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 STN-50-529 Palo Verde Nuclear Station, Unit 2, Arizona Publi 05000529
 STN-50-530 Palo Verde Nuclear Station, Unit 3, Arizona Publi 05000530

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SUBJECT: Application for amends to licenses NPF-41,NPF-51 & NPF-74,
 revising TS Section 3/4.8.1, "Electrical Power Sys,AC
 Sources" to implement recommended changes from NUREG-1432,GL
 94-01 & GL 93-05 to increase EDG reliability.

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EXECUTIVE VICE PRESIDENT
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102-03293-WLS/AKK/KR
March 24, 1995

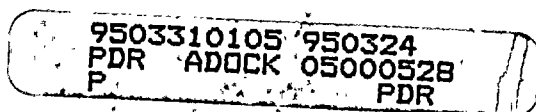
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- References:
1. NUREG 1432, "Standard Technical Specifications Combustion Engineering Plants," dated September 28, 1992
 2. NRC Generic Letter 94-01, "Removal of Accelerated Testing and Special Reporting Requirements for Emergency Diesel Generators," dated May 31, 1994
 3. NRC Generic Letter 93-05, "Line-Item Technical Specification Improvements to Reduce Surveillance Requirements for Testing During Power Operation," dated September 27, 1993
 4. NRC Regulatory Guide 1.160, "Monitoring the Effectiveness of Maintenance at Nuclear Power Plants," Revision 1, dated January 1995.
 5. NUMARC 93-01, "Industry Guidelines for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants," dated May 1993

Dear Sirs:

Subject: Palo Verde Nuclear Generating Station (PVNGS)
Units 1, 2, and 3
Docket Nos. STN 50-528/529/530
Proposed Amendment to Technical Specification Section 3/4.8.1

Pursuant to 10 CFR 50.90, Arizona Public Service Company (APS) submits herewith a proposed amendment to Technical Specification (TS) Section 3/4.8.1, Electrical Power Systems, A.C. Sources, and the associated TS BASES for Palo Verde Units 1, 2, and 3. The proposed amendment would implement recommended changes from NUREG 1432 (Reference 1), Generic Letter (GL) 94-01 (Reference 2), and GL 93-05 (Reference 3); and are intended to increase EDG reliability by reducing the stresses on the EDGs caused by unnecessary testing.



ADDI

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As specified in GL 94-01, APS commits to implement, within 90 days of the issuance of the license amendment, a maintenance program for monitoring and maintaining emergency diesel generator (EDG) performance consistent with the provisions of 10 CFR 50.65, "Requirements for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants," and the guidance contained in Regulatory Guide (RG) 1.160 (Reference 4). APS understands that a commitment to implement the maintenance rule consistent with the guidance of RG 1.160 as applicable for EDGs is a commitment to implement the NRC endorsed NUMARC 93-01 (Reference 5). Proposed alternatives to implementing the guidance of RG 1.160 and the endorsed NUMARC 93-01 guidelines, to demonstrate compliance with the maintenance rule for EDGs, are specified in Enclosure 2.

Provided in Enclosure 1 to this request are the following:

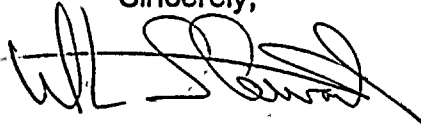
- A. Description of the Technical Specification Amendment Request
- B. Purpose of the Technical Specifications
- C. Need for the Technical Specification Amendment
- D. Safety Analysis for the Technical Specification Amendment Request.
- E. No Significant Hazards Consideration Determination
- F. Environmental Consideration
- G. Marked-up Technical Specification Pages
- H. Marked-up CE Standard Technical Specification Pages
- I. Proposed Technical Specification Section 3/4.8.1 and BASES for 3/4.8

In accordance with Technical Specification Section 6.5, the Plant Review Board and the Offsite Safety Review Committee have reviewed and concur with this request. Pursuant to 10 CFR 50.91(b)(1), a copy of this request is being forwarded to the Arizona Radiation Regulatory Agency.

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Should you have any questions on the proposed amendment, please contact Scott A. Bauer at (602) 393-5978.

Sincerely,

A handwritten signature in black ink, appearing to read "Scott A. Bauer", written over a horizontal line.

WLS/AKK/KR/pv

Enclosures

cc: K. E. Perkins
L. J. Callan
K. E. Johnston
B. E. Holian
A. V. Godwin (ARRA)

STATE OF ARIZONA)
) ss.
COUNTY OF MARICOPA)

I, W. L. Stewart, represent that I am Executive Vice President - Nuclear, Arizona Public Service Company (APS), that the foregoing document has been signed by me on behalf of APS with full authority to do so, that I am familiar with the content of such document and its enclosure and that to the best of my knowledge and belief, the statements made therein are true and correct.



W. L. Stewart

Sworn To Before Me This 24 Day Of March, 1995.



Notary Public

My Commission Expires

My Commission Expires June 12, 1997



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ENCLOSURE 1

PROPOSED AMENDMENT TO

TECHNICAL SPECIFICATION SECTION 3/4.8.1

Additional

References: RG 1.9, "Selection, Design, Qualification and Testing of Emergency Diesel Generator Units Used as Class 1E Onsite Electric Power Systems at Nuclear Power Plants," dated July 1993.

NRC Generic Letter 84-15, "Proposed Staff Actions to Improve and Maintain Diesel Generator Reliability," dated July 2, 1984.

RG 1.108, "Periodic Testing of Diesel Generator Units Used as Onsite Electric Power Systems at Nuclear Power Plants," dated August 1977.

NRC Generic Letter 91-18, "Information to Licensees Regarding Two NRC Inspection Manual Sections on Resolution of Degraded and Nonconforming Conditions and on Operability," dated November 7, 1991.

NUREG 1366, "Improvements to Technical Specifications Surveillance Requirements," dated December 1992.

CEN 355, "Restructured Standard Technical Specification," Volume 5, Discussion of Changes, dated May 1989.

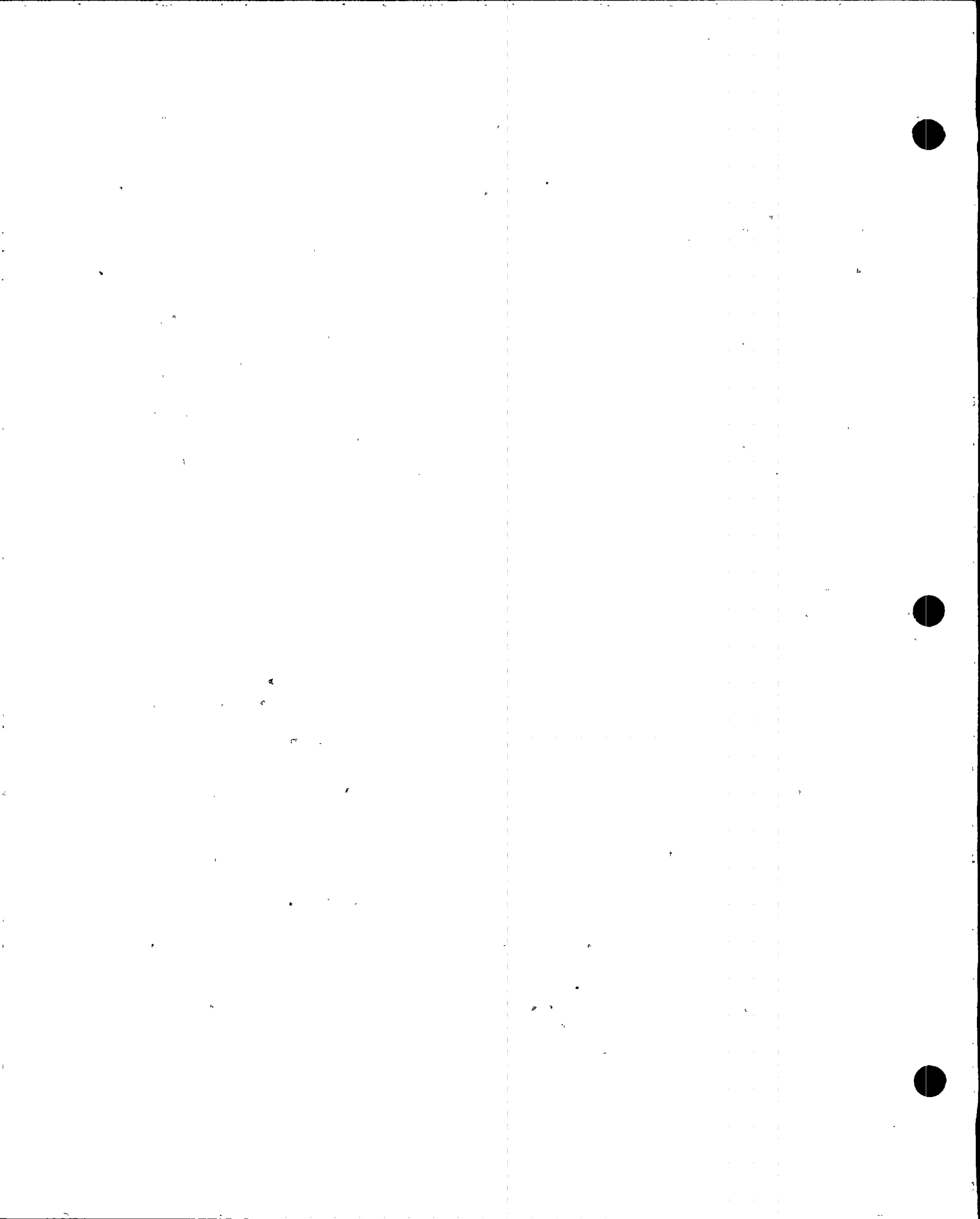
NUMARC 87-00, "Guidelines and Technical Bases for NUMARC Initiatives Addressing Station Blackout at LWRs," Revision 1, dated August 1991.

