Boston Edison

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BECo Ltr. #96-040
April 25, 1996

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

Docket No. 50-293
License No. DPR-35

Proposed Technical Specification Changes

In accordance with the requirements of 10 CFR 50.90, Boston Edison Company (BECo) proposes changes to the Pilgrim Nuclear Power Station (PNPS) Technical Specifications.

These Technical Specification changes are proposed as part of an overall effort to improve outage performance at Pilgrim Station. These changes will result in greatly simplified outages thereby resulting in improved work control, enhanced safety, and optimized outage duration.

Pilgrim's next refueling outage is scheduled for February 1997, with a 30-day completion goal. The attached change requests are submitted in support of the planned 30-day outage effort and reflect accepted industry practices and conditions supporting the design configuration at Pilgrim. The combined effect of the proposed changes affords an opportunity to significantly improve outage performance. We request these changes be given a level III priority of review.

The proposed changes are described in Attachment A. Attachment B provides amended Technical Specification pages. Marked-up Technical Specification pages are provided in Attachment C. Attachment D includes a figure of our Auxiliary AC Configuration to assist in the review.

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We request NRC approval of the proposed technical specifications changes by no later than October 1996 with an implementation date effective within 90 days of approval.

E. T. Boulette

E. T. Boulette, PhD

Commonwealth of Massachusetts)
County of Plymouth)

Then personally appeared before me, E. T. Boulette, who being duly sworn, did state that he is Senior Vice President - Nuclear of Boston Edison Company and that he is duly authorized to execute and file the submittal contained herein in the name and on behalf of Boston Edison Company and that the statements in said submittal are true to the best of his knowledge and belief.

My commission expires: March 25, 1999 James D. Keyes
DATE NOTARY PUBLIC

Attachment A: Description of Proposed Changes
Attachment B: Amended Pages from Current Technical Specifications
Attachment C: Marked-up Technical Specification Pages
Attachment D: Auxiliary AC Configuration

Original plus 37 copies
ETB/Rap96/jdk

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Attachment A

Description of Proposed Changes

Part I: Description of Proposed Changes

Part II: No Significant Hazards Consideration Determination

Part III: Probabilistic Risk Assessment Considerations

Part I: Description Of Proposed Changes

Proposed change (1): Definition of Operable-Operability

A change is proposed to the definition of "Operable-Operability" in Specification 1.0.E. The change consists of substituting the word "and" with "or" in the sentence "... all necessary attendant instrumentation, controls, normal and emergency electrical power sources..." The current Pilgrim Technical Specification (TS) definition specifies normal (offsite) and emergency (onsite) power sources for determining operability. The revised definition specifies the use of either normal (offsite) or emergency (onsite) power sources for determining electrical power operability of systems, subsystems, trains, components or devices.

Discussion

The current Pilgrim "Operable-Operability" definition considers systems/subsystems as operable provided that both sources of onsite (emergency) and offsite (normal) AC power are available. Thus when one source of power is not available, Pilgrim's current definition requires the supported systems to be declared inoperable. The revised definition redefines the AC power needs to allow either onsite or offsite power available for systems/subsystems to be considered operable. Individual emergency diesel generator (EDG) Limiting Conditions of Operation (LCOs) are also incorporated into specific system specifications to ensure an operable emergency power source is always available to the operable systems/subsystems.

Reducing the need for both onsite and offsite power sources provides additional operational flexibility by allowing redundant systems/subsystems to still be considered "operable" within the requirements of their functional operability requirements. This does not compromise the level of safety already afforded to such systems/subsystems because (i) functional operability requirements are assured through the technical specifications applicable to such systems/subsystems and (ii) AC power availability continues to be assured through proposed surveillances and action statements applicable to AC power systems.

Proposed Change (2): Emergency Diesel Generator and AC Power Sources

TS 3.5.F.1 is revised to increase the Allowed Outage Time (AOT) for the Emergency Diesel Generators (EDGs) from the currently allowed 3 days to 14 days.

Discussion

The purpose of increasing the EDGs to a 14-day AOT is to provide more flexibility for maintenance and repair of the EDGs. The TS allow each EDG to be out of service for a certain period of time based on the availability of the Startup transformer (SUT) and Shutdown transformer (SDT) and the fact that each EDG carries sufficient engineered safeguards equipment to cover all design basis accidents. With one EDG out of service and a Loss of Offsite Power (LOOP) condition, i.e., loss of both 345 Kv sources, the capability to power vital and auxiliary system components remains available via the other EDG, and the SDT for all operating, transient and accident conditions.

In response to Generic Letter 88-20, Pilgrim submitted an Individual Plant Examination (IPE) in September 1992. A detailed Probabilistic Safety Assessment (PSA) of Pilgrim, completed to support the IPE, was used to quantify the overall impact of the proposed change on core damage frequency. This assessment supports the change to a 14-day AOT for the EDGs.

The 14-day AOT is practical and does not present undue risk to the plant for compliance with the design basis requirements. As shown in Part IIi, there is an insignificant increase in risk due to the proposed change.

Additional changes are proposed in the AOTs for the Shutdown and Startup transformers and emergency buses based upon their contribution to risk in relation to the EDG 14-day AOT. These include a reduction from 7 days to 3 days AOT for loss of the Startup transformer (TS 3.9.B.1) and a reduction from 72 hours to 48 hours in AOT for a simultaneous loss of both a Startup transformer and an EDG (TS 3.9.B.4.b). These proposed AC power equipment AOT changes do not alter the AC power distribution configuration required for declaring the operability of systems/subsystems under the existing Specification 3.5.F, but more accurately reflect the AOTs based upon the individual risk contributors as determined by the PSA for the AC power equipment.

The unavailability of an EDG as a result of corrective maintenance is not likely to change due to revising the AOT from 3 to 14 days. A statistical evaluation of historical repair times shows that there is only a small probability that a corrective maintenance activity would last longer than 3 days and hence increase the unavailability of the EDG under a 14 day AOT. Unavailability due to planned maintenance would however cause overall unavailability to increase. Major planned EDG maintenance such as overhauls have always been done during shutdown periods. With a 14 day AOT, such maintenance can be done on line. Our PSA therefore conservatively assumed that the full 14 day AOT would be used per EDG per year. The historical level of corrective maintenance is then added to the 14 days of planned unavailability . Thus a new unavailability value consisting of both planned and corrective maintenance was used in the PSA.

These assumptions are very conservative, because even if EDG overhauls are performed on-line, they would be done every other year, and not every year as assumed in our PSA. In addition, the Maintenance Rule implementation program for the EDGs includes an unavailability performance criteria that will monitor entries into LCOs for extended periods of time.

