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SUBJECT: Responds to 960412 ltr requesting addl info re Tech Specs change on EDGs.

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Robinson File No: 13510
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United States Nuclear Regulatory Commission
Attn: Document Control Desk
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**H. B. ROBINSON STEAM ELECTRIC PLANT, UNIT NO. 2
DOCKET NO. 50-261/LICENSE NO. DPR-23
RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION
REGARDING A REQUEST FOR A TECHNICAL SPECIFICATIONS CHANGE**

Gentlemen:

NRC letter dated April 12, 1996 requested additional information regarding our Technical Specifications change request dated January 30, 1996, concerning the Emergency Diesel Generators. The response to the request for addition information, enclosed, was requested to be provided within 30 days from the letter. Since the NRC letter was received on April 19, 1996, the response is to be submitted by May 20, 1996.

Questions regarding this matter may be referred to me at (803) 857-1802.

Very truly yours,

R. M. Krich
Manager - Regulatory Affairs

JSK/klb

- c: Mr. S. D. Ebnetter, Regional Administrator, USNRC, Region II
Ms. B. L. Mozafari, USNRC Project Manager, HBRSEP
Mr. W. T. Orders, USNRC Senior Resident Inspector, HBRSEP

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H. B. ROBINSON STEAM ELECTRIC PLANT, UNIT NO. 2
RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION
REGARDING A REQUEST FOR A TECHNICAL SPECIFICATIONS CHANGE

Request 1

Identify a Technical Specifications (TS) provision that verifies the operability of the required systems, subsystems, trains, components, and devices that depend on the remaining Emergency Diesel Generators (EDGs) as a source of onsite emergency power before removing an EDG for Preventative Maintenance (PM). In addition, specify what positive measures would be available to preclude subsequent testing or maintenance activities on these systems, subsystems, trains, components, and devices while the EDG is inoperable.

Response 1

TS Section 1.3 provides the definition of operability. It states the following, in part,

“ . . . When a system, subsystem, train, component or device is determined to be inoperable solely because its emergency power source is inoperable, or solely because its normal power source is inoperable, it may be considered OPERABLE for the purpose of satisfying the requirements of its applicable Limiting Condition for operation, provided: (1) its corresponding normal or emergency power source is OPERABLE; and (2) all of its redundant system(s), subsystem(s), train(s), component(s) and device(s) are OPERABLE, or likewise satisfy the requirements of this specification.”

Therefore, the equipment that would be powered by the EDG that is undergoing PM would be considered operable, unless the redundant equipment powered by the remaining EDG became inoperable. The provisions of TS Section 1.3 precludes subsequent testing or maintenance activities on these systems, subsystems, trains, components, and devices while the EDG is inoperable, since rendering the redundant equipment inoperable for maintenance or testing would result in both trains of equipment becoming inoperable.

Additionally TS Section 3.7.2(d) contains provisions to ensure that the remaining EDG is operable. TS Section 3.7.2(d) states,

“With either diesel generator inoperable, restore inoperable diesel generator to service within 7 days and perform 1) AND EITHER 2) OR 3) below:

- 1) Verify the availability of the required off-site power source within one hour and once per twelve hours thereafter.

AND

- 2) Determine that the remaining operable diesel generator is not inoperable due to common cause failure within 24 hours; AND if the inoperable diesel generator is not restored prior to 72 hours, verify the remaining operable diesel generator starts within the next 24 hours.

OR

- 3) Verify the remaining operable diesel generator starts within 24 hours."