A. DESCRIPTION OF THE TECHNICAL SPECIFICATION AMENDMENT REQUEST

It is requested that TS 3/4.8.1, A.C. Sources, and the associated TS Bases be revised for Palo Verde Units 1, 2, and 3. The proposed changes are intended to increase EDG reliability by reducing the stresses on the EDGs caused by unnecessary testing. Additional changes have also been proposed to TS 3/4.8.1 to further enhance EDG reliability, to be consistent with NUREG 1432, CE STS, and to make administrative changes to improve the TS presentation.

APS considered adopting NUREG 1432, CE STS as the most efficient method to reduce the TS change burden. However, simply adopting STS did not encompass all the licensing concerns. Since September 1992, several other regulatory documents (GL 93-05, GL 94-01, RG 1.9, and RG 1.160) have been issued or updated which APS has considered and incorporated into this TS change submittal. The majority of the proposed changes are based on the guidance and recommendations from NUREG 1432, GL 94-01, and GL 93-05. Listed below is a brief description of the proposed amendment. An indepth description and justification is provided in detail in G. MARKED-UP TECHNICAL SPECIFICATION PAGES.

1. The proposed TS changes are consistent with the guidance provided in GL 94-01 to delete special reporting requirements for EDG failures, valid or nonvalid, and to delete accelerated testing requirements. The affected TS sections are SR 4.8.1.1.2.a, SR 4.8.1.1.3, and Table 4.8-1. As a condition of GL 94-01, APS commits to implement, within 90 days of the issuance of the license amendment, a maintenance program for monitoring and maintaining EDG performance consistent with the provisions of 10 CFR 50.65, "Requirements for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants," and the guidance contained in RG 1.160. APS understands that a commitment to implement the maintenance rule consistent with the guidance of RG 1.160 as applicable for EDGs is a commitment to implement the endorsed NUMARC 93-01. Proposed alternatives to implementing the guidance of RG 1.160 and the endorsed NUMARC 93-01 guidelines, to demonstrate compliance with the maintenance rule for EDGs, are specified in Enclosure 2.
2. The proposed TS changes are compatible with plant operating experience and are consistent with recommendations and guidance provided in GL 93-05 Section 10.1, EDG SRs. The proposed changes based on GL 93-05 are as follows:
 - a. Delete the requirement for testing of the EDG with offsite circuit(s) inoperable in TS LCO 3.8.1.1.a and 3.8.1.1.d.
 - b. EDGs will be loaded in accordance with the manufacturer's recommendations for test purposes (SR 4.8.1.1.2.a.3 and 4.8.1.1.2.c) other than the refueling outage loss of offsite power tests.



- c. Separated the hot-start test from the 24 hour EDG test run in SR 4.8.1.1.2.d.8. The only requirement will be that the hot-start test is performed within 5 minutes of operating the EDG at its continuous rating for 2 hours or until operating temperatures have stabilized.
3. The following proposed TS changes are consistent with NUREG 1432, "Standard Technical Specifications Combustion Engineering Plants," dated September 28, 1992, Section 3.8, AC Sources:
- ▶ Reformatted the TS presentation consistent with NUREG 1432, with the exclusion of the tabular format. The formatting changes include the separation and numbering of each ACTION statement or surveillance requirement, and the placement and wording of the footnotes. Unless specified, the intent of the statement or requirement was not modified.
 - ▶ The applicable Bases sections have been expanded to provide additional background information and guidance.

TS 3.8.1.1 LCO and ACTION statements:

- ▶ Relocated the requirement for the day fuel tank and the fuel storage system, as well as the fuel transfer pump, from LCO 3.8.1.1.b. SRs have been provided that satisfy the requirements necessary to demonstrate EDG OPERABILITY.
- ▶ TS section 3/4.8.1.3 has been renamed from CATHODIC PROTECTION to DIESEL FUEL OIL STORAGE SYSTEM to address fuel storage system, volume requirements, and diesel fuel oil properties (sampling requirements), as well as cathodic protection.
- ▶ Revised the ACTION statements (LCO 3.8.1.1 ACTION a, b, c, d, and e) and associated Bases for TS 3/4.8.1 to eliminate unnecessary testing (old TS SR 4.8.1.1.2.a.4) of the OPERABLE EDG when an offsite circuit or an EDG becomes inoperable. The revision to TS LCO 3.8.1.1 ACTION b eliminates testing of the remaining OPERABLE EDG when an EDG is declared inoperable, unless there is cause to believe any potential common mode failure exists for the remaining OPERABLE EDG.

It is acceptable to base EDG OPERABILITY on satisfactory completion of the 31 day SR (new TS SR 4.8.1.1.2.a.2). The 31 day SR assures that the EDGs are OPERABLE and are capable of performing their intended safety functions. The 31 day SR is sufficient to demonstrate EDG reliability. Therefore, the testing of the OPERABLE EDG is excessive unless there is cause to believe any potential common mode failure exists.

- ▶ Deleted the requirement to load the EDG in the ACTION statement to demonstrate OPERABILITY of the remaining OPERABLE EDG (LCO 3.8.1.1 ACTION b).

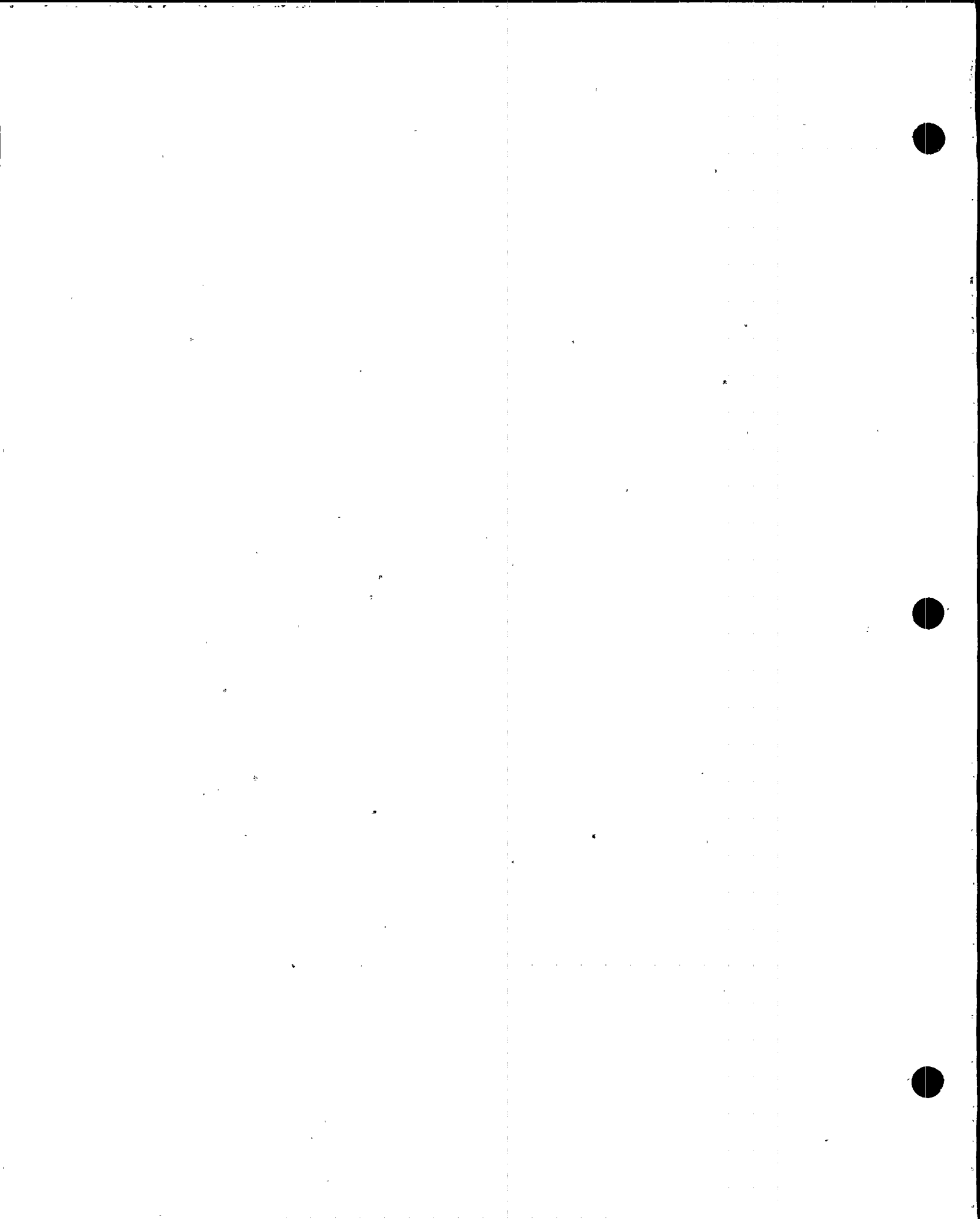
In the event that it has not been determined that the remaining OPERABLE EDG is not inoperable due to a common mode failure within 24 hours, only the performance of new SR 4.8.1.1.2.a.2 (EDG start) is necessary to demonstrate OPERABILITY of the remaining OPERABLE EDG. It is acceptable to base the EDG's capability to load on satisfactory completion of the 31 day SR. The 31 day SR assures that EDGs are OPERABLE and are capable of performing their intended safety functions. The 31 day SR is sufficient to demonstrate EDG reliability. Therefore, the loading requirement in the current TS LCO 3.8.1.1 ACTION b is excessive. In addition, it is not desirable to subject the OPERABLE EDG to grid perturbations that may occur during the loading test.