Proposed Change (2): (continued)

> TS 4.5.F.1 is revised to delete the daily testing of the operable diesel generator when the other EDG becomes inoperable. Instead, a determination must be made within 24 hours that a common cause failure does not exist for the operable EDG or the diesel generator must be tested. Actions are also added to verify breaker alignment and indicated power availability for each offsite circuit This verification assures AC power availability without compromising the AC power distribution.

Discussion

The purpose of deleting the daily testing of the operable diesel generator in Specification 4.5.F.1 is to eliminate excessive testing of the operable EDG. This deletion is based on the NRC guidance provided in item 10.1 of Generic Letter 93-05, "Line-Item Technical Specification Improvements to Reduce Surveillance Requirements for Testing During Power Operation" and Generic Letter 94-01, "Removal of Accelerated Testing and Special Refueling Requirements for Emergency Diesel Generators".

Pilgrim Station was originally licensed with a 7 day TS LCO for the EDGs. In 1990, we proposed a TS AOT reduction from 7 to 3 days for both the EDGs and the Containment Cooling system in order to eliminate the need for testing redundant trains when the opposite train became inoperable. This request was granted by the NRC via Amendment # 135. The change removed the need for immediate and daily surveillance testing on the operational train

of core and containment cooling when the redundant train is inoperable. However, the elimination of the requirement for immediate and daily testing of the operational diesel generator when the redundant diesel generator is inoperable was not approved.

The basis for NRC approval for the core and containment cooling surveillance elimination was that the change brought this section of TS into conformance with the Standard Technical Specifications (STS) in effect at that time by : 1) removing the need to place redundant systems in daily testing arrangements during periods without system redundancy, 2) by reducing potential system failures due to improper system alignment after excessive testing, and 3) by reducing wear on components caused by excessive surveillance testing. Because the STS at that time did not allow the same surveillance elimination concept for EDGs, this part of the request was not approved. However, the EDG AOT reduction from 7 days to 3 days was retained by the NRC as part of the amendment approval because the STS prescribed this AOT for EDGs.

Proposed Change (2): (continued)

> TS 3.9.B.1 and 3.9.B.2 are revised by deleting the words "demonstrated to be" for the operability of the EDG and associated emergency buses.
>
> TS 3.9.B.1 is also split into two individual AOTs, one for the Startup transformer and one for the Shutdown transformer. The AOT for the Startup transformer is reduced from 7 days to 3 days based on the PSA results. The Shutdown transformer AOT remains at 7 days.
>
> TS 3.9.B.3 is revised to include references to other sections in the TS that require continued operability of the remaining train of equipment that depends on the operable diesel generator as a source of emergency power.
>
> TS 3.9.B.4.b is revised to reduce the AOT for a combined inoperable Startup transformer and inoperable EDG from 72 hours to 48 hours based on the PSA results. The AOT for simultaneous inoperability of the Shutdown transformer and an EDG remains at 72 hours.

Discussion

Specification 3.9.B.1 and 3.9.B.2 are revised to allow operability verification consistent with the NRC guidance provided in Generic Letters 93-05 and 94-01. Thus the words "demonstrated to be" are deleted.

Changes are proposed in the AOTs for the Shutdown and Startup transformers based upon their contribution to risk in relation to the EDG 14-day AOT risk assessment analysis. The AOT for the Startup transformer inoperable was reduced from 7 days to 3 days (TS 3.9.B.1.a) and the AOT for the Shutdown transformer inoperable remained at 7 days (TS 3.9.B.1.b)

Adding additional system operability requirements to TS 3.9.B.3 provides a positive measure to prevent entry into the 14 day AOT if any redundant system that relies on the operable diesel generator for its source of emergency power is out of service.

An additional reduction from 72 hours to 48 hours is proposed in the AOT for a simultaneous loss of both a Startup transformer and an EDG (TS 3.9.B.4.b) based upon the Startup transformer's contribution to risk in relation to the EDG 14-day AOT risk assessment analysis and that two power sources have been removed from the associated bus. This proposed AC power equipment AOT change does not alter the AC power distribution configuration required for declaring the operability of systems/subsystems under the existing Specification 3.5.F, but more accurately reflects the AOTs based upon the individual risk contributors as determined by the PSA for the AC power equipment.

Proposed Change (3): Standby Gas Treatment and Control Room High Efficiency Air Filtration and Standby Liquid Control System (SBLC)

TS 3.7.B.1.a and 3.7.B.2.a are revised to eliminate the association to the diesel generators based on the proposed revision to the definition of "Operable-Operability".

TS 3.7.B.1.c (SGT), 3.7.B.2.c (CRHEAF), and 3.4.B.1 (SBLC) are revised by adding a new condition requiring the EDG associated with the operable train of SGT, CRHEAF, and SBLC to be operable while in a 14 day EDG AOT.

Also, TS 3.7.B.1.c (SGT) is revised to have the same wording as 3.7.B.2.c (CRHEAF). These TS govern the same plant conditions for the two systems and should read alike. This change is administrative.

TS 3.7.B.1.e (SGT) and 3.7.B.2.e (CRHEAF) are revised to establish plant safety systems configuration during refueling conditions. Provisions are added to allow fuel movement with one inoperable train each of SGT and CRHEAF for 7 days as long as each remaining train of SGT and CRHEAF is demonstrated operable within 2 hours, and the EDG associated with the operable train is operable.

TS 3.7.B.1.f. is deleted based on the proposed change to (e) above which makes the compensatory measures formerly contained in (f) unnecessary. Former references to (f) are revised to (e) in TS 3.7.B.1.a and 3.7.B.1.c.

Discussion

The SGT and CRHEAF TS have been revised in the past to accommodate planned sequences of safety system maintenance and surveillances during refueling outages. The (past) definition of Operable-Operability made scheduling this work difficult due to the need to maintain both onsite and offsite power sources. For example, in support of refueling outage # 9, BECo requested relief with specific conditions to Specification 3.7.B.1.c., and e, and 3.7.B.2.c which restricted the movement of irradiated fuel if only one train of SGT or one train of CRHEAF were operable. Irradiated fuel movement could not begin and could only continue for 7 days if the LCO was entered. The NRC granted the relief by TS Amendment No. 144. Subsequently, BECo proposed adding these compensatory measures as permanent conditions to accommodate future refueling outages. As a result, new sections 3.7.B.1.f and 3.7.B.2.e were proposed. The NRC granted these changes by TS Amendment No. 161. The Amendment No. 161 defines one train of SGT and one train of CRHEAF to be considered operable without their associated emergency power supply, provided one source of normal power (Startup Transformer or Unit Auxiliary power) is available.

