested in RG 1.177, as follows:

Tier 1, PSA Capability and Insights
Tier 2, Avoidance of Risk Significant Plant Configurations, and
Tier 3, Risk-Informed Configuration Risk Management

Evaluation of each of these tiers is provided in this section.

4.2.1 Tier 1: PSA Capability and Insights

Tier 1 is an evaluation of the impact on plant risk of the proposed change as expressed by the change in CDF, the incremental conditional change in core damage probability (ICCDP), and when appropriate, the change in LERF and the incremental conditional large early release probability (ICLERP).

A quantitative estimate of the impact of extending the current EDG AOT from 3 days (72 hours) to 14 days on CDF was performed using the ANO-2 Probabilistic Safety Analysis (PSA) Model, Revision 3p01. This model is an at-power Level-1 internal events risk model. The model does not explicitly address the risk associated with the Anticipated Transients without Scram (ATWS) scenarios and the interfacing system loss of coolant accidents (ISLOCAs). The model also does not address the risk associated with "external events," including seismic events, internal and external floods, high winds, and tornadoes, as well as transportation and nearby facility accidents.

In order to assess the risk impact of extending the current EDG AOT, both a quantitative assessment of the Level-1 risk included in the ANO-2 PSA model and a qualitative assessment of other Level-1 risk contributors and a qualitative assessment of the Level-2 risk were performed. The insights generated in the ANO-2 Individual Plant Examination (IPE) and the ANO-2 IPE of external events (IPEEE) were used to support the qualitative assessments. The overall change in CDF due to a 14 day AOT does not contribute significantly to the ANO-2 CDF.

The evaluation was performed based on the assumption that the full, extended AOT (i.e., 14 days) would be applied for each EDG once per cycle. The cycle time is based on the current 18-month fuel cycle (allowing for planned and unplanned plant outage time) for a net assumed cycle length of 1.5 years. It should be noted that EDG reliability and availability are monitored and evaluated in relationship to Maintenance Rule goals to ensure that EDG outage times do not degrade operational safety over time.

ICCDP, ICLERP, the change in CDF, and the change in LERF were calculated per the guidance in RG 1.177 for the EDG AOT extension. The results of the risk evaluation are presented in the table below and compared to the risk significance criteria from RG 1.174, *"An Approach for Using Probabilistic Risk Assessment In Risk-Informed Decisions On Plant Specific Changes to the Licensing Basis"* and from RG 1.177.

Table 1

Risk Metric	Significance Criterion	Internal Events Results[1]	External Events Results[2]
Annual Average ΔCDF	< 1.0E-06/rx-yr	9.6E-08/rx-yr[3]	1.1E-07/rx-yr[4]
ICCDP	< 5.0E-07	7.2E-08[3]	8.6E-08[4]
Annual Average ΔLERF	<1.0E-7/rx-yr	1.2E-08/rx-yr[4]	1.0E-08/rx-yr[4]
ICLERP	<5.0E-8	9.0E-09[4]	7.6E-09[4]

Notes: 1 includes modeled "internal events" risk contributors, excludes ATWS and ISLOCA
2 includes "external events" risk contributors and ATWS and ISLOCA
3 based on quantitative assessment using ANO-2 PSA model
4 based on qualitative assessment using insights from ANO-2 IPE and IPEEE

Both the "internal events" annual average ΔCDF and ICCDP risk metrics are quantitative results generated via the ANO-2 PSA model. The other risk metrics were generated using qualitative assessments from insights generated in the ANO-2 IPE and the ANO-2 IPEEE. The qualitative results are not directly comparable to the quantitative results but are useful for obtaining risk insights associated with the EDG AOT extension.

The above values are based on preventative maintenance assumptions. Preventative maintenance (PM) is defined as planned maintenance evolutions not precipitated by equipment failure. It is assumed that PM is planned such that plant risk is minimized consistent with the requirements of the Maintenance Rule (10CFR50.65(a)(4)). Consistent with this definition, during EDG PM activities, it is assumed that common cause failure (CCF) contributors that affect both EDGs are not applicable and that testing and maintenance (T&M) activities on other plant equipment are minimized. Thus, for the EDG PM calculations, EDG CCF basic events and the A.C. power related T&M events were set to zero. Specifically, it was assumed that no T&M that affects the reliability of the ANO-2 train associated with the operable EDG or associated with off-site power sources will be scheduled during the EDG out of service time.

Corrective maintenance (CM) is defined as emergent maintenance evolutions precipitated by equipment failure. Because CM is not planned, it is assumed that the plant risk may be elevated due to plant conditions that existed when the subject equipment failure occurred. Consistent with this definition, during EDG CM, it was assumed that CCF contributors that affect either both EDGs or the AACDG are elevated due to the failure that leads to the CM and that nominal values for T&M are applicable.