- ▶ Added a time allowance (24, 12, or 4 hours) from the discovery of one or two offsite circuits inoperable or one EDG inoperable concurrent with the inoperability of the redundant required feature(s) to evaluate and repair any discovered inoperabilities prior to entering other TS LCO ACTION statements (LCO 3.8.1.1 ACTION a, b, and d).

This ACTION is intended to provide assurance that a loss of offsite power event coincident with a single failure of the associated EDG does not result in a complete loss of safety function of critical redundant required features. Redundant required feature failures consist of inoperable features associated with a train, redundant to the train that has an inoperable offsite circuit or EDG. These features require Class 1E power from PBA-S03 or PBB-S04 ESF buses to be OPERABLE.

- ▶ Added a 6 day completion time (6 days from the discovery of the failure to meet the LCO) for restoring the offsite circuit or the EDG to OPERABLE status to establish a limit on the maximum time allowed for any combination of required AC power sources to be inoperable during any single contiguous occurrence of failing to meet the LCO (LCO 3.8.1.1 ACTION a and b).

The 6 day completion time provides a limit on the time allowed in a specified condition after discovery of failure to meet the LCO. This limit is reasonable for situations in which both the offsite circuit and the EDG are inoperable concurrently. The AND connector between the 72 hour and 6 day completion times means that both completion times apply simultaneously, and the more restrictive completion time must be met.



TS 4.8.1.1 Surveillance Requirements:

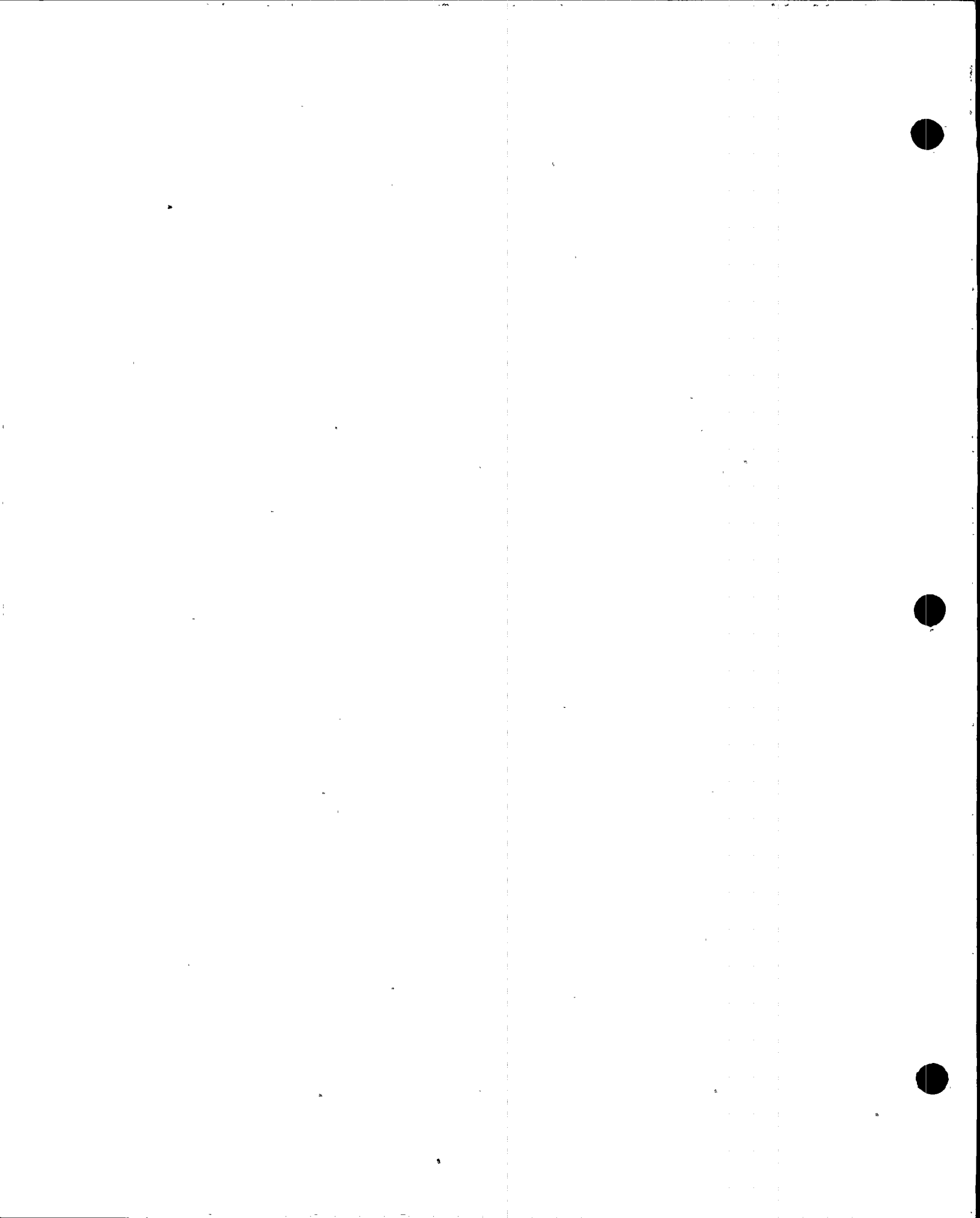
- ▶ Deleted the 31 day SR requirement for an EDG start using one of the following signals on a STAGGERED TEST BASIS: manual, simulated loss of power (LOP), simulated LOP and ESFAS test signal, or ESFAS test signal (SR 4.8.1.1.2.a).

Per CEN 355, "Restructured STS," studies have shown that staggered testing (such as alternating the method of EDG starts) has little impact on component and system reliability. Additionally, such testing schedules increase operational problems and increase the likelihood of human error. The details pertaining to the EDG starting methods are covered by plant procedures. As defined in TS 1.33 and CE STS 1.1 Definitions, STAGGERED TEST BASIS consists of testing of one EDG at a time, not specifying alternate methods of performing EDG starts.

- ▶ Deleted the 31 day SR requirement for the EDG to start and accelerate in ≤ 10 seconds (old SR 4.8.1.1.2.a.4).

This change would allow a reduction in the number of fast starts (≤ 10 seconds) currently required by SR 4.8.1.1.2; allow the EDGs to be tested using "slow starts" during the monthly surveillance; and would require conducting fast starts during the 184 day surveillance (new SR 4.8.1.1.2.c). Slow starts decrease the stress and wear on the EDG and therefore, would avoid premature wear of the engine and lead to greater EDG reliability and availability. This change is consistent with the GL 84-15 guidance which contains recommendations for changes to the TS to reduce the number of fast starts, thereby improving reliability. Performing the fast start test every 184 days will adequately demonstrate the EDGs' level of reliability and availability. These SRs (31 and 184 day EDG start) provide adequate assurance of EDG OPERABILITY, while minimizing degradation resulting from testing. This change is also consistent with the guidance provided in RG 1.9 which states that for monthly SRs, the EDG can be brought to rated speed and voltage in a time that is recommended by the manufacturer to minimize stress and wear (slow started).

- ▶ Deleted the 184 day SR requirement to load in less than or equal to 60 seconds (SR 4.8.1.1.2.c). This change is consistent with guidance provided in GL 93-05 Section 10.1 EDG SRs (i.e., EDGs should be loaded in accordance with the manufacturer's recommendations for all test purposes other than the refueling outage loss of offsite power tests).
- ▶ Modified the SR frequency for verifying the fuel oil transfer system operates to transfer fuel oil from the storage tank to the day tank from 31 days to a frequency corresponding to the inservice testing requirements for pumps as contained in TS 4.0.5 (new SR 4.8.1.1.2.b).