We propose to restructure these specifications based on the (i) application of the revised definition of "Operable-Operability" and (ii) operation of the systems within their design basis requirements. The restructuring consists of defining the condition governing the need for the

systems to be operable (3.7.B.1.a for SGT and 3.7.B.2.a for CRHEAF), and providing two LCOs. One governing plant operation (3.7.B.1.c for SGT and 3.7.B.2.c for CRHEAF) and one governing plant shutdown (3.7.B.1.e for SGT and 3.7.B.2.e for CRHEAF).

The proposed changes to the LCO during plant operation are mostly editorial except for the addition of the new condition requiring the EDG associated with the operable train of SGT and CRHEAF to be operable. This condition is added as a result of the revised EDG LCO as discussed previously in Proposed Change # 2. Although the revised definition of "Operable-Operability" would only require either the normal or emergency power sources to be available under these circumstances, the remaining trains of SGT and CRHEAF will include the requirement to have their associated emergency power source available. (Note: This same requirement is added to the SBLC TS 3.4.B.1 for the same reason as discussed here.) This provides assurance that these trains will still have an emergency source of power in the unlikely event of a loss of offsite power. Continued reactor operation, irradiated fuel handling, or new fuel handling over the spent fuel pool is still permissible for 7 days with only one train of SGT and CRHEAF providing that within 2 hours all active components of the other SGT and CRHEAF are demonstrated to be operable and the diesel generator associated with the operable train is operable. If the train is not operable within the 7 day time frame, reactor shutdown shall commence, irradiated fuel handling operations shall be terminated within 2 hours, and the reactor placed in cold shutdown within 36 hours.

The proposed changes governing plant shutdown are revised to allow fuel movement for up to 7 days provided that one train of SGT and one train of CRHEAF is operable with their emergency AC power sources also operable. After 7 days, the operable SGT train must be placed in operation if the other train has not been returned to an operable condition. For CRHEAF, after 7 days the operable train must be demonstrated operable on a daily basis.

The SGT is designed to automatically start upon receipt of a high radiation signal in secondary containment. With one train out of service, a single failure could possibly prevent the remaining train from achieving its stated design purpose. Refueling operations are allowed to continue for 7 days based on the operability demonstration of the remaining train within 2 hours and the requirement that it's associated EDG also be operable. After 7 days, fuel handling activities shall be stopped or the SGT shall be placed in continuous operation. This action places the train in the active operational mode thereby providing the safety actions essential to avoiding unacceptable safety results associated with abnormal operational transients and accidents. For CRHEAF, after 7 days the operable train must be demonstrated operable on a daily basis

Safety Considerations: EDG Changes

During normal power operations, Pilgrim Station AC power to the Engineered Safeguards Features (ESF) components on redundant safety buses A5 and A6 can be supplied from diverse and redundant sources. The normal supply is from the Unit Auxiliary Transformer (UAT) fed from the main generator with backup from the Startup Transformer (SUT) or the onsite EDGs. In addition to these sources, the Shutdown Transformer (SDT) or the Station Blackout Diesel Generator (SBODG) are available. The following Table shows the diversity of AC power.

Auxiliary AC Power Source and Emergency Bus Energization

Auxiliary AC Power Source	Distribution to Buses
1. Unit Auxiliary Transformer (UAT) Main Generator	A5 and A6
2. Start-up Transformer (SUT) Two 345 Kv	A5 and A6
3. Shutdown Transformer (SDT) 23Kv	A5 and A6
4. Emergency Diesel Generator, (EDG A) 2600KW (normal)	A5
5. Emergency Diesel Generator, (EDG B) 2600KW (normal)	A6
6. Station Blackout Diesel Generator (SBODG) 2000KW (normal)	A5 or A6

Each EDG provides emergency onsite AC power to its associated emergency 4.16 KV bus A5 or A6 as shown on Attachment D. Each of these buses by itself can provide the power required to mitigate a design basis accident. Normally, at 100% reactor power, buses A5 and A6 are supplied from the Unit Auxiliary Transformer (UAT). If the UAT is lost (due to a reactor scram), the emergency buses are automatically transferred to the Startup Transformer (SUT). In the case of a loss of offsite power (LOOP), the SUT will not be available, causing the EDG's to start automatically. Power to the emergency buses will be interrupted for approximately 10 seconds as the EDGs start, come up to rated speed, and then load onto the buses, automatically. In the event that an EDG fails to re-energize its associated bus, the Shutdown Transformer (SDT) will automatically load onto the failed EDG's emergency bus approximately twelve seconds after the LOOP. The SDT is supplied from the 23 KV Commonwealth Electric line. In the event of a SDT failure, the Station Black-Out Diesel Generator (SBODG) can be manually loaded onto the failed EDG's emergency bus from the control room within 10 minutes. The SBODG is capable of supplying one Core Standby Cooling System (CSCS) pump and all associated 480 V loads.

Pilgrim Nuclear Power Station Alternate AC power distribution is shown in Attachment D.

Testing and Verification of EDG Operability: BECo has implemented an EDG reliability program in compliance with the Station Blackout Rule (10 CFR 50.63). The reliability program elements meet the NRC Regulatory Guide 1.155 and NUMARC-8700 guidance. The NRC has reviewed and approved the EDG reliability program through Safety Evaluation Report, dated February 13, 1994, and NRC Inspection Reports, 50-293/93-80, dated December 23, 1993 and 50-293/95-16, dated September 11, 1995.

The current EDG target reliability goal is 0.975. Any time an EDG falls below its target goal, a root cause analysis will be performed and corrective actions taken on the affected EDG to ensure the reliability of the engine remains in accordance with the reliability program.

Normal Operation: During normal plant operation, emergency buses A5 and A6 are fed from the UAT. When one EDG is out-of-service for repair or preventive maintenance, continued station operation is carried out in accordance with TS 3.9.B.3, if specification 3.9.A.1 and 3.9.A.2.a are satisfied, since SUT, and SDT or UAT are available.

Off-Normal Operating Condition: An off-normal operating condition with respect to AC power distribution would be a loss of one 345 KV line to the main switchyard. Since, the main switchyard is fed with two 345 KV lines, UAT and SUT will continue to be available, and compliance with the TS 4.9.A.1 will be achieved, when one EDG is out-of-service.