The current and proposed TS 3.8.1.1 Action b requires performance of a CCF evaluation within 24 hours of entering the Action. If a CCF were to be present, then both EDGs would be considered inoperable and TS 3.8.1.1 Action e would be entered. Since the TSs address CCF, the risk value associated with the CCF does not affect the risk metrics listed in Table 1.

Additionally, as stated above it was assumed that no T&M that affects the reliability of the train associated with the operable EDG or associated off-site power sources will be scheduled during the EDG out of service time. TS 3.0.5 requires when an emergency or normal power source is inoperable for one train that 1) its corresponding normal or emergency power source is OPERABLE; and 2) all of its redundant system(s), subsystem(s), train(s), component(s), and device(s) are OPERABLE. If either of these requirements is not met, then within 6 hours the

unit shall be placed in HOT STANDBY, in at least HOT SHUTDOWN within the next 6 hours, and in at least COLD SHUTDOWN within the following 24 hours. Thus to comply with TSs and to avoid the possibility of a unit shutdown, the ANO-2 Operations staff takes every precaution to assure redundant systems and the corresponding normal or emergency power source are operable. The assumptions used when evaluating the risk associated with PM activities are therefore included in the TSs.

Only minimal T&M activities will be allowed regardless of what the cause of the EDG failure is (i.e., PM or CM). Any T&M activity that renders a redundant component inoperable would result in a plant shutdown as required by TS 3.0.5. Any T&M activity on the corresponding normal or emergency power source that would result in inoperability would also require a plant shutdown. If T&M activities were on-going upon declaring an EDG inoperable, then the appropriate TS Action would be entered.

The AACDG is not a TS LCO controlled component. Note 1 of the proposed change requires operability of the AACDG in order to extend the AOT beyond 72 hours. In addition if the AACDG were to become inoperable while in the AOT, the AOT is reduced to 72 hours from the point in time the AACDG becomes inoperable not to exceed the original 14 day AOT.

In conclusion, the current and proposed TSs require a review of the CCF within 24 hours; and assure reduced T&M activities during the AOT; and the proposed change includes a requirement for operability of the AACDG. These requirements remove the risk factors applied to CCF and nominal T&M which are included in CM. Therefore, the risk contributed by PM activities more closely reflects the risk that would result when a single EDG is removed from service.

4.2.2 Tier 2, Avoidance of Risk Significant Plant Configurations

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

A Configuration Risk Management Program (CRMP) is in place at ANO in accordance with ANO's commitment for compliance with 10CFR50.65, particularly with respect to paragraph (a)(4). The program provides assurance that risk significant plant equipment configurations are precluded or minimized when plant equipment is removed from service. When an EDG is removed from service, increases in risk posed by potential combinations of equipment out of service will be managed in accordance with the CRMP. Additional contingencies, which will be administratively controlled and completed either prior to declaring the EDG inoperable during planned maintenance activities or within the first 72 hours after declaring the EDG inoperable if unplanned entry into the AOT is required, include:

1. The system dispatcher will be contacted once per day and informed of the EDG status along with the power needs of the facility.
2. Weather conditions will be evaluated prior to entering an extended EDG AOT for voluntary planned maintenance. An extended EDG AOT will not be entered for voluntary planned maintenance purposes if official weather forecasts are predicting

severe conditions (tornado or thunderstorms) that could significantly threaten grid stability during the planned outage time.

3. No discretionary switchyard maintenance will be allowed. In addition, no discretionary maintenance will be allowed on main, auxiliary, or startup transformers associated with the unit.
4. No maintenance or testing that affects reliability of the ANO-2 train associated with the operable EDG will be scheduled during the extended EDG AOT.
5. The AACDG will be verified available prior to entering the extended AOT and once per 8 hours during the extended AOT.
6. Maintenance activities on the ANO-1 EDGs will not be scheduled simultaneously with maintenance activities on an ANO-2 EDG.
7. The steam driven emergency feedwater pump will be controlled as "protected" equipment.
8. Operating crews will be briefed on the EDG work plan, with consideration given to key procedural actions that would be required in the event of a loss of offsite power or station blackout.

Note that ANO-2 already has procedures and the capability to align the AACDG to either ANO-2 4160 V vital bus. This capability is included in the PSA models used for the risk assessment.

4.2.3 Tier 3, Risk Informed Configuration Risk Management

Consistent with 10CFR50.65(a)(4), and as indicated above, ANO has developed a CRMP. This program is a proceduralized risk-informed assessment process to manage the risk associated with planned and unplanned plant maintenance activities. The program ensures that the risk impact of out of service equipment is appropriately evaluated prior to performing a planned maintenance activity and soon after entering into an emergent maintenance condition. Procedures and guidelines have been developed that govern this process. These documents require an integrated (i.e., both quantitative and qualitative) review of maintenance activities to identify risk significant plant equipment outage configurations. This review is required both during the work management process and for emergent conditions during normal plant operation. Appropriate consideration is given to equipment unavailability, operational activities like testing or load dispatching, and weather conditions. This program includes provisions for performing a configuration dependent assessment of the overall impact on risk of proposed plant configurations prior to, and during, the performance of maintenance activities that remove equipment from service. Risk is re-assessed if an equipment failure/malfunction or emergent condition produces a plant configuration that has not been previously assessed.