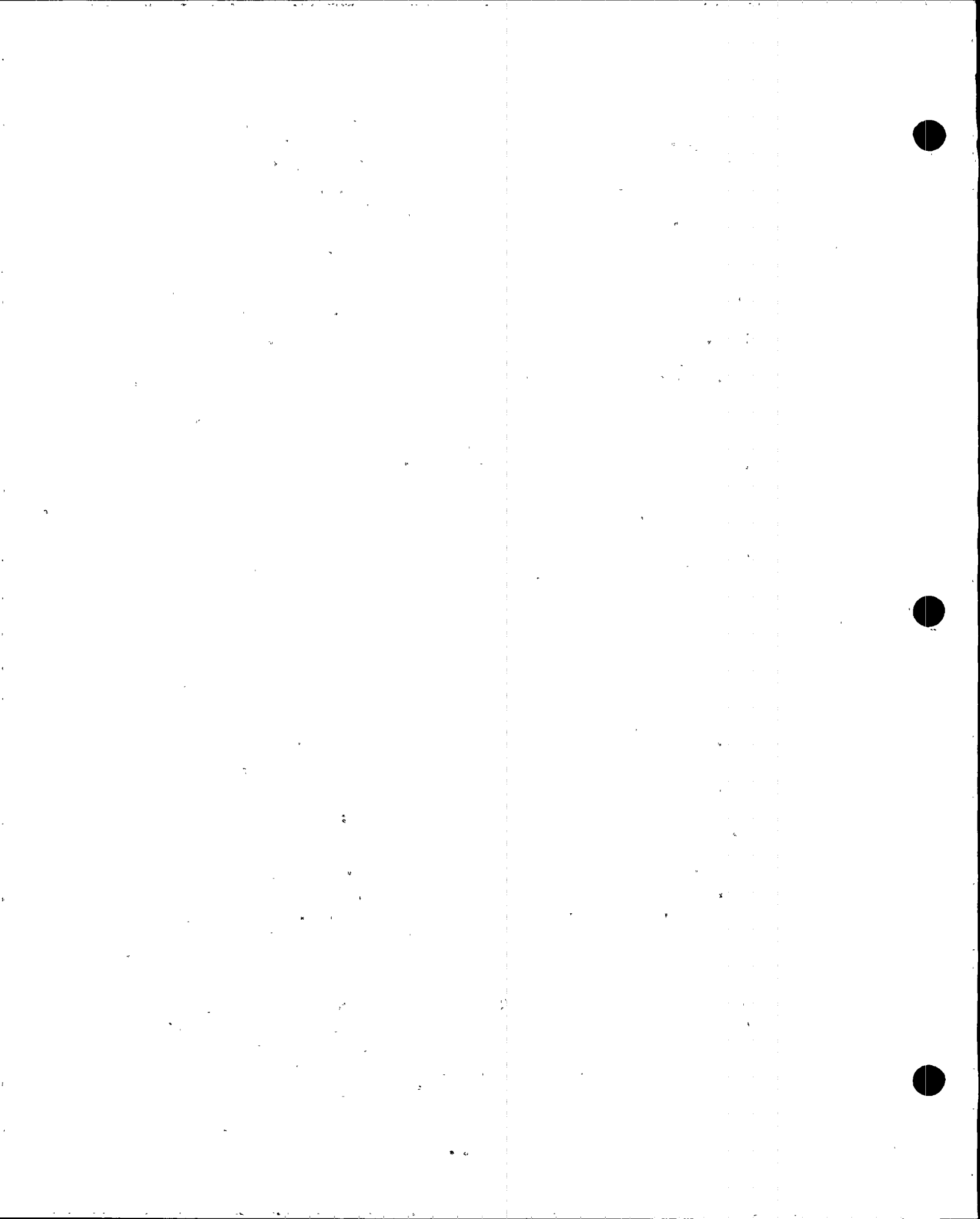
The frequency corresponding to the inservice testing requirements for pumps as contained in the ASME Code, Section XI is currently 92 days. The TS 4.0.5 frequency is appropriate since problems with the fuel oil transfer system would be readily detected if the pumps did not operate automatically in order to maintain an adequate volume of fuel oil in the day tank during the 31 day TS SR 4.8.1.1.2.a.3 (EDG runs greater than 1 hour). Risk-based inservice testing performance-based initiatives and analysis may dictate a frequency other than 92 days which will be made mandatory under TS 4.0.5.

- For the 18 month SRs and 10 year SR (SR 4.8.1.1.1.b, 4.8.1.1.2.d, and 4.8.1.1.2.e), replaced "during shutdown" with a footnote that specifies MODE restraints for these surveillances.

Specific MODE restraints have been footnoted where applicable for each 18 month SR. The reason for "This Surveillance shall not be performed in MODE 1 or 2" is that during operation with the reactor critical, performance of this SR could cause perturbations to the electrical distribution system (EDS) that could challenge continued steady state operation and, as a result, unit safety systems; or that performing the SR would remove a required EDG from service. The reason for "This Surveillance shall not be performed in MODE 1, 2, 3, or 4" is that performing this SR would remove a required offsite circuit from service, perturb the EDS, and challenge safety systems.

- Credit unplanned events to satisfy SR 4.8.1.1.1.b (transfer the onsite Class 1E power supply from the normal offsite circuit to the alternate offsite circuit) and SR 4.8.1.1.2.e (10 year simultaneous EDG start).
- Deleted the 18 month SR requirement (old SR 4.8.1.1.2.d.1) for subjecting the EDG to inspection procedures prepared in conjunction with manufacturer's recommendations. The EDG will continue to be inspected in accordance with manufacturer's recommendations as part of controlled maintenance programs.

The intent remains that the inspections will continue to be performed during shutdown conditions to minimize the risk of removing an EDG from service during operating modes. The change merely permits taking credit for current maintenance activities without specifying the EDG inspection in an SR. Sufficient SRs are retained to demonstrate the functional capability of the EDGs. This change is consistent with CE STS in that the requirement to inspect the EDGs in accordance with the manufacturer's recommendations is not specifically included in NUREG 1432 CE STS. Per the guidance specified in GL 94-01 and RG 1.160, EDG reliability and availability will be monitored by the PVNGS Maintenance Rule Program, ensuring appropriate inspections and maintenance activities.



- ▶ Separated the hot restart test (SR 4.8.1.1.2.d.8) from the 24-hour EDG test run (SR 4.8.1.1.2.d.7) and increased the EDG run at its continuous rating from 1 hour or until operating temperatures have stabilized to 2 hour or until operating temperatures have stabilized. These changes are consistent with the guidance in GL 93-05, Section 10.1 EDG SRs (i.e., the only requirement should be that the hot-start test is performed within 5 minutes of operating the EDG at its continuous rating for 2 hours or until operating temperatures have stabilized).
- ▶ Provided an allowance for the 2 hour run be performed before or after the 22 hour run, or to perform the 2 hour run anytime within the 24 hour period (SR 4.8.1.1.2.d.7). This change is consistent with RG 1.9. The current SR specifies that the 2 hour run to be performed following the 22 hour run. NUREG 1432, CE STS specifies that the 2 hour run be performed prior to the 22 hour run.
- ▶ Deleted the SR (old SR 4.8.1.1.2.d.9) to verify that the auto-connected loads to each EDG do not exceed the continuous rating of 5500 kW based on an existing calculation 13-EC-MA-221.

Assurance that the EDG load is less than the continuous rating is provided by calculation 13-EC-MA-221. Specifically, the total-calculated load (which includes discretionary manual loads in addition to auto-connected load) is 4961 kW for Train A and 5035 kW for Train B. The calculation is conservative in that it assumes worst case scenarios. Existing design control measures ensure additional loads cannot be connected until the calculations are completed to evaluate any impact. This change is consistent with CE STS in that the requirement to verify that the auto-connected loads to each EDG do not exceed the continuous rating is not specifically included in NUREG 1432 CE STS. Existing SRs ensure the EDG capability to start, load, sequence, and carry the rated load. This assurance, coupled with the assurance of the calculation that the load under worst case conditions is within the continuous rating of 5500 kW, demonstrates OPERABILITY of the EDGs. As specified in RG 1.9, C.1.3, the predicted loads should not exceed the continuous rating. This requirement is a design consideration, not an EDG test that is practical to perform.

- ▶ Deleted the SR to verify that the EDG lockout features (turning gear engaged and emergency stop) prevent the EDG from starting only when required.

This requirement is related to equipment and personnel protection. Local and control room alarms indicate if the turning gear is not properly secured, or if the stop button has been depressed; the condition would be detectable during any EDG start and is procedurally controlled. This change is consistent with CE STS and GL 84-15 in that the SR is not

specifically included in these references. The reference to the manual emergency stop trip protective device is relocated to SR 4.8.1.1.2.d.6.