Transient Condition: The most severe transient condition is the Station Blackout. In this case, normal off-site power would be lost. UAT and SUT are no longer available. One EDG is being repaired; the other EDG fails to start. The SDT is then called upon to provide power to both

emergency Buses A5 and A6. If the SDT fails to provide the required power, the operator confirms that the plant is in an SBO transient, and manually starts the SBODG. The SBODG was demonstrated to be available to energize either bus within 10 minutes of an SBO event, and with the control room pull-to-lock switches, the SBO transient can be mitigated, with no equipment or core damage. Thus, during one EDG out-of-service, a SBO transient can be mitigated with no adverse consequences. Compliance with the SBO rule has been verified by NRC review and in Inspection Reports as referenced above under the testing and verification discussion.

Accident Condition: The most severe design basis accident condition is the LOCA with concurrent LOOP. When one EDG is out-of-service, if a LOCA with LOOP accident occurs, the second EDG and SDT are available to mitigate the accident condition. One EDG carries sufficient loads for ESF equipment to cover all design basis accidents (DBAs). The SDT is also designed to carry at least one train of ESF equipment loads under all DBAs.

Safety Considerations: SGT and CRHEAF Changes

The SGT is one of four subsystems of the Secondary Containment System (SCS). The other subsystems are the Reactor Building, the Reactor Building Isolation and Control System (RBICS), and the Main Stack. The SCS surrounds the refueling facilities and is designed to provide containment for the postulated fuel handling accident.

The SCS uses four different features to mitigate the consequences of a postulated fuel handling accident. The first feature is a negative pressure barrier which minimizes the ground level release of fission products by exfiltration. The second feature is a low leakage containment volume which provides a holdup time for fission product decay prior to release. The third feature is the removal of particulates and iodines by filtration prior to release. The fourth feature is the exhausting of the secondary containment atmosphere through an elevated release point which aids in dispersion of the effluent by atmospheric diffusion.

Each of the features is provided by a different combination of subsystems: the first by the Reactor Building, the RBICS, and the SGT exhaust fans; the second by the Reactor Building and the RBICS; the third by the SGT filters; and the fourth by the Main Stack.

The safety objective of the SCS is to limit the release of radioactive materials to the environs ensuring offsite doses from a postulated DBA will be below the guideline values of 10 CFR 100.

The safety design bases of the SCS satisfying this safety objective states that the SCS shall be designed to be sufficiently leak-tight to allow the Standby Gas Treatment System (SGT) to reduce the Reactor Building pressure to a minimum subatmospheric pressure of 0.25 inches of water, under neutral wind conditions, when the SGT fans are exhausting Reactor Building atmosphere at a maximum of 4,000 ft^3/min.

PNPS TS Bases state that only one of the two SGT trains is needed to maintain the secondary containment at a 0.25 inch of water negative pressure upon containment isolation. During outages at least one train of SGT will be operable including its associated emergency safety related power source operable, when satisfying the need for secondary containment.

The CRHEAF system's safety function is to maintain Control Room habitability after an event that releases radioactive material. During fuel movement operations, CRHEAF is required to address a potential irradiated fuel damage event.

During refueling outages one entire safety system loop will be taken out of service for required surveillances and preventive maintenance. Upon return to service, the other loop will be taken out of service in a similar fashion for its outage related work. Included in each loop to be removed is one train of SGT and one train of CRHEAF. In the proposed change, we have imposed provisions governing fuel movement. Provisions are added to allow fuel movement with one train each of SGT and CRHEAF for 7 days as long as the operable train of SGT and CRHEAF are demonstrated operable and after the 7 days, SGT is placed in the continuous run condition and CRHEAF is demonstrated to be operable on a daily basis.

Part II: No Significant Hazards Consideration Determination

The Code of Federal Regulations (10 CFR 50.91) requires licensees requesting an amendment to provide an analysis, using the standards in 10 CFR 50.92, that determines whether a significant hazards consideration exists. The following analysis is provided in accordance with 10 CFR 50.91 and 10 CFR 50.92 for the proposed amendment.

(a) The proposed amendment does not involve a significant increase in the probability or consequences of an accident previously evaluated.

Operation of PNPS in accordance with the proposed license amendment will not involve a significant increase in the probability or consequences of an accident previously evaluated because of the following:

Definition of "Operable- Operability"

Definitions perform a supporting function for other sections of the TS. The definition of "Operable-Operability" affects the manner in which the requirements for a Limiting Condition for Operation (LCO) and its associated remedial actions are applied when a support system is inoperable. This definition re-affirms the principle that a system is operable when it is capable of performing its specified function and when all necessary support systems are also capable of performing their related support functions. The corollary is that a system is inoperable when it is not capable of performing its specified function or when a necessary support system is not capable of performing its related support function.

No changes are being made to the plant design, system configuration, or method of operation. The proposed change does not affect the ability of the AC power sources to perform their required safety functions nor affect the ability of the features they support to perform their respective safety functions. Therefore, the proposed change does not involve a significant increase in the probability or consequences of an accident previously evaluated.

EDG

An Individual Plant Examination (IPE) for Internal Events was submitted to the NRC in response to Generic Letter 88-20 in September 1992. The IPE was used to quantify the overall impact of the proposed 14 day allowed outage time on core damage frequency. Part III provides the results of a comprehensive Probabilistic Safety Assessment (PSA) of the impact

of the proposed AOTs for the EDGs and Startup and Shutdown transformers. As shown in Part III, there is not a significant increase in risk due to the proposed change. Thus the proposed change does not involve a significant increase in the probability or consequences of an accident previously evaluated.

The existing specification 3.9.B.1 is being separated into two segments (a and b) because of the proposed and different AOTs for the Startup and Shutdown transformers. As a result of the PSA, the AOT for the Startup transformer (a) is reduced from 7 days to 72 hours, while the AOT for the Shutdown transformer (b) remains at 7 days. The reduction of the AOT from 7 days to 3 days is based on the relative risk importance of the Startup transformer's support to the balance of plant systems. Similarly, an additional reduction from 72 hours to 48 hours is proposed in the AOT for a simultaneous loss of both the Startup transformer and an EDG (TS 3.9.B.4.b) based upon the Startup transformer's contribution to risk in relation to the EDG 14-day AOT risk assessment analysis and that two power sources have been removed from the associated bus. The AOT reductions represent a measurable decrease in risk as assessed in the PSA. Thus, the probability or consequences of an accident previously evaluated are not significantly increased.