The quantitative risk assessment is performed to ensure that the activity does not pose any unacceptable risk. This evaluation is performed using the ANO-2 Equipment Out of Service (EOOS) model, a Level-1 PSA model. The model is used to calculate core damage frequency for actual plant conditions. The EOOS risk assessment results are classified by a color code based on the increased risk of the activity. These color code classifications are described in the following table.

Color	Risk
Green	Minimal Risk – normal work controls are sufficient.
Yellow	Acceptable Risk – Plant management approval is required. Measures are taken to quickly restore the components to service. Steps are taken to ensure subsequent maintenance activities do not raise risk.
Orange	High Risk – Plant Manager approval is required for voluntary entry or notification required if this Risk category is entered due to emergent activities. Written guidance and or contingency plans are required prior to voluntarily entering this condition. Equipment maintenance activities should be worked around the clock until completion.
Red	Unacceptably High Risk – Voluntary entry into this condition is NOT allowed. Plant Manager notification is required upon entering this condition from emergent activities. Immediate steps are taken to restore any equipment impacting plant safety.

The qualitative assessment addresses a broad range of areas, including trip or transient potential, reactivity mismanagement potential, redundant equipment availability, containment integrity, cross unit impact, red train-green train separation, fire, flooding, and severe weather contingencies.

For planned activities, an assessment of the risk of the activities on plant safety is performed prior to the scheduled work. The assessment includes the following considerations:

- Maintenance activities that affect redundant structures, systems, and components (SSCs) that provide backup for the same function are minimized.

- The potential for planned activities to cause a plant transient are reviewed and work on SSCs that would be required to mitigate the transient are avoided.

- For Maintenance Rule Program High Risk Significant SSCs, the impact of the planned activity on the unavailability performance criteria is evaluated.

Emergent work is reviewed by Planning and Scheduling and Operations to ensure that it does not invalidate the assumptions made during the schedule development process. Prior to starting any work, the work scope and schedule are critically reviewed to assure that nuclear safety and plant operations are consistent with the expectations of management.

The probability of plant fire events is not assessed for distinct plant activities such as EDG maintenance. However, following the current ANO Fire Hazards Analysis requirements and procedures provides sufficient assurance that risk associated with removing equipment such as the EDGs is minimized.

The Fire Protection Program uses a three tiered approach:

1. Preventing fires from starting
2. Detecting fires promptly, suppressing them quickly, and therefore limiting fire damage;
3. Designing plant safety systems so that a fire which does start will not ultimately prevent essential plant safety functions from being accomplished.

Fire prevention is accomplished through various procedures and training programs. As with current maintenance practices, any fire protection preventative measures that are required to be implemented during EDG maintenance activities will be established.

4.3 Implementation and Monitoring Program

To ensure the proposed extension of the EDG AOT does not degrade operational safety over time, should equipment not meet its performance criteria, an evaluation is required as part of the Maintenance Rule (MR), 10CFR50.65.

The reliability and availability of the affected EDG at ANO are monitored under the Maintenance Rule Program. If the pre-established reliability or availability performance criteria are exceeded for the EDGs, consideration must be given to 10CFR50.65(a)(1) actions, including increased management attention and goal setting in order to restore EDG performance (i.e., reliability and availability) to an acceptable level. The performance criterion is risk informed and, therefore, is a means to manage the overall risk profile of the plant. An accumulation of large core damage probabilities over time is precluded by the performance criteria.

In practice, the actual out of service time for the EDGs is minimized to ensure that MR reliability and availability performance criteria for these components are not exceeded. It should be noted that the EDG availability used in the PSA to calculate the ΔCDF value for a 14 day AOT is conservative compared to the EDG system MR goals, actual past performance of the EDGs at the plant, and expected availability following implementation of the proposed increased EDG AOT. The latter is true because a full 14 days of unavailability per cycle is not anticipated.

The ANO-2 EDGs and the AACDG are currently in the 10CFR50.65(a)(2) Maintenance Rule categories (i.e., the EDGs and AACDG are meeting established performance criteria.) Performance of the EDG on-line maintenance is not anticipated to result in exceeding the current established maintenance rule criteria for the EDGs.

Pursuant to 10CFR50.65, EDG reliability is monitored and periodically evaluated in relationship to the maintenance rule goals. The ANO-2 EDG unavailability goal is < 2.28% (300 hours) per rolling 18 months. The AACDG unavailability goal is < 3.5616% (468 hours) per rolling 18 months. The Maintenance Rule performance criterion for reliability is < 3 functional failures (FF) per EDG train per rolling18-months. The performance criterion for the AACDG is < 3 train level FF per rolling 18 months.