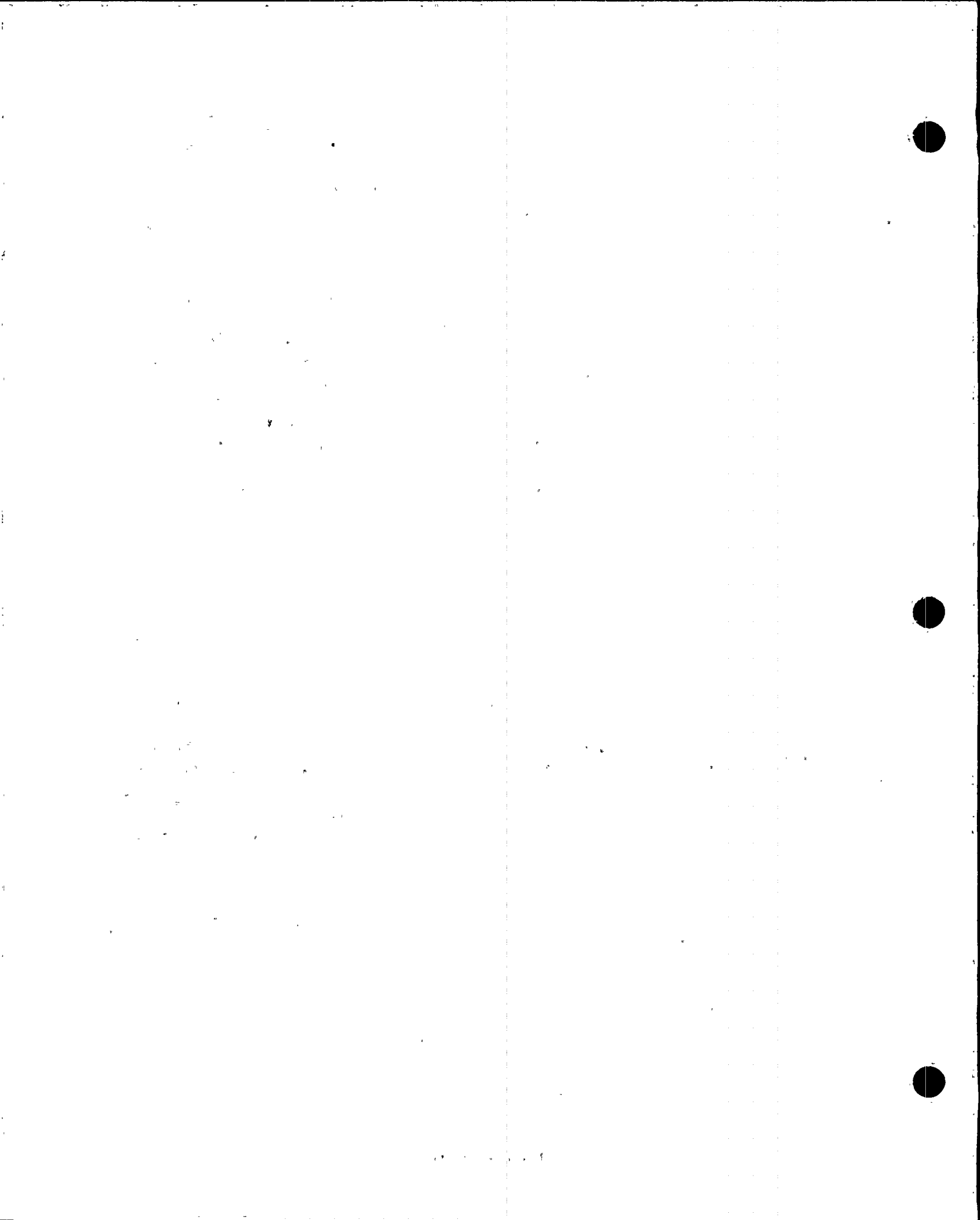
- Relocated the requirement for performing the 10 year simultaneous EDG start, "after any modifications which could affect EDG interdependence," to a footnote which will credit testing after any modifications which could affect EDG interdependence to satisfy SR 4.8.1.1.2.e.

RG 1.108 refers to the reliability demonstration of EDGs during plant preoperational testing and testing subsequent to any plant modification where EDG interdependence may have been affected or every 10 years (during a plant shutdown), whichever is the shorter. Following the performance of the preoperational test, a 10 year TS SR requiring a simultaneous start would ensure common mode failures resulting from undetected interdependence were identified. In the interim, the existing design control process would ensure modifications that may affect EDG interdependence were addressed, evaluate any impact, and ensure appropriate testing, including a simultaneous start of the EDGs.

TS 3.8.1.2 LCO, ACTION, and SR:

- Relocated the requirement for the day fuel tank and the fuel storage system, as well as the fuel transfer pump, from LCO 3.8.1.2.b. SRs have been provided that satisfy the requirements necessary to demonstrate EDG OPERABILITY.
- Replaced the ACTION statement's MODE 5 and 6 qualifiers (MODE 5 with the reactor coolant loops not filled, or in MODE 6 with the water level less than 23 feet above the reactor vessel flange), with the requirement to immediately initiate actions to restore the required power sources to OPERABLE. This change is more restrictive and applicable to all MODE 5 and 6 operations.
- Specified the three SRs that are not applicable in MODE 5 or 6, and footnoted the SRs that are not required.

SR 4.8.1.2 specifies the SRs from TS LCO 3.8.1.1 that are necessary to be performed to ensure the OPERABILITY of the AC sources in other than MODES 1, 2, 3, and 4. SR 4.8.1.1.1.b is not required to be met since only one offsite circuit is required to be OPERABLE in MODE 5 or 6. SR 4.8.1.1.2.d.10 is not required to be met because the required OPERABLE EDG is not required to undergo periods of being synchronized to the offsite circuit. SR 4.8.1.1.2.e is not required to be met because starting independence is not required since only one EDG is required to be OPERABLE in MODE 5 or 6.



The reason for the footnote (The following SRs are not required to be performed) is to preclude requiring the OPERABLE EDG from being paralleled with the offsite power network or otherwise rendered inoperable. With limited AC sources available, a single event could compromise both the required circuit and the EDG. It is the intent that these SRs must still be capable of being met, but actual performance is not required during periods when the EDG is required to be OPERABLE.

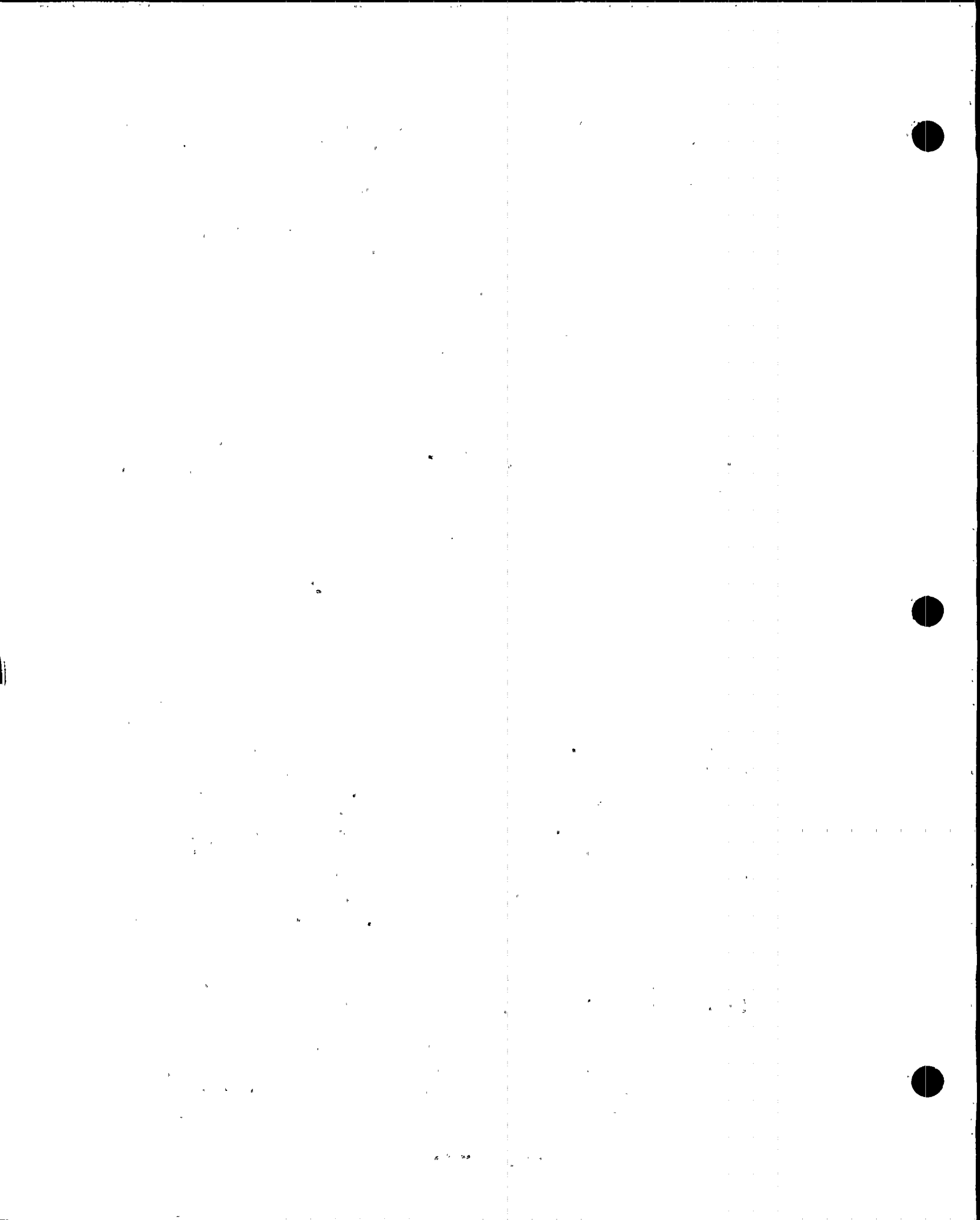
TS 3.8.1.3 LCO, ACTION, and SR:

- ▶ TS section 3/4.8.1.3 has been renamed from CATHODIC PROTECTION to DIESEL FUEL OIL STORAGE SYSTEM to address fuel storage system, volume requirements, and diesel fuel oil properties (sampling requirements), as well as cathodic protection.
- ▶ Added the qualifier "indicated" to minimum fuel level of 80 percent and relocated specified gallons value to the BASES section. Per calculation 13-MC-DG-306, the minimum number of gallons required for a 7 day fuel oil supply has been reduced by 2000 gallons from 71,500 gallons to 69,500 gallons. In addition, a 48 hour LCO completion time to restore fuel level has been added (LCO 3.8.1.3 ACTION a).

In this condition (i.e., $< 80\%$ indicated level but $\geq 71\%$ indicated level), the 7 day fuel oil supply (69,500 gallons of fuel) for an EDG is not available. However, the condition is restricted to fuel oil level reductions that maintain at least a 6 day supply (60,200 gallons of fuel). These circumstances may be caused by events such as full load operation required after an inadvertent start while at minimum required level; or feed and bleed operations, which may be necessitated by any number of oil quality degradations. This restriction allows sufficient time for obtaining the requisite replacement volume and performing the analysis required prior to addition of fuel oil to the tank. A period of 48 hours is sufficient to complete the restoration of the required level prior to declaring the EDG inoperable. This period is acceptable based on the remaining capacity (> 6 days), the fact that actions will be initiated to obtain replenishment, and the low probability of an event during this brief period. With the required ACTION and associated completion time not met, the associated EDG may be incapable of performing its intended function and must be immediately declared inoperable.

- ▶ Added a 30 day LCO completion time to restore fuel oil properties (LCO 3.8.1.3 ACTION b).

With the fuel oil properties defined in the Bases for TS SR 4.8.1.3.2 not within the required limits, a period of 30 days is allowed for restoring the stored fuel oil properties. This period provides sufficient time to restore the stored fuel oil properties. This restoration may involve feed and bleed



procedures, filtering, or combinations of these procedures. Even if an EDG start and load was required during the 30 day frequency and the fuel oil properties were outside limits, there is a high likelihood that the EDG would still be capable of performing its intended function. With the required ACTION and associated completion time not met, the associated EDG may be incapable of performing its intended function and must be immediately declared inoperable.

4. The following exceptions/clarifications to NUREG 1432, "Standard Technical Specifications Combustion Engineering Plants," dated September 28, 1992, have been included:

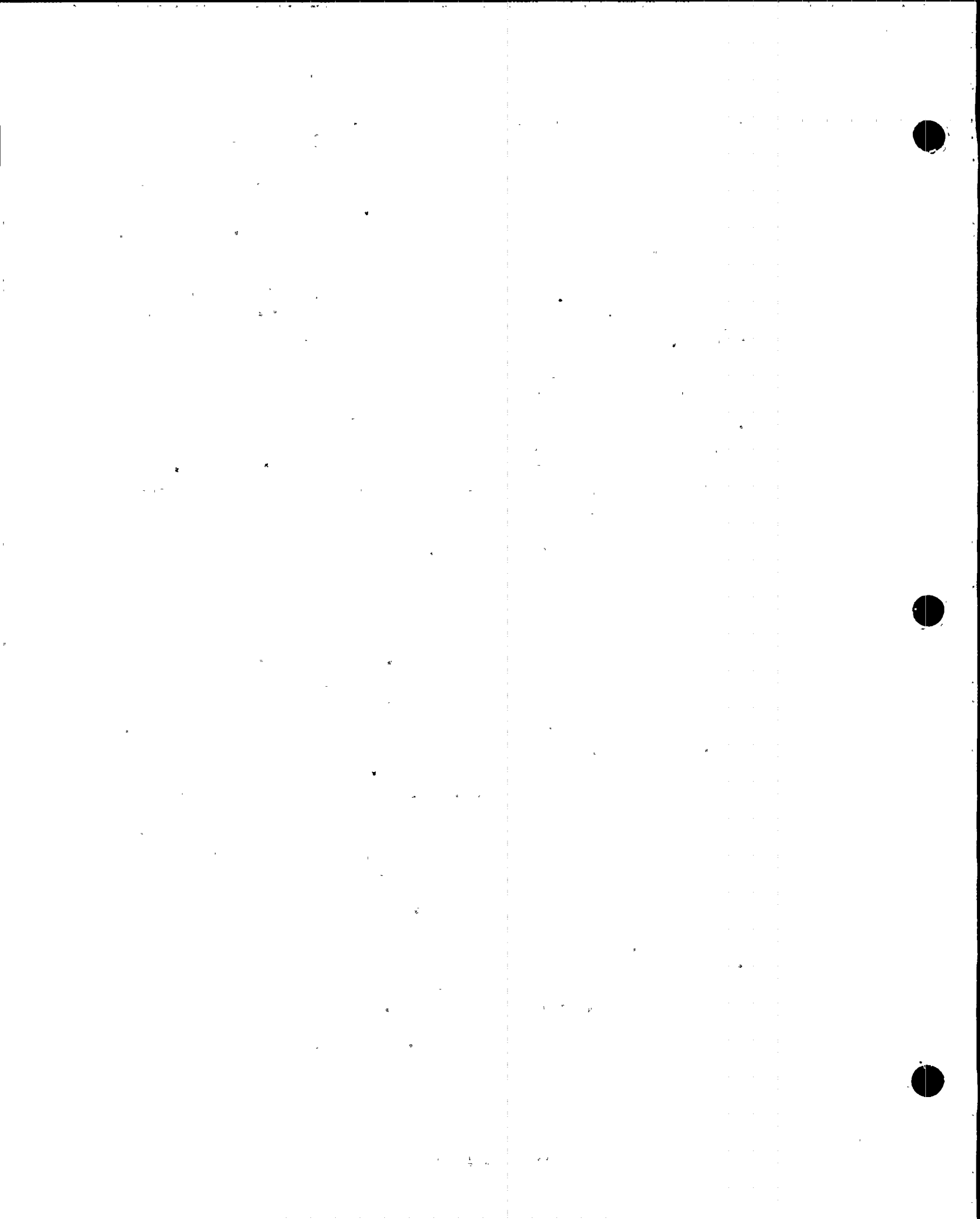
- ▶ Exception to EDG start from standby condition:

Currently CE STS provides for starting the EDG from standby condition during the 31 day EDG start (CE STS SR 3.8.1.2), the 184 day EDG start (CE STS SR 3.8.1.7), the 18 month simulated LOP (CE STS SR 3.8.1.11), the 18 month simulated ESFAS (CE STS SR 3.8.1.12), the 18 month simulated LOP and ESFAS (CE STS SR 3.8.1.19), and the 10 year simultaneous EDG start (CE STS SR 3.8.1.20). CE STS defines standby condition in the BASES to mean the EDG coolant and oil are being continuously circulated and temperature is being maintained consistent with manufacturer's recommendations.

Because it is important to EDG reliability to minimize the number of unnecessary runs, it is expected that most EDG starts will be performed from normal standby conditions. However, all EDG starts, except the 184 day EDG start (new SR 4.8.1.1.2.c), may be performed with the jacket water cooling and lube oil temperatures within the lower to upper limits of EDG OPERABILITY. The requirement to cool the EDG down to standby conditions in between EDG runs should be minimized. The time required to cool the EDG down may impact the time in the LCO, possibly exceeding the LCO and unnecessarily subjecting the unit to a shutdown, challenging safety systems. Rapid cooling (e.g., excessive ventilation) of the EDG in order to achieve standby condition could have an adverse affect on EDG reliability and should be minimized. Performing the EDG start test from standby condition every 184 days will adequately demonstrate the EDGs' present level of reliability and availability, and provide adequate assurance of EDG OPERABILITY, while minimizing potential degradation resulting from testing.

- ▶ Qualified when the 10 seconds time has been satisfied.

Currently CE STS specifies that the EDG shall start and achieve, in ≤ 10 seconds, specific voltage and frequency ranges during the 184 day EDG start, the 18 month simulated ESFAS EDG start with no LOP, the 18 month hot restart, and the 10 year simultaneous EDG start. CE STS does not



provide guidance at what point within the specific voltage and frequency ranges that the 10 seconds is satisfied (i.e., lower, upper, or steady state).