The current technical specifications allow one EDG to be out of service for three days based on the availability of the SUT and SDT and the fact that each EDG carries sufficient engineered safeguards equipment to cover all design basis accidents. With one EDG out of service and a Loss of Offsite Power (LOOP) condition, the capability to power vital and auxiliary system components remains available via the other EDG, and for one train of ESF equipment via the SDT for all operating, transient and accident conditions. Increasing the EDG AOT to 14 days provides flexibility in the maintenance and repair of the EDGs. The EDG unavailability will be monitored and trended in accordance with the Maintenance Rule. The PSA analyses supports the change to a 14 day AOT for the EDGs based on an insignificant increase in overall risk. Implementation of the proposed change is expected to result in less than a one percent increase in the baseline core damage frequency (2.84E-05/yr), which is considered to be insignificant relative to the underlying uncertainties involved with probabilistic safety assessments. Additional conditions are added to the Standby Liquid Control, Standby Gas Treatment, and Control Room High Efficiency Air Filtration systems requiring the EDG associated with these systems to remain operable while in the 14 day EDG AOT. Thus, the 14 day EDG AOT does not involve a significant increase in the probability or consequences of an accident previously evaluated.

Eliminating the 4.5.F.1 requirement for daily testing of the operable diesel generator when the redundant diesel generator becomes inoperable is consistent with the guidance provided in Generic Letter 93-05. The change does not affect the ability of the emergency diesel generator to perform on demand, and by actually lowering the number of demands to demonstrate operability, reduces the probability of equipment failure. The redundant EDG will remain in service during the entire period of inoperability of the out-of-service EDG. If a common cause failure cannot be ruled out, the redundant EDG will be tested to assure operability. The proposed revisions do not involve a significant change to the plant design or operation, only to the manner in which remaining equipment is confirmed to be operable, which is consistent with NRC guidance. Thus operation of PNPS in accordance with the proposed license amendment will not involve a significant increase in the probability or consequences of an accident previously evaluated.

The 3.9.B.1 and 2 requirements to demonstrate both EDGs and associated emergency buses operable are deleted. This change is based on the NRC guidance provided in item 10.1 of

Generic Letter 93-05, "Line-Item Technical Specification Improvements to Reduce Surveillance Requirements for Testing During Power Operation". Revising the methods for verifying EDG and emergency bus operability does not physically alter the plant or have an affect on the probability or consequences of an accident previously evaluated. Deleting the testing requirements for an EDG when the other EDG is inoperable does not increase the probability or consequences of an accident previously evaluated because the reliability program and routinely performed TS surveillances continue to provide the added assurance sought by the testing. The elimination of this testing will serve to improve the overall reliability of the EDGs. Since the proposed change does not affect the design or negatively affect the performance of the EDGs, the change will not result in a significant increase in the consequences or probability of an accident previously analyzed.

SGT and CRHEAF

During normal plant operation, with one SGT or CRHEAF subsystem inoperable, the inoperable subsystem must be restored to operable status in 7 days. In this condition, the remaining operable SGT or CRHEAF subsystem is adequate to perform the required radioactivity release control function. However, the overall system reliability is reduced because a single failure in the operable subsystem could result in the radioactivity release control function not being adequately performed. The 7 day completion time is based on consideration of such factors as the availability of the operable redundant SGT subsystem and the low probability of a DBA occurring during this period.

If the SGT or CRHEAF subsystem cannot be restored to operable status within 7 days when in the Run, Startup, or Hot Shutdown MODE, the plant must be brought to a MODE in which the LCO does not apply. To achieve this status, the plant must be brought to at least Hot Shutdown within 12 hours and to Cold Shutdown within 36 hours. The allowed completion times are reasonable, based on operating experience, to reach the required plant conditions from full power conditions in an orderly manner and without challenging plant systems.

Current TS governing refueling operations restrict fuel movement if one train of SGTS or one train of CRHEAF are inoperable. In this condition the remaining operable SGT and CRHEAF trains are adequate to perform the required radioactivity release control functions. However, the overall system reliability is reduced because a single failure in the operable train could result in the radioactivity release control function of the systems not being adequately performed. New requirements are added that require if one train of SGT or CRHEAF is inoperable, the redundant train of SGT or CRHEAF must be demonstrated to be operable within 2 hours. This substantiates the availability of the operable trains. Fuel handling is limited only to the following 7 days and if the inoperable train is not returned to an operable condition within that time frame, the operable SGT train is placed in operation or fuel handling activities are suspended. For CRHEAF, after 7 days, the operable subsystem is demonstrated operable in accordance with existing surveillances on a daily basis. The proposed changes do not modify system design, use, or configuration in a manner different from their original design and therefore do not involve a significant increase in the consequences or probability of an accident previously analyzed.

The revisions to make the SGT and CRHEAF TS sections similar in wording are made to enhance usability and alleviate possible confusion. These changes are strictly editorial, have no impact, and do not alter technical content or meaning of the specifications. These editorial changes do not involve a significant increase in the probability or consequences of an accident previously analyzed.

(b) The proposed amendment does not create the possibility of a new or different kind of accident from any accident previously evaluated.

The operation of PNPS in accordance with the proposed license amendment will not create the possibility of a new or different kind of accident from any accident previously evaluated because of the following:

Definition of "Operable-Operability"

The revised definition redefines the AC power needs to allow either onsite or offsite power available for systems/subsystems to be considered operable. This does not compromise the level of safety already afforded to such systems/subsystems because the functional operability requirements continue to be assured through the technical specifications applicable to such systems/subsystems. AC power availability continues to be assured through existing and proposed surveillances and action statements applicable to AC power systems. Reducing the need for both onsite and offsite power sources in order to consider operable, the systems/subsystems powered by these AC power sources, provides additional operational flexibility by allowing redundant systems/subsystems to still be considered "operable" within the requirements of their functional operability requirements. No new change or modes of plant operation are involved. Therefore, operation in accordance with the revised definition does not introduce any new or different kind of accident from any accident previously evaluated.

EDG

The proposed amendment will extend the action completion/allowed outage time for an inoperable emergency diesel generator from 72 hours to 14 days. The EDGs are designed as backup AC power sources for essential safety systems in the event of loss of offsite power. The proposed AOT does not change the conditions, operating configurations or minimum amount of operating equipment assumed in the safety analysis for accident mitigation. The EDGs and AC equipment are not accident initiators. No change is being made in the manner in which the EDG's provide plant protection. No new modes of plant operation are involved. An extended AOT for one EDG does not increase the probability of occurrence of a new or different kind of accident previously evaluated. The PSA results concluded that the risk contribution of the EDG AOT extension is insignificant.