The Maintenance Rule Program provides a process to identify and correct adverse trends to ensure the TS AOT does not degrade operational safety over time. Compliance with the Maintenance Rule not only optimizes reliability and availability of important equipment, it also results in management of the risk when equipment is taken out of service for testing or maintenance per 10CFR50.65(a)(4).

4.4 PRA Quality

The ANO-2 Individual Plant Examination (IPE) model was developed by ANO Safety Analysis Design Engineering personnel with support from SAIC (now DS&S), other Design Engineering groups, and Operations. As part of the IPE development process, an expert panel review was performed on the results. This panel was composed of experienced personnel from these

groups. In addition, ERIN Engineering performed an external review of the IPE model and results.

The ANO-2 Probabilistic Safety Assessment (PSA) model has been updated several times since the IPE in an effort to maintain it consistent with the as-built/as–operated plant, to incorporate improved thermal hydraulic results, and to incorporate PSA methodology improvements. The updates have involved a cooperative effort involving both Entergy personnel and PSA consultant support. In each of the updates, all of the elements of the PSA were independently reviewed and revised, as appropriate. The PSA model and results have been maintained as plant calculations or engineering reports. As part of each major update, an internal review of PSA model results was performed by utilizing an expert panel composed of experienced personnel from various plant organizations, including Operations, System Engineering, Design Engineering, Safety Analysis, and PSA engineers. In addition, the Combustion Engineering Owners Group (CEOG) conducted a peer review on the ANO-2 Model in February 2002. However, the results of the CEOG peer review have not been issued to date. It should be noted that the NRC staff has reviewed the results of the current ANO-2 PSA model as part of its benchmarking of the ANO-2 Significance Determination Process notebook. This review was conducted by the staff and its contractors at the ANO site during the week of November 26, 2001. Also, the NRC staff performed an extensive review of the risk assessment methods used in the ANO-2 PSA model as part of its review of the risk impact of the ANO-2 power uprate. This review included a site visit on December 18 and 19, 2001.

4.5 Conclusion

The proposed extension of the EDG AOT is acceptable based upon a risk informed assessment. The assessment concludes that the increase in plant risk is small and consistent with the guidance contained in RG 1.177.

Maintenance during power operation can improve overall EDG availability and should result in reducing shutdown risk by increasing the availability of emergency power during refueling outages.

5.0 REGULATORY ANALYSIS

5.1 Applicable Regulatory Requirements/Criteria

The proposed changes have been evaluated to determine whether applicable regulations and requirements continue to be met. The conformance discussion for General Design Criteria (GDC) is provided in Chapter 8 as well as in Section 3.1 of the ANO-2 Safety Analysis Report (SAR). The conformance discussion related to various Regulatory Guides (RGs) that are applicable to electrical power systems is included in Section 8.3 of the SAR. Entergy has determined that the proposed changes do not require any exemptions or relief from regulatory requirements, other than the TS, and do not affect conformance with any GDC differently than described in the SAR.

5.2 No Significant Hazards Consideration

Entergy Operations, Inc. proposes to change the Arkansas Nuclear One, Unit 2 (ANO-2) Technical Specifications (TSs) to permit an extension of the allowable outage time for the emergency diesel generators (EDGs) from 72 hours to 14 days. The proposed change also includes a requirement to reduce the allowed outage time (AOT) from 14 days to 72 hours, not to exceed 14 days, should the alternate A.C. diesel generator (AACDG) become inoperable. The additional time will allow performance of maintenance activities during power operations. Entergy Operations, Inc. has evaluated whether or not a significant hazards consideration is involved with the proposed amendment by focusing on the three standards set forth in 10CFR50.92, *"Issuance of amendment,"* as discussed below:

1. Does the proposed change involve a significant increase in the probability or consequences of an accident previously evaluated?

   Response: No.

   The proposed TS change does not affect the design, operational characteristics, function or reliability of the EDGs. The EDGs are not the initiators of previously evaluated accidents. The EDGs are designed to mitigate the consequences of previously evaluated accidents including a loss of offsite power. Extending the AOT for a single EDG would not affect the previously evaluated accidents since the remaining EDG supporting the redundant Engineered Safety Features (ESF) systems and the AACDG, which has the capability to support either train of ESF systems, would continue to be available to perform the accident mitigating functions.

   The duration of a TS AOT is determined considering that there is a minimal possibility that an accident will occur while a component is removed from service. A risk informed assessment was performed which concluded that the increase in plant risk is small and consistent with the guidance contained in Regulatory Guide 1.177.

   The current TS requirements ensure that redundant systems relying on the remaining EDG are operable. In addition to these requirements, administrative controls will be established to provide assurance that the AOT extension is not applied during adverse weather conditions that could potentially affect offsite power availability. Administrative controls are also implemented to avoid or minimize risk significant plant configurations during the time when an EDG is removed from service.

   Therefore, the proposed change does not involve a significant increase in the probability or consequences of an accident previously evaluated.

2. Does the proposed change create the possibility of a new or different kind of accident from any accident previously evaluated?