At Palo Verde, the timed start (≤ 10 seconds) is satisfied when the EDG achieves at least 3740 volts and 58.8 Hz. At these values, the EDG output breaker permissives are satisfied; and on detection of bus undervoltage or loss of power, the EDG breakers would close, reenergizing its respective ESF bus. Further clarification is provided stating that following the timed start, it is expected that the rated speed (i.e., frequency) and voltage will stabilize and maintain steady state voltage at 4160 ± 420 volts and frequency at $60 \pm 1.2/-0.3$ Hz.

► Exception to a timed (≤ 10 second) start:

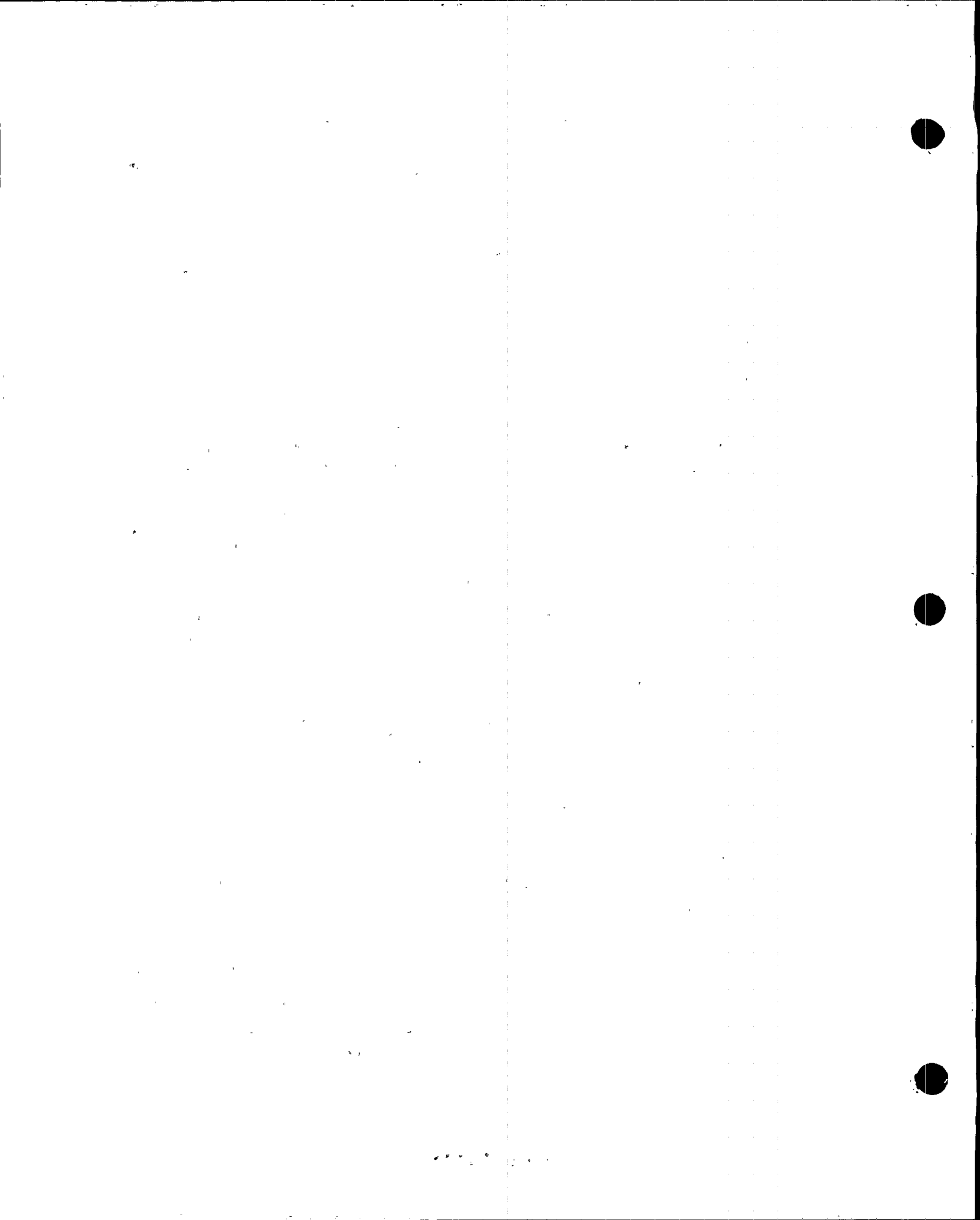
The primary purpose of SR 4.8.1.1.2.d.4 (the 18 month simulated ESFAS EDG start with no LOP) is to test the circuitry of a SIAS with offsite power available and to verify that the EDG receives a start signal. Therefore, a timed start is not required to support this SR. Not adopting an unnecessary fast start is consistent with industry and regulatory guidance for reducing the number of fast starts. Slow EDG starts decrease the stress and wear on both the diesel engine and the generator, and therefore, would avoid premature wear of the engine and lead to greater EDG reliability and availability. This change is consistent with the guidance contained in GL 84-15. GL 84-15 contains recommendations for changes to the TS to reduce the number of fast starts and improve reliability. Performing the fast start test every 184 days will adequately demonstrate the EDGs' present level of reliability and availability, and provide adequate assurance of EDG OPERABILITY, while minimizing degradation resulting from testing. This is also consistent with the guidance provided in RG 1.9 which does not include a timed start for the SIAS test.

► Exception taken to operate EDG at a specific power factor:

Currently CE STS provides for operating at or below a specified power factor during the 18 month single largest load reject test, the 18 month full-load rejection test, and the 18 month 24 hour EDG run. At Palo Verde, site specific conditions exist that preclude the use of power factor as a performance criterion during the performance of these tests:

The 18 month single largest load reject test (SR 4.8.1.1.2.d.1) can be performed using one of two test methods:

1. In emergency mode (not paralleled to the grid) in which the EDG is powering the bus. Using this test method, the power factor cannot be adjusted. The power factor is determined by the induction loading at the time of the test.



2. In test mode (paralleled to the grid). During this test method, the power factor may be adjusted by raising EDG excitation to attain the desired power factor.

At PVNGS, the test is performed in emergency mode and power factor is not a prerequisite test condition.

The 18 month full-load rejection test (SR 4.8.1.1.2.d.2) cannot be performed using the power factor as a prerequisite test condition. In order to obtain the rated power factor while paralleled to the grid, the EDG would have to be overexcited. Depending on grid conditions, this overexcitation would raise EDG output terminal voltage which could cause the downstream bus to exceed the upper voltage limit for ESF equipment, resulting in potential damage to downstream ESF loads.

The 18 month 24 hour EDG run (SR 4.8.1.1.2.d.7) cannot be performed using the power factor as a test condition. The SR is required to be performed parallel to the grid. In order to obtain the rated power factor while paralleled to the grid, the EDG would have to be overexcited. Depending on grid conditions, this overexcitation would raise EDG output terminal voltage which could cause the downstream bus to exceed the upper voltage limit for ESF equipment, resulting in potential damage to downstream ESF loads.

5. Subsequent to a comprehensive examination of TS 3/4.8.1, additional changes are being proposed to TS 3/4.8.1 to further enhance EDG reliability. Administrative changes to improve the TS presentation are described in detail in G. MARKED-UP TECHNICAL SPECIFICATION PAGES.

- ▶ The required steady state frequency range for the EDG is 60 +1.2/-0.3 Hz to be consistent with the safety analysis to provide adequate safety injection flow. In accordance with the guidance provided in RG 1.9, where steady state conditions do not exist (i.e., transients), the frequency range should be restored to within ± 2 percent of the 60 Hz nominal frequency (58.8 Hz to 61.2 Hz).
- ▶ The kilowatt band has been revised throughout the SRs of 4.8.1.1 to be consistent with the guidance provided in RG 1.9.

RG 1.9 load-run test description states to demonstrate 90 to 100 percent of the continuous rating of the EDG (4950 to 5500 kW) (SR 4.8.1.1.2.a.3).

Consistent with the guidance provided in the RG 1.9 full-load rejection test description, the 4950 - 5500 kW band will demonstrate the EDG's capability to reject a load equal to 90 to 100 percent of its continuous rating (SR 4.8.1.1.2.d.2).

Per the guidance in RG 1.9, in order to demonstrate the full-load carrying capability for an interval of not less than 24 hours, the 2 hour interval is to be performed at a load equal to 105 to 110 percent of the continuous rating of the EDG (5775 - 6050 kW), and the 22 hour interval is to be performed at a load equal to 90 to 100 percent of its continuous rating (4950 - 5500 kw). (SR 4.8.1.1.2.d.7).

Per the guidance in RG 1.9, SR 4.8.1.1.2.d.8 would demonstrate the hot restart functional capability at full-load temperature conditions, after the EDG has operated for 2 hours (or until operating temperatures have stabilized) at full load (i.e., 4950 - 5500 kW).