The current Pilgrim Technical Specifications requiring immediate and daily testing of the redundant operable EDG is based on the assumption that the increased testing provides additional assurance that the equipment is available should it be needed. Industry experience indicates that repetitive testing can place demands and wear on the EDG without necessarily providing additional confidence of availability. Also, the new surveillance requires verification that offsite power is available and that a common cause failure is not present. These actions provide assurance that the required emergency buses can be energized with no loss of functions to mitigate accident or transient conditions. In addition, Pilgrim has implemented an EDG reliability program to maintain reliability of EDGs. The proposed change does not introduce any new mode of plant operation or new accident precursors, involve any physical alterations to plant configurations, or make changes to system set points that could initiate a new or different kind of accident. Therefore, operation in accordance with the proposed change does not create the possibility of a new or different kind of accident from any previously evaluated.

The AOT for an inoperable Startup Transformer is reduced from 7 days to 72 hours based upon the PSA that was performed to quantitatively assess the risk impact of the proposed amendment. The proposed reduction in AOT improves overall AC power source availability because the SUT will potentially be inoperable for shorter time periods. Therefore, reducing

the AOT does not create the possibility of a new or different kind of accident from any accident previously evaluated.

SGT and CRHEAF

The SGT system is designed to filter radioactive materials from the secondary containment following a postulated DBA or fuel handling accident prior to release to the environment to ensure compliance with 10 CFR 100 limits.

The CRHEAF is designed to filter intake air for the control room atmosphere during conditions when normal intake air may be contaminated.

The proposed revisions do not affect the ability of the SGTS or CRHEAF to perform their intended function, do not create the possibility of a new or different kind of accident from the loss of coolant or fuel handling accidents previously analyzed, and do not modify system configuration, use, or design. Therefore, operating Pilgrim in accordance with this change will not create the possibility of a new or different kind of accident from any accident previously analyzed.

The revisions to make the SGT and CRHEAF TS sections similar in wording are made to enhance usability and alleviate possible confusion. These changes are strictly editorial, have no impact, and do not alter technical content or meaning of the specifications. These editorial changes do not create the possibility of a new or different kind of accident from any previously analyzed.

(c) The proposed amendment does not involve a significant reduction in a margin of safety.

The operation of PNPS in accordance with the proposed license amendment will not involve a significant reduction in a margin of safety because of the following:

Definition of "Operable-Operability

The implementation of the "Operability" definition clarifies the relationship between AC power supplies and the operability status of the equipment requiring AC power. No change is being made in which the plant systems relied upon in the safety analyses provide plant protection. Plant safety margins are maintained through the limitations established in the TS LCOs. Since there will be no significant reduction to the physical design or operation of the plant there will be no significant reduction to any of these margins.

EDG

Operation of PNPS in accordance with the proposed license amendment will not involve a significant reduction in a margin of safety. As shown in Part III, incorporation of the proposed change involves an insignificant reduction in the margin of safety.

The proposed changes do not significantly reduce the basis for any technical specification related to the establishment of, or the maintenance of, a safety margin nor do they require physical modifications to the plant. Additional conditions are added to the Standby Liquid Control, Standby Gas Treatment, and Control Room High Efficiency Air Filtration systems requiring the diesel generator associated with the redundant operable trains of these systems to remain operable while in the 14 day EDG AOT. Moreover, the PSA results showed that the

Control, Standby Gas Treatment, and Control Room High Efficiency Air Filtration systems requiring the diesel generator associated with the redundant operable trains of these systems to remain operable while in the 14 day EDG AOT. Moreover, the PSA results showed that the risk contribution of extending the AOT for an inoperable EDG is insignificant. The reduction in the AOT for the SUT could improve availability, therefore, reducing overall risk. Likewise the proposed changes in the deletion of testing have no impact on the safety margin.

As previously stated, implementation of the proposed changes is expected to result in an insignificant increase in: (1) power unavailability to the emergency buses (given that a loss of offsite power has occurred), and (2) core damage frequency. Implementation of the proposed changes does not increase the consequences of a previously analyzed accident nor significantly reduce a margin of safety. Functioning of the EDGs and the manner in which limiting conditions of operation are established are unaffected.

SGT and CRHEAF

SGT and CRHEAF contribute to the margin of safety by supporting the secondary containment system during fuel handling by mitigating the consequences of a fuel handling event. Allowing fuel movement to continue as established in the LCOs does not involve a significant reduction in the margin of safety because the first line of defense, the other SGT and CRHEAF trains will be operable. The proposed change will allow placing the Operable SGT subsystem in operation, or in the case of CRHEAF, conducting daily testing, as an alternative to suspending movement of irradiated fuel. This alternative is less restrictive than the existing requirement, however, the proposed requirements ensure that the remaining subsystem is operable, that no failures that could prevent actuation have occurred, and that any failure would be readily detected. The proposed change does not result in a significant reduction in a margin of safety because it allows operations which have the potential for releasing radioactive material to the secondary containment to continue only if the system designed to mitigate the consequences of this release is functioning. Proper operation of only one SGT or one CRHEAF subsystem is sufficient to mitigate the consequences of any analyzed accident. Therefore, this change does not change any of the assumptions in the accident analysis and does not involve a significant reduction in a margin of safety.

The revisions to make the SGT and CRHEAF TS sections similar in wording are made to enhance usability and alleviate possible confusion. These changes are strictly editorial, have no impact, and do not alter technical content or meaning of the specifications. These editorial changes do not involve a significant reduction in the margin of safety.

Conclusions

The above proposed changes have been prepared to utilize the diversity of AC power and preserve the validity of the safety analyses while providing sufficient flexibility in the LCOs to accommodate the need for maintenance and surveillance of equipment.

These proposed changes have been reviewed and approved by the Operations Review Committee and reviewed by the Nuclear Safety Review and Audit Committee.

We have also reviewed the submittals of several other Licensees who have received approval for similar changes. The conditions accompanying NRC approval of the changes are further addressed.

Considerations for the EDG AOT

Existing specification 3.5.F provides controls for the CSCS to ensure that the required systems, subsystems, trains, components, and devices that depend on the remaining diesel generator as a source of emergency power are operable before removing an EDG from service.

Adding additional provisions to TS 3.9.B.3 provides further positive measures to prevent entry into the 14 day AOT if other TS required redundant systems, subsystems, trains, components, or devices that rely on the operable diesel generator for their source of emergency power, are not in service.

Station Procedure 8.C.34 "Operations Technical Specification Requirements for Inoperable Systems/Components" provides instructions for surveillance requirements due to system/component inoperability in accordance with Pilgrim's TS. Each attachment within the procedure applies to a system/component which is inoperable for whatever reason. Within each attachment, instructions are included for surveillance requirements due to system/component inoperability satisfying Pilgrim's TS.