As stated in the Basis section of the TS, the above required actions provide assurance that a loss of off-site power with one inoperable EDG will not result in a complete loss of the engineered safety features equipment. The availability of off-site power is confirmed by verifying breaker alignment (i.e., that breakers are in the correct position) to ensure the distribution buses and loads are connected to the preferred (i.e., normal) power sources. A determination is made concerning common cause failure of the remaining operable EDG. In addition, Attachment 6.2 of procedure Operations Management Manual (OMM) - 001-12 "Minimum Equipment List and Shift Relief," provides guidelines for Operations personnel during shift turnover to verify the availability of equipment covered by TS while the reactor is on-line (i.e., reactor coolant system temperature > 200 °F). In addition to the TS restrictions discussed above, maintenance activities and testing of these systems are prohibited while EDG PM is in progress. This work is controlled by the processes outlined in Plant Program Procedure (PLP) - 056, "Work Control Process," and as discussed in Response 3, below.

Request 2

To minimize the impact of not having a redundant EDG, the staff requires that an Alternate AC (AAC) power source be available for a time period the EDG is out of service. The availability of the AAC power source should be ensured by verifying that it is functional and capable of being connected to the safety bus before taking the EDG out of service, and this capability of being connected to the safety bus associated with the inoperable EDG is verified once every 8 hours (shift) thereafter. Provide a discussion on how your design will comply with the above requirement.

Response 2

An alternate AC source will be available during the period of time an EDG is inoperable while PM is being performed. The Dedicated Shutdown Diesel Generator (DSDG) and the Dedicated Shutdown (DS) Bus will be operable during this period as provided by PLP - 056, in addition to the opposite train EDG as required TS and by procedure PLP-056. The primary function of the DSDG and DS Bus is to mitigate Station Blackout (SBO) and 10 CFR 50, Appendix R, "Fire Protection Program For Nuclear Power Facilities Operating Prior To January 1, 1979," events. While the design of the DSDG and the DS Bus does not allow the capability of connecting directly to the emergency bus associated with the inoperable EDG, the capability does exist to energize certain Engineered Safety Features (ESFs) loads (e.g., a Residual Heat Removal pump) from the DS Bus. End Path Procedure (EPP) -001, "Loss Of All AC Power," directs Operations

personnel to start the DSDG after repeated attempts to start the EDGs have failed. Once the DSDG has started, the selected ESFs are loaded on the DSDG using procedures EPP - 022, "Energizing Plant Equipment Using Dedicated Shutdown Diesel Generator," and EPP - 025, "Energizing Supplemental Plant Equipment Using The DSDG." The reliability and availability of the DSDG is monitored by PLP - 034, "Diesel Generator Reliability Program."

Operability of the DSDG will be verified prior to performance of EDG PM by confirming the successful completion of the monthly testing in accordance with Operations Surveillance Test (OST) - 901, "Dedicated Shutdown Diesel Generator (Monthly)."

Request 3

Specify any current procedures available to minimize any component testing, maintenance, or removal of safety systems and important non-safety equipment from service that could reduce the loss of offsite power source events (e.g., not allowing switchyard work while performing an EDG PM, or not performing an EDG PM when adverse weather is expected, etc.).

Response 3

The current procedure used to minimize the potential for a loss of all ac power as the result of maintenance activities is PLP-056. Attachment 10.2 of PLP - 056 provides a matrix of risk significant work activities from different systems when scheduled concurrently. The matrix only allows two risk significant trains from different systems to be unavailable at any given time and provides limitations on combinations commensurate with risk. For example, PLP - 056 precludes both an EDG and the DSDG from being out of service concurrently. In addition to the restrictions regarding risk significant activities provided by the matrix, PLP - 056 also recommends that no maintenance be performed on 4 kV, non-safety related 480 Vac, 208/120 Vac, and the switchyard systems while performing maintenance on one of the EDGs or steam driven auxiliary feedwater pumps.

Past practice has been to present plans for major EDG outages to the Plant Nuclear Safety Committee (PNSC) for review prior to undertaking any work. The PNSC review can and does impose additional restrictions, or propose modifications to the plans, or delay the schedule for reasons such as a potential for severe weather, to enhance the overall safety of the proposed work.