   Response: No.

   The proposed change does not involve a change in the design, configuration, or method of operation of the plant that could create the possibility of a new or different kind of accident. The proposed change extends the AOT currently allowed by the TS to

14 days. It also provides for a reduction to 72 hours, not to exceed 14 days, should the AACDG become inoperable during the extended AOT.

Therefore, the proposed change does not create the possibility of a new or different kind of accident from any previously evaluated.

3. Does the proposed change involve a significant reduction in a margin of safety?

Response: No.

The ESF systems required to mitigate the consequences of postulated accidents consist of two independent trains. The ESF systems on either of the two trains provide for the minimum safety functions necessary to shut down the unit and maintain it in a safe shutdown condition. Each of the two trains can be powered from one of the offsite power sources of its associated EDG. In addition, the AACDG is available to provide power to either or both of the two trains. This design provides adequate defense in depth to ensure that diverse power sources are available to accomplish the required safety functions. Thus, with one EDG out of service, there are sufficient means to accomplish the safety functions and prevent the release of radioactive material in the event of an accident.

The proposed change does not affect any of the assumptions or inputs to the Final Safety Analyses Report and does not erode the decrease in severe accident risk achieved with the issuance of the Station Blackout (SBO) Rule, 10CFR50.63, "Loss of All Alternating Current Power."

Therefore, the proposed change does not involve a significant reduction in a margin of safety.

Based on the above, Entergy concludes that the proposed amendment presents no significant hazards consideration under the standards set forth in 10CFR50.92(c), and, accordingly, a finding of "no significant hazards consideration" is justified.

5.3 Environmental Considerations

The proposed amendment does not involve (i) a significant hazards consideration, (ii) a significant change in the types or significant increase in the amounts of any effluent that may be released offsite, or (iii) a significant increase in individual or cumulative occupational radiation exposure. Accordingly, the proposed amendment meets the eligibility criterion for categorical exclusion set forth in 10CFR51.22(c)(9). Therefore, pursuant to 10CFR51.22(b), no environmental impact statement or environmental assessment need be prepared in connection with the proposed amendment.

Attachment 2

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Proposed Technical Specification Changes (mark-up)

3/4.8 ELECTRICAL POWER SYSTEMS

3/4.8.1 A.C. SOURCES

LIMITING CONDITION FOR OPERATION

3.8.1.1 As a minimum, the following A.C. electrical power sources shall be OPERABLE:

a. Two physically independent circuits between the offsite transmission network and the onsite Class 1E distribution system and

b. Two separate and independent diesel generators each with:

1. A day fuel tank containing a minimum volume of 280 gallons of fuel (equivalent to 50% of indicated tank volume),

2. A separate fuel storage system containing a minimum volume of 22,500 gallons of fuel (equivalent to 100% of indicated tank level), and

3. A separate fuel transfer pump.

APPLICABILITY: MODES 1, 2, 3 and 4.

ACTION:

a. With one offsite A.C. circuit of the above required A.C. electrical power sources inoperable, perform the following:

1. Demonstrate the OPERABILITY of the remaining offsite A.C. circuit by performing Surveillance Requirement 4.8.1.1.1.a within 1 hour and at least once per 8 hours thereafter, and

2. Restore the offsite A.C. circuit to OPERABLE status within 72 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours. Startup Transformer No. 2 may be removed from service for up to 30 days as part of a preplanned preventative maintenance schedule. The 30-day allowance may be applied not more than once in a 10-year period. The provisions of Specification 3.0.4 are not applicable to Startup Transformer No. 2 during the 30-day preventative maintenance period.

~~b. With one diesel generator of the above required A.C. electrical power source inoperable, perform the following:~~
~~1. Demonstrate the OPERABILITY of both the offsite A.C. circuits by performing Surveillance Requirement 4.8.1.1.1.a within 1 hour and at least once per 8 hours thereafter, and~~
~~2. Demonstrate the OPERABILITY of the remaining OPERABLE diesel generator by performing Surveillance Requirement 4.8.1.1.2.a.4 within 24 hours except when:~~
~~i. A common cause failure has been determined not to exist, or~~

ii. The remaining diesel generator is currently in operation, or
iii. The remaining diesel generator has been demonstrated OPERABLE within the previous 24 hours, and

3. Restore the diesel generator to OPERABLE status within 72 hours (See note 1) or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

Note 1 The requirement for diesel generator (EDG) restoration to OPERABLE status may be extended to ten days if the Alternate AC diesel generator (AACDG) is verified available. If the AACDG is found unavailable during this period, the 72 hour restoration period of condition b.3 is immediately applicable until either the AACDG or the EDG is returned to operable status (not to exceed ten days from the initial diesel generator inoperability). The 10 day allowance may be applied only once for each EDG.