Also, Procedure 1.2.2 "Administrative Operations Requirements" establishes administrative requirements and policies for activities which are not addressed by TS requirements and ensures maintenance activities are planned and executed with appropriate consideration of plant safety, operational requirements, and sound judgment. The procedure establishes limits regarding permissible plant configurations during planned maintenance and abnormal plant conditions. For example, repeated entries and exits from LCOs are prohibited when voluntarily entering into LCO action statements, and component testing or maintenance that could increase the likelihood of a plant transient are avoided. Also, a 12 week schedule matrix for performing on-line maintenance has been developed with risk insights provided by the PSA. Procedure 1.2.2 will be updated to incorporate the elements of the proposed TS changes such that the status of key associated systems and trains will be reviewed for safety impact and thus ensure plant equipment outage configurations or any AOT or combination of other system AOTs do not occur while an extended EDG AOT exists.

Consideration of adverse weather conditions is already an integral part of the operations decision process used to maintain safe plant operation. Further guidance will be added to Procedure 1.2.2 to consider the potential impact of adverse weather conditions when selectively removing equipment from service.

Considerations for EDG Unavailability

As shown in attached Part III, the PSA analysis assumed each EDG would be unavailable for the full duration of 14 days in addition to its historical yearly unavailability from the original IPE (1.14E-02). Assuming a capacity factor of 90%, the unavailability assumed for each EDG equates to :

(14 days)*(24 hours)+(1.14E-02)*(8760 hours*.9)*(351/365) = 422 hours

This corresponds to an assumed unavailability of :

422 hours / (.9*8760 hours) = 5.35E-02

The Maintenance Rule has been implemented for the EDGs. Presently, the performance goal and baseline unavailability for an EDG is 0.8% (approximately 63 hours) and 1.14% (approximately 90 hours), respectively. Considerable margin exists between this goal and that assumed, 422 hours, in the PSA supporting the 14 day AOT.

As indicated above, the current performance goal for the EDGs (0.8%) is below the baseline unavailability (1.14%) assumed in the original IPE. Implementation of a 14 day EDG AOT will necessitate an adjustment to the performance goal. It will increase, but remain below the assumed unavailability (5.35%) in the supporting PSA. Thus the overall unavailability of the EDG will not exceed the value used in the PSA supporting the proposed AOT.

Part III: Probabilistic Safety Assessment Considerations

Summary Of Results

A Probabilistic Safety Assessment (PSA) has been performed which demonstrates that implementation of the following proposed changes results in no significant change in risk. The proposed changes extend the Allowed Outage Times (AOT) for the Emergency Diesel Generators (EDG) (from 3 to 14 days), and reduce the AOT for the Startup Transformer (SUT) (from 7 to 3 days).

Introduction

The PSA was utilized to assess the risk significance of the proposed Technical Specifications changes to extend the operating AOTs for the EDGs and decrease the operating AOT for the Startup Transformer. The Startup Transformer AOT decrease was considered appropriate to explore in the PSA due to the relative risk importance of its supported balance of plant systems. These changes were reviewed using temporary and permanent risk change criteria to address both instantaneous and cumulative impacts. The PSA Applications Guide, EPRI TR-105396, August 1995, provides guidance to determine the risk significance of permanent and temporary risk increase situations. It classifies non-risk-significant changes as those where the permanent risk increase is less than 10% of baseline CDF and the temporary risk increase is less than 1.0E-06. If these values are exceeded, further evaluation is required to determine the risk significance of any change.

Methodology

The scope of this risk application is limited to the at-power-internal events PSA model because the proposed changes have no anticipated influence on external events or shutdown operations. It provides a clear interface with the systems of interest by explicitly modeling the maintenance unavailability of each system. An Individual Plant Examination (IPE) for Internal Events was submitted to the NRC in response to Generic Letter 88-20 in September 1992. The IPE model has been revised since the 1992 submittal to more accurately represent the current configuration and performance of the plant.

The PSA model was used to evaluate two figures of merit; Core Damage Frequency (CDF) and Large Early Release Frequency (LERF). CDF, the traditional figure of merit, is the frequency of uncovery and heatup of the reactor core to the point of prolonged clad oxidation and anticipated severe fuel damage. LERF is the frequency of a large rapid unscrubbed release from containment before the effective implementation of protective actions. The combination of these figures of merit provide assurance that both early and long term health effects are considered.

CDF is easily calculated and represents a direct measure of the likelihood of the occurrence of a severe accident. The current mean CDF is 2.84E-05/year.

LERF is a measure of the containment's ability to mitigate large early unscrubbed radiological releases. LERF, as measured at PNPS, is categorized as an early release consisting mostly of drywell liner melt through and an insignificant contribution of containment bypass. The conditional probability of early release given core damage is 0.13, or 3.69E-06/year. Accident

sequences contributing to LERF are relatively fast sequences such as ATWS (20%) and loss of high pressure injection with either failure of depressurization (TQUX type sequences-57%) or failure of low pressure injection (TQUV type sequences-23%).

None of the proposed changes have a measurable effect on the fast accident sequences. The EDGs do not contribute to TQUX or ATWS sequences. While the EDGs support the low pressure systems, each EDG contributes only 1% to the TQUV type of sequences which in turn contribute approximately 23% to LERF. Therefore, the EDGs contribution to LERF is less than 0.5% and is considered negligible.

Since there is no measurable effect on LERF, LERF calculations were not necessary. Therefore, CDF is the only figure of merit calculated to support this analysis.

Approach

The corrective maintenance unavailability associated with each of the systems affected by the proposed changes are based on PNPS historical data where available.

All possible combinations of equipment unavailabilities allowed by the proposed changes were assessed. For each possible combination, the entire PSA model was requantified at a truncation level of 1.0E-09 with the specified equipment failed and all other equipment available, e.g., when EDG "A" is unavailable for maintenance, EDG "B" is subject to demand and start failures but will not be unavailable due to maintenance.

The data used for the analysis was identical to that of the 1992 IPE submittal except for the updated partial and full loss of offsite power initiating event frequencies of 0.643/year and 0.035/year (updated through September 1995), respectively and updated HPCI and RCIC data (through December 1993). The performance of all key equipment has been monitored by the Maintenance Rule. As there has been no significant degradation in performance of the systems (EDGs, AC Power, RBCCW, SSW, and RHR) involved in the analysis, no other data update is necessary to support the risk assessment.