B. PURPOSE OF THE TECHNICAL SPECIFICATION

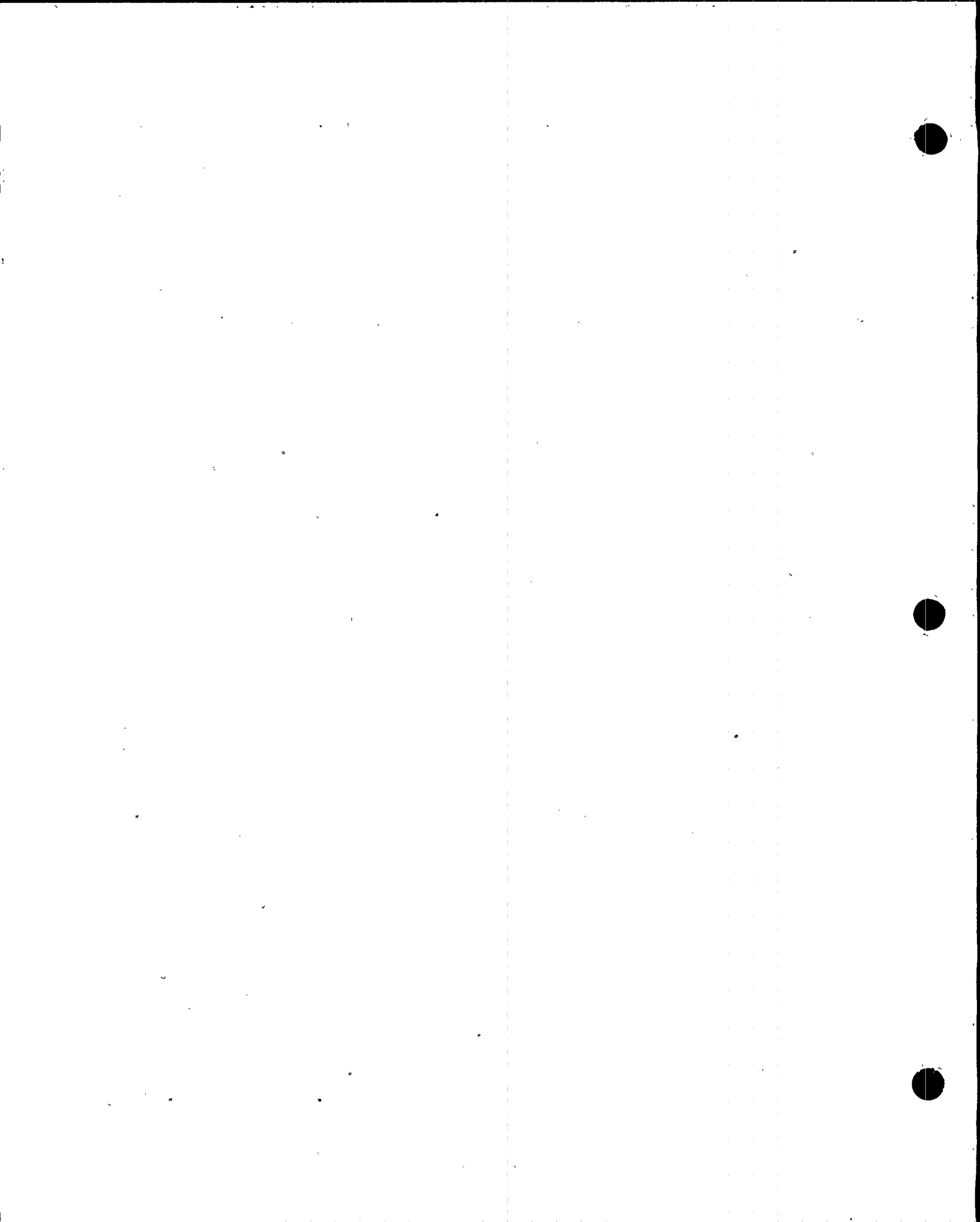
Technical Specification (TS) 3/4.8.1, A.C. Sources, and the associated surveillance requirements, ensure sufficient power will be available to supply the safety-related equipment required for (1) the safe shutdown of the facility and (2) mitigation and control of accident conditions within the facility by ensuring the operability of the AC power sources and associated distribution systems during operation; and ensure that (1) the facility can be maintained in the shutdown and refueling condition for extended periods and (2) sufficient instrumentation and control capability is available for monitoring and maintaining the unit status by ensuring the operability of the minimum specified AC power sources and associated distribution systems during shutdown and refueling.

C. NEED FOR THE TECHNICAL SPECIFICATION AMENDMENT

This proposed TS amendment will implement the recommendations of NUREG 1432, GL 94-01, and GL 93-05 as line-item TS improvements. These changes will improve EDG reliability and availability, thereby providing additional assurance that the EDGs will be capable of performing their safety function, and thereby having an overall positive affect on plant safety; decrease equipment degradation; and remove unnecessary burden on personnel resources by reducing the amount of testing that the TS requires during power operation.

D. SAFETY ANALYSIS FOR THE TECHNICAL SPECIFICATION AMENDMENT REQUEST

The proposed changes to TS 3/4.8.1 and the associated Bases are intended to improve EDG reliability and availability, thereby providing additional assurance that the EDGs will be capable of performing their safety function, and thereby having an overall positive affect on plant safety. The proposed changes, however, will not reduce the effectiveness of the surveillances for demonstrating the operability of the EDGs. These changes are intended to improve plant safety, decrease equipment degradation, and remove



unnecessary burden on personnel resources by reducing the amount of testing that the TS requires during power operation.

E. NO SIGNIFICANT HAZARDS CONSIDERATION DETERMINATION

In accordance with the requirements of 10 CFR 50.92, this license amendment request involves no significant hazards considerations based on the following:

Standard 1 - Does the proposed license amendment involve a significant increase in the probability or consequence of an accident previously evaluated?

The proposed changes to TS 3/4.8.1 and the associated Bases affect the required actions in response to inoperable offsite and onsite AC sources, surveillance requirements for the EDG, and reporting requirements for EDG failures. The majority of the proposed changes are based on the recommendations of NUREG 1432, GL 94-01, and GL 93-05. These proposed changes have been extensively reviewed by the NRC during the preparation of these documents, and by APS during the development of this request for TS amendment. The proposed changes are expected to result in improvements in EDG performance and reduce EDG aging due to excessive testing. The proposed changes will permit the elimination of the unnecessary mechanical stress and wear on the EDGs while ensuring that the EDGs will perform their design function. The elimination of mechanical stress and wear will improve reliability and availability of the EDGs which will have a positive effect on the ability of the EDGs to perform their design function. The proposed changes do not affect the availability or the testing requirements of the offsite circuits.

Because the proposed changes do not affect the design or performance of the EDGs or their ability to perform their design function, the changes are expected to result in a decrease in the probability or consequences of an accident previously evaluated. The proposed changes will increase EDG reliability, thereby increasing overall plant safety. Because these changes do not affect the probability of accident precursors (EDGs do not initiate any accidents), the proposed type license amendment does not involve a significant increase in the probability or consequence of an accident previously evaluated.

Standard 2 - Does the proposed license amendment create the possibility of a new or different kind of accident from any accident previously evaluated?

The proposed changes to TS 3/4.8.1 and the associated Bases do not introduce any new modes of plant operation or new accident precursors, involve any physical alterations to plant configurations, or make any changes to system setpoints which could initiate a new or different kind of accident. The proposed changes do not affect the design or performance characteristics of any EDG or its ability to perform its design function. No new failure modes have been defined nor new system interactions introduced for any plant system or component, nor has any new limiting failure been identified as a result of the proposed changes. The proposed changes will eliminate unnecessary EDG testing, increasing EDG reliability and availability, and thereby having an overall positive

affect on plant safety. Accidents concerning loss of offsite power and a single failure (e.g., loss of an EDG) have previously been evaluated. These changes are intended to improve plant safety, decrease equipment degradation, and remove unnecessary burden on personnel resources by reducing the amount of testing that the TS requires during power operation. Therefore, the proposed license amendment does not create the possibility of a new or different kind of accident from any previously evaluated.

Standard 3 - Does the proposed license amendment involve a significant reduction in a margin of safety?

Under the proposed changes to TS 3/4.8.1 and the associated Bases, the EDGs will remain capable of performing their safety function. The changes do not affect the design or performance of any EDG, but will increase EDG reliability and availability by reducing the stresses and the effects of aging on the EDG by eliminating unnecessary testing. This will result in an overall increase in plant safety. Since the ability of the EDGs to perform their safety function will not be degraded, the proposed license amendment does not involve a significant reduction in the margin of safety.

F. ENVIRONMENTAL CONSIDERATION

APS has determined that the proposed amendment involves no change in the amount or type of radiological effluent that may be released offsite, and that there is no increase in individual or cumulative occupational radiation exposure. As such, operation of PVNGS Units 1, 2, and 3, in accordance with the proposed amendment, does not involve an unreviewed environmental safety question. However, emissions from the EDGs which are regulated by the Maricopa County Division of Air Pollution Control would be reduced as a result of a reduction in EDG testing.