3/4.8 ELECTRICAL POWER SYSTEMS

3/4.8.1 A.C. SOURCES

LIMITING CONDITION FOR OPERATION

b. With one diesel generator of the above required A.C. electrical power source inoperable, perform the following:

1. Demonstrate the OPERABILITY of both the offsite A.C. circuits by performing Surveillance Requirement 4.8.1.1.1.a within 1 hour and at least once per 8 hours thereafter, and

2. Demonstrate the OPERABILITY of the remaining OPERABLE diesel generator within 24 hours by:~~performing Surveillance Requirement 4.8.1.1.2.a.4 within 24 hours except when:~~

   i. Determining the OPERABLE diesel generator is not inoperable due to a A common cause failure, ~~has been determined not to exist,~~ or
   ii. Perform Surveillance Requirement 4.8.1.1.2.a.4 unless:
   iia. The remaining diesel generator is currently in operation, or
   iiib. The remaining diesel generator has been demonstrated OPERABLE within the previous 24 hours, and

3. Restore the diesel generator to OPERABLE status within ~~72 hours~~14 days (See Note 1) or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

Note 1 - If the Alternate AC Diesel Generator (AACDG) is determined to be inoperable during this period, then a 72 hour restoration period is applicable until either the AACDG or the diesel generator is returned to operable status (not to exceed 14 days from the initial diesel generator inoperability).

ELECTRICAL POWER SYSTEMS

3/4.8.1 A.C. SOURCES

LIMITING CONDITION FOR OPERATION

~~ACTION (Continued)~~

c. With one offsite A.C. circuit and one diesel generator of the above required A.C. electrical power sources inoperable, perform the following:

1. Demonstrate the OPERABILITY of the remaining offsite A.C. circuit by performing Surveillance Requirement 4.8.1.1.1.a within 1 hour and at least once per 8 hours thereafter; and,

2. If the diesel generator became inoperable due to any cause other than preplanned preventive maintenance or testing, then

i. Demonstrate the OPERABILITY of the remaining OPERABLE diesel generator by performing Surveillance Requirement 4.8.1.1.2.a.4 within 8 hours except when:

a. The remaining diesel generator is currently in operation, or
b. The remaining diesel generator has been demonstrated OPERABLE within the previous 8 hours, and

3. Restore at least one of the inoperable sources to OPERABLE status within 12 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours, and

4. Restore the remaining inoperable A.C. Source to an OPERABLE status (Offsite A. C. Circuit within 72 hours or Diesel Generator within 14 days (see b.3, Note 1)) based on the time of the initiating event that caused the inoperability ~~Restore both offsite circuits and both diesel generators to OPERABLE status within 72 hours (see b. 3, Note 1) of the initiating event~~ or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

d. With two offsite A.C. circuits of the above required A.C. electrical power sources inoperable, perform the following:

1. Perform Surveillance Requirement 4.8.1.1.2.a.4 on the diesel generators within the next 8 hours except when:

i. The diesel generators are currently in operation, or
ii. The diesel generators have been demonstrated OPERABLE within the previous 8 hours, and

2. Restore one of the inoperable offsite A.C. circuits to OPERABLE status within 24 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours, and

3. Restore both A.C. circuits within 72 hours of the initiating event or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

~~e. With two diesel generators of the above required A.C. electrical power sources inoperable, perform the following:~~

~~1. Demonstrate the OPERABILITY of the two offsite A.C. circuits by performing Surveillance Requirement 4.8.1.1.1.a within 1 hour and at least once per 8 hours thereafter, and~~

~~2. Restore one of the inoperable diesel generators to OPERABLE status within 2 hours or be in a least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours, and~~

~~3. Restore both diesel generators within 72 hours (see b.3, Note 1) of the initiating event or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.~~

Section E will be moved to the next page.

3/4.8 ELECTRICAL POWER SYSTEMS

3/4.8 1 A.C. SOURCES

LIMITING CONDITION FOR OPERATION

e. With two diesel generators of the above required A.C. electrical power sources inoperable, perform the following:

1. Demonstrate the OPERABILITY of the two offsite A.C. circuits by performing Surveillance Requirement 4.8.1.1.1.a within 1 hour and at least once per 8 hours thereafter, and

2. Restore one of the inoperable diesel generators to OPERABLE status within 2 hours or be in a least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours, and

3. Restore the remaining inoperable diesel generator within 14 days ~~both diesel generators within 72 hours~~ (see b.3, Note 1) of the initiating event or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

ELECTRICAL POWER SYSTEMS

SURVEILLANCE REQUIREMENTS

4.8.1.1.1 Each of the above required independent circuits between the offsite transmission network and the onsite Class 1E distribution system shall be:

a. Determined OPERABLE at least once per 7 days by verifying correct breaker alignments, indicated power availability, and

b. Demonstrated OPERABLE at least once per 18 months during shutdown by transferring (manually and automatically) unit power supply from the normal circuit to the alternate circuit.