Request 4

Describe how the proposed EDG on-line PM will affect the mean Core Damage Frequency (CDF) for the SBO event, and the impact it will have on the resolution of the SBO issue. In calculating the SBO CDF for the plant, state the values for EDG reliability and availability used in the Probabilistic Safety Assessment (PSA) study. List the current reliability and availability values for EDGs and show how they compare to the industry averages. State if the overall reliability and availability of the EDG are monitored and controlled in accordance with the maintenance rule performance goals.

Response 4

An analysis has been performed in accordance with the "EPRI PSA Applications Guide" (i.e., EPRI TR-105396, August 1995) concerning the risk associated with on-line maintenance of the EDGs. Assuming that no other risk significant systems are unavailable, the analysis shows that EDG 'A' can remain unavailable for up to 112 hours per maintenance outage and EDG 'B' can remain unavailable for up to 76 hours per maintenance outage before the change in core damage probability exceeds the guidance of 1×10^{-6} per occurrence. Neither maintenance activity will result in exceeding the maximum suggested instantaneous core damage frequency of 1×10^{-3} per year. The unavailability targets established in the Maintenance Rule performance criteria of 1.5 percent per EDG per year will be used to limit the overall allowed annual unavailability. These target values are more restrictive than the historical data for unavailability currently used in the PSA. The performance criteria were established at a more restrictive value in order to improve the plant safety profile. Due to an aggressive program to improve EDG reliability, these performance criteria represent a realistic estimate of EDG unavailability. Therefore, the EDG on-line preventive maintenance program will have no negative impact on the SBO mean core damage frequency calculated in the PSA.

The values used in the PSA for EDG availability and reliability when calculating the SBO CDF are as follows.

- 1) EDG Unavailability: 2.43 percent/year
- 2) EDG Reliability:
 - A) Failure to run: 2.3×10^{-3} per hour
 - B) Failure to start: 6.8×10^{-3} per demand

Note that neither EDG is credited in the SBO coping study and, therefore, EDG on-line maintenance has no impact on the results from that study.

The current reliability figures, as of April 30, 1996, are 100 percent for EDG 'A' and 99.0 percent for EDG 'B,' based on the past 100 demands. The average unavailability figure for both EDG trains combined, for the period from January 1, 1996, to April 30, 1996, is 3.90 percent. The unavailability for both trains is currently 3.90 percent because of the recent EDG outages to replace the turbocharger on EDG 'B' and the 18 month inspections on both EDGs. Since no EDG outages are planned during the remainder of 1996, we expect that the average unavailability for the year will be well below the 2.43 percent assumed in the PSA. The reliability figures for the EDGs are calculated in accordance with NUMARC 87-00, "Guidelines and Technical Bases for NUMARC Initiatives Addressing Station Blackout at Light Water Reactors," and procedure Technical Management Manual (TMM) - 034, "Emergency Diesel Generator Reliability Program." The target reliability figure for the EDGs as required by these documents is 95 percent. The unavailability and reliability values are trended and maintained in accordance to the Maintenance Rule performance criteria outlined in the Scoping and Determination Basis Document for the EDGs that was developed as part of our Maintenance Rule implementation.

Request 5

State what type of EDG tests would be performed following the EDG inspection to ensure its operability. Justify performing them during power operation.

Response 5

The tests performed on the EDGs following an EDG inspection to ensure its operability are OST - 401-1, "EDG 'A' Slow Speed Start (Monthly Except When OST 409 - 1 is Scheduled)," and OST-401-2, "EDG 'B' Slow Speed Start (Monthly Except When OST 409 - 2 is Scheduled)," which are the slow speed start surveillance tests, and OST-409-1, "EDG 'A' Fast Speed Start (Semi Annually)," and OST-409-2, "EDG 'B' Fast Speed Start (Semi Annually)," which are the fast speed start surveillance tests. These tests are the same ones performed during power operation to demonstrate that the EDGs meet the TS surveillance requirements.