Results

Emergency Diesel Generator (EDG):

The extension of the EDG AOT is intended to increase the repair and preventive maintenance time and to reduce potential plant shutdown transients when the EDG repair or maintenance work cannot be completed within the existing 72 hour LCO. Also, the 14 days will allow for the performance of on-line EDG maintenance.

It was conservatively assumed that in addition to the EDGs historical level of unavailability, each EDG would be unavailable for its full fourteen day AOT, once per year, with the remaining EDG and both offsite power supplies assumed available (i.e., zero maintenance outage time) but still randomly able to fail during the 14 day AOT. The temporary risk increase of one EDG out of service for the full duration of the proposed AOT is calculated as follows:

Baseline CDF	= 2.84E-05 /year
Baseline CDP integrated over 14 days	= 2.84E-5*14/365=1.09E-06
CDF with one EDG (A or B) unavailable	= 3.27E-05 /year
CDP with one EDG unavailable integrated over 14 days	= 3.27E-05/year•14/365= 1.25E-06

This represents a temporary increase of 1.65E-07 over the baseline CDP for the same 14 day AOT period. This is less than the 1.0E-06 EPRI PSA applications criteria and is considered non-risk-significant.

The permanent CDF/year is the sum of the configuration specific CDP integrated over the prescribed time period and the baseline CDF integrated over the remainder of the year, calculated as follows:

CDP with one EDG unavailable 14 days = 1.25E-06

Permanent CDF = 2•1.25E-06+(2.84E-05•337/365)= 2.87E-05 /year

The percentage increase for this scenario is approximately 1.0% over the baseline CDF, if it is conservatively assumed that each EDG's LCO is additionally entered once per year for the full 14 days in addition to its historical level of unavailability. A 1.0% change is considered negligible and well within the statistical fluctuations expected in annual CDF.

Start-Up Transformer (SUT):

The proposed reduction of the AOT for the SUT from 7 days to 3 days is due to the relative risk importance of its supported balance of plant systems. Having the SUT unavailable for the full duration of the existing AOT of 7 days represents an integrated risk as calculated below:

Baseline CDF	= 2.84E-05 /year
Baseline CDP integrated over 7 days	= 2.84E-05*7/365=5.45E-07
CDF with SUT unavailable	= 7.92E-05 /year
CDP with SUT unavailable integrated over 7 days	= 7.92E-05/year•7/365 = 1.52E-06

This represents a temporary increase in risk of 9.75E-07 over the baseline CDP for the same time period. This increase is just below the 1.0E-06 non-significant risk threshold discussed previously. However, the combination of having the SUT unavailable during other LCOs can result in risk significant configurations. For example, having a loop of Containment Cooling, HPCI and the SUT unavailable simultaneously for seven days would result in a CDP calculated as follows:

CDF with SUT, HPCI, and one loop of Containment Cooling unavailable
= 1.04E-03 /year

CDP with SUT, HPCI, 1 loop Containment Cooling unavailable integrated over 7 days
=1.04E-03/year•7/365 = 1.99E-05

This represents a temporary risk increase of 1.94E-05 over the baseline CDP. While this scenario is very unlikely, it would be possible if the proposed change and planned changes to increase the Containment Cooling LCO from 3 to 7 days are implemented. This temporary risk increase is considerably greater than 1.0E-06 and would be classified as potentially risk significant. Consequently, it was decided to reduce the AOT to assure that all possible configurations would be of low risk significance. A three day AOT for this particular configuration is calculated as follows

Baseline CDP integrated over 3 days =2.84E-05*3/365 =2.33E-07

CDP with SUT, HPCI, 1 loop Containment Cooling unavailable integrated over 3 days
= 1.04E-03/year•3/365 = 8.55E-06

This represents an increase of 8.31E-06 over the baseline CDP. This increase is greater than 1.0E-06 and could suggest that even 3 days might be too long for this configuration. However, the risk of remaining on line for the full 3 days would compare favorably with the risk of shutting down sooner with the SUT unavailable because of the resulting loss of offsite power transient which would accompany the shutdown.

The proposed SUT AOT of 3 days is justified for several reasons. In all cases, it represents a measurable decrease in risk, especially in a worst case scenario such as described above

where the reduction from 7 to 3 days represents a measurable risk decrease of 1.11E-05. The case described has a very low probability of occurring as the plant operators would not disable HPCI when there is an increased chance of losing offsite power. The 3 days affords enough time to attempt to return the SUT to service if possible, without causing undesirable plant transients caused by shutting down without the SUT. Such a shutdown would result in a loss of offsite power transient which would needlessly challenge the plant.

SUT And Either EDG Unavailable

The AOT for having an EDG unavailable simultaneously with the SUT is reduced from 72 to 48 hours. As described above, the AOT for just the SUT being unavailable was reduced from 7 days to 72 hours. It follows that the AOT for having an EDG unavailable in addition to the SUT should be of less time duration. This effectively leaves the corresponding emergency bus dependent on the Shutdown transformer only.

Having the SUT and either EDG unavailable for the full 48 hour duration of the proposed AOT represents an integrated risk as calculated below:

Baseline CDF	=2.84E-05/year
Baseline CDP integrated over 48 hours =2.84E-05/year *2/365	=1.56E-07
CDF with SUT & an EDG unavailable	=1.16E-04/year
CDP with SUT & an EDG unavailable integrated over 2 days =1.16E-04/year*2/365	=6.36E-07

This represents a temporary increase of 4.80E-07 over the baseline CDF for the same time period. This is well below the 1.0E-06 non-risk significant risk threshold discussed previously and is therefore considered acceptable.

SDT And Either EDG Unavailable

The AOT for having an EDG unavailable simultaneously with the Shutdown transformer remains unchanged at 72 hours. The AOT for just the SDT being unavailable also remains unchanged at 7 days. It follows that the AOT for having an EDG unavailable in addition to the SDT should be of less time duration. This effectively leaves the corresponding emergency bus dependent on the SUT only.

Having the SDT and either EDG unavailable for the full 72 hour duration of the existing AOT represents an integrated risk as calculated below:

Baseline CDF	=2.84E-05/year
Baseline CDP integrated over 72 hours =2.84E-05/year *3/365	=2.33E-07
CDF with SDT & an EDG unavailable	=3.65E-05/year
CDP with SDT & an EDG unavailable integrated over 3 days =3.65E-05/year*3/365	=3.00E-07

This represents a temporary increase of 6.66E-08 over the baseline CDP for the same time period. This is well below the 1.0E-06 non-risk significant risk threshold discussed previously and is therefore considered acceptable.

Attachment B

Amended Technical Specification Pages