4.8.1.1.2 Each diesel generator shall be demonstrated OPERABLE: (Note 1)

a. At least once per 31 days on a STAGGERED TEST BASIS by:

1. Verifying the fuel level in the day fuel tank.

2. Verifying the fuel level in the fuel storage tank.

3. Verifying the fuel transfer pump can be started and transfers fuel from the storage system to the day tank.

4. Verifying the diesel starts from a standby condition and accelerates to at least 900 rpm in $\leq$ 15 seconds. (Note 2)

5. Verifying the generator is synchronized, loaded to an indicated 2600 to 2850 Kw and operates for $\geq$ 60 minutes. (Notes 3 & 4)

6. Verifying the diesel generator is aligned to provide standby power to the associated emergency busses.

b. At least once per 92 days by verifying that a sample of diesel fuel from the fuel storage tank obtained in accordance with ASTM-D270-65, is within the acceptable limits specified in Table 1 of ASTM D975-74 when checked for viscosity, water and sediment.

Note 1
All planned diesel generator starts for the purposes of these surveillances may be preceded by prelube procedures.

Note 2
This diesel generator start from a standby condition in $\leq$ 15 sec. shall be accomplished at least once every 184 days. All other diesel generator starts for this surveillance may be in accordance with vendor recommendations.

Note 3
Diesel generator loading may be accomplished in accordance with vendor recommendations such as gradual loading.

Note 4
Momentary transients outside this load band due to changing loads will not invalidate the test. Load ranges are allowed to preclude over-loading the diesel generators.

Attachment 3

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Changes to Technical Specification Bases Pages

3/4.8 ELECTRICAL POWER SYSTEMS

BASES

Containment electrical penetrations and penetration conductors are protected by either de-energizing circuits not required during reactor operation or by demonstrating the OPERABILITY of primary and backup overcurrent protection circuit breakers during periodic surveillance. The 480 volt air frame protective devices utilize electro-mechanical overcurrent elements which are mounted on the protective device and, in some instances, protective relays to trip the protective device. Actuation of the overcurrent element or relay will trip the protective device. The molded case protective devices utilize magnetic or thermal-magnetic overcurrent elements which are contained in the protective device. Actuation of each overcurrent element will trip the protective device.

TS 3.8.1.1 Action "a" includes ~~An~~ an allowance ~~has been provided, for~~ extending the allowable outage time for Startup Transformer No. 2 only, for up to 30 days. The 30-day allowance is permitted not more than once in any 10-year period, which is considered sufficient for proper maintenance of the transformer. The 30-day window should permit extensive preplanned preventative maintenance without placing either unit in an Action Statement of short duration and would allow both units to be operating during such maintenance. Because this allowance assumes parts are prestaged, appropriate personnel are available, and proper contingencies have been established, it is not intended to be used for an unexpected loss of the transformer. Pre-established contingencies will consider the projected stability of the offsite electrical grid, the atmospheric stability projected for the maintenance window, the ability to adequately control other ongoing plant maintenance activities that coincide with the window, projected flood levels, and the availability of all other power sources. Since a station blackout is the most affected event that could occur when power sources are inoperable, the steam driven emergency feedwater pump will also be maintained available during the evolution.

TS 3.8.1.1 Action "b" allows for the extension of the EDG AOT up to 14 days. Typically, the extended AOT will be used for voluntary planned maintenance or inspections, but it may be used for corrective maintenance activities. The following contingencies shall be met prior to entering the extended EDG AOT when pre-planned maintenance activities are scheduled or within 72 hours if unplanned entry into the Action is required:

1. Weather conditions will be evaluated prior to entering the extended EDG AOT for voluntary planned maintenance. An extended EDG AOT will not be entered for voluntary planned maintenance purposes if official weather forecasts are predicting severe conditions (tornado or thunderstorm warnings).
2. The condition of the offsite power supply and switchyard will be evaluated.
3. No discretionary switchyard maintenance will be allowed. In addition, no discretionary maintenance will be allowed on the main, auxiliary, or startup transformers associated with the unit.
5. No maintenance or testing that affects the reliability of the ANO-2 train associated with the OPERABLE EDG will be scheduled during the extended AOT. If any testing and maintenance activities must be performed while the extended AOT is in effect, the a 10CFR50.65 (a)(4) evaluation will be performed.
6. The Alternate AC Diesel Generator (AACDG) will be available as a backup to the inoperable EDG and will not be used for non-safety functions such as power peaking to the grid. After entering the extended AOT, the AACDG will be verified available every 8 hours and treated as protected equipment.
7. ANO-1 personnel will be notified to ensure no elective maintenance activities will be scheduled on the ANO-1 EDGs and will be made aware of the dedication of the AACDG to ANO-2.

BASES

8. The steam driven emergency feedwater pump will not be taken out of service for planned maintenance activities and will be treated as protected equipment.

Note 1 of TS 3.8.1.1 Action "b" requires availability of the AACDG when an EDG is removed from service. If the AACDG becomes unavailable, then the allowable outage time is reduced to 72 hours not to exceed 14 days from the initial entry related to the inoperable EDG. Either the AACDG or the EDG may be restored within the 72 hours. If the EDG is restored, then TS 3.8.1.1, Action "b" is exited. If the AACDG is restored within the 72 hours, then restoration of the EDG must be accomplished within the initial 14 day AOT (i.e. 14 days from the time the EDG was initially declared inoperable and Action "b" was entered).

TS 3.8.1.1 Action "c 4" is entered when one of the inoperable A.C. Sources is restored to an OPERABLE status as required by Action "c.3" and requires restoration of the remaining inoperable A.C. Source to an OPERABLE status. The allowable restoration time in Action "c.4" for the remaining inoperable A.C. source began when the component initially became inoperable. If not restored within the AOT, then a plant shutdown is required The requirement associated with the AACDG (reference Action "b.3" Note 1) is applicable to the EDG AOT.

TS 3.8.1.1 Action "e.3" requires restoration of the remaining inoperable EDG to an OPERABLE status. The time allowed for restoration is based on the time at which the remaining inoperable EDG was initially declared inoperable. If not restored within the AOT, then a plant shutdown is required. The requirement associated with the AACDG (reference Action "b.3," Note 1) is applicable to the EDG AOT

TS 4.8.1.2.c.3 demonstrates the EDG load response characteristics and capability to reject the largest single load without exceeding predetermined voltage and frequency while maintaining a specified margin to the overspeed trip. For ANO-2, the single load for each EDG is the Service Water pump, rated at 800 HP (636.9 KW).

TS 3.8.2.3 Action "b" requires the performance of SR 4.8.2.3.a.1 within one hour and at least once per 8 hours thereafter for a loss of one of the required full capacity chargers. If any Category A limit in Table 4.8-2 is not met while a charger is inoperable, the associated battery bank shall be declared inoperable and ACTION "a" entered. The Category A limits in Table 4.8-2 specify the normal limits for electrolyte level, float voltage and specific gravity for each designated pilot cell. When TS 3.8.2.3 ACTION "b" is entered without the associated battery bank being on float (i.e. charger not connected to the bus), pilot cell float voltage is determined by measuring pilot cell voltage. The term "full capacity charger" as used in TS 3.8.2.3 is defined as a charger that is capable of supplying an output of $\geq$ 300 amperes.

Attachment 4

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List of Regulatory Commitments

List of Regulatory Commitments

The following table identifies those actions committed to by Entergy in this document. Any other statements in this submittal are provided for information purposes and are not considered to be regulatory commitments.

COMMITMENT	TYPE (Check one)		SCHEDULED COMPLETION DATE (If Required)
	ONE-TIME ACTION	CONTINUING COMPLIANCE	
1. Weather conditions will be evaluated prior to entering the extended EDG AOT for voluntary planned maintenance. An extended EDG AOT will not be entered for voluntary planned maintenance purposes if official weather forecasts are predicting severe conditions (tornado or thunderstorm warnings).		x	
2. The condition of the offsite power supply and switchyard will be evaluated.		x	
3. No discretionary switchyard maintenance will be allowed. In addition, no discretionary maintenance will be allowed on the main, auxiliary, or startup transformers associated with the unit.		x	
4. No maintenance or testing that affects the reliability of the ANO-2 train associated with the OPERABLE EDG will be scheduled during the extended AOT. If any testing and maintenance activities must be performed while the extended AOT is in effect, the a 10CFR5065 (a)(4) evaluation will be performed.		x	
5. The Alternate A.C. Diesel Generator (AACDG) will be available as a backup to the inoperable EDG and will not be used for non-safety functions such as power peaking to the grid. After entering the extended AOT, the AACDG will be verified available every 8 hours and treated as protected equipment.		x	
6. ANO-1 personnel will be notified to ensure no elective maintenance activities will be scheduled on the ANO-1 EDGs and will be made aware of the dedication of the AACDG to ANO-2.		x	
7. The steam driven emergency feedwater pump will not be taken out of service for planned maintenance activities and will be treated as protected equipment.		x	

List of Regulatory Commitments

COMMITMENT	TYPE (Check one)		SCHEDULED COMPLETION DATE (If Required)
	ONE-TIME ACTION	CONTINUING COMPLIANCE	
8. The system dispatcher will be contacted once per day and informed of the EDG status along with the power needs of the facility.		x	
9. Should a tornado or thunderstorm warning be issued for the local area, an operator will be available should local operation of the AACDG be required as a result of on-site weather-related damage.		x	
10. ANO-2 on-shift Operations crews will discuss and review appropriate normal and emergency operating procedures upon or prior to assuming the watch for the first time after having scheduled days off while the AOT is in effect.		x	
11. ANO-2 Operations crews will be briefed concerning the ANO-2 EDG activities, including compensatory measures established and the importance of promptly starting and aligning the AACDG following instruction of the ANO-2 Shift Manager upon the loss of power event. This briefing will be performed upon or prior to assuming the watch for the first time after having scheduled days off while the AOT is in effect.		x	