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VIRGINIA POWER

February 28, 1985

Mr. Harold R. Denton, Director
Office of Nuclear Reactor Regulation
Attn: Mr. Hugh L. Thompson Jr., Director
Division of Licensing
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

Serial No. 439B
NO/ALM:acm
Docket Nos. 50-280
50-281
50-338
50-339
License Nos. DPR-32
DPR-37
NPF-4
NPF-7

Gentlemen:

VIRGINIA POWER
RESPONSE TO GENERIC LETTER 84-15
PROPOSED STAFF ACTIONS TO IMPROVE AND MAINTAIN
DIESEL GENERATOR RELIABILITY

Our letter of February 1, 1985 requested an extension in submitting responses to items 2a and 3b identified in our August 16, 1984 letter on the above subject. The enclosed attachment provides you with our response to those two items.

Virginia Power has recently submitted proposed Technical Specifications changes for the North Anna Unit 2 Emergency Diesel Generators as an exigent request. This change request is a direct outcome of the investigation following the recent diesel engine failures experienced on Unit 2. Preliminary findings of this investigation identified several testing requirements of the associated Technical Specification which were likely contributors to the unreliability experienced with the engines.

Very truly yours,

R. F. Hardwick, /1

for W. L. Stewart

Attachment

A056
1/1

VIRGINIA POWER

cc: Dr. J. Nelson Grace
Regional Administrator
Region II

Mr. Steven A. Varga, Chief
Operating Reactors Branch No. 1
Division of Licensing

Mr. James R. Miller, Chief
Operating Reactors Branch No. 3
Division of Licensing

Mr. Don J. Burke
NRC Resident Inspector
Surry Power Station

Mr. M. W. Branch
NRC Resident Inspector
North Anna Power Station

RESPONSE FOR GENERIC LETTER 84-15

NRC Request 2a

Licensees are requested to report the reliability of each diesel generator at their plant for its last 20 and 100 demands. This should include the number of failures in the last 20 and 100 valid demands indicating the time history for these failures.

Response

The reliability of the diesel generators at North Anna Nuclear Power Station has been determined in accordance with the definition of valid failure as specified by Regulatory Guide 1.108 position C.2.e. In the case of Surry, continued operation for at least 30 minutes in lieu of 1 hour constitutes a valid test in accordance with Surry Technical Specifications requirement. The determination of reliability was based on the number of failures in the last 20 and 100 valid demands. The following table covers these two catagories and the date of each failure. The reliability of each of the diesels has been maintained at or above 97% for the last 100 valid demands as of February 27, 1985.

FAILURES/VALID DEMAND

NORTH ANNA POWER STATION

1H Diesel	1J Diesel	2H Diesel	2J Diesel
1/20	0/20	1/20	1/20
1/100	0/100	3/100	2/100*
2/1/85		12/3/84	12/7/84
		12/9/84	1/13/85
		2/25/85	

SURRY POWER STATION

#1 Diesel	#2 Diesel	#3 Diesel (Swing)
1/20	0/20	1/20
1/100	2/100	1/100
3/13/84	5/4/81	12/18/84
	4/15/82	

*On June 14, 1983, while the 2J emergency diesel was undergoing maintenance troubleshooting, a cracked piston and cylinder liner were discovered and replaced. This was not interpreted as a valid test or valid failure per R.G. 1.108, however there was a significant component failure found during a maintenance investigation.

North Anna Unit 2 has maintained a record of EDG starts since 1982. The diesel start information for the other 3 units were not maintained or required to be maintained in similar format or detail and have required significant review and interpretation of surveillance and operating procedures and control room operator logs in order to assess diesel reliability in accordance with the Regulatory Guide. The research of this information was as thorough as the documentation and our resources would allow. Future diesel start information shall be maintained consistently in an EDG log for each engine at the respective station.

NRC Request 3b

Licenses are requested to comment on and/or compare their program with the proposed performance specification and provide comments for staff consideration in finalizing surveillance testing requirements for diesel generators.

Response

The generic letter proposed diesel generator performance technical specification offers several improvements to the Standard Technical Specifications. We submit the following comments in affirmation of the proposed changes or as additional proposals for your consideration. Based on our diesel experience, we believe this proposal to represent positive modifications to the Standard Technical Specifications which will aid in reducing unnecessary stress and wear to the Emergency Diesel Generators (EDG), and will enhance diesel performance, reliability and operability.

Reduction in Operability Testing

The proposed changes to the technical specifications reduce the number of operability tests required when a diesel or an offsite circuit is unavailable from every 8 hours to once in the first 24 hours after declaring the source inoperable. This change will reduce the number of tests of the operable diesel(s) from a maximum of 9 in a 72 hour period to only one. Additionally, we believe that for a loss of one offsite source that the operability testing of the diesels need not be performed until more than a seven day period has elapsed since the last surveillance test. If the diesel has been surveillance tested within the previous seven days, an operability test provides little further assurance of diesel availability than what already has been provided by the preceding surveillance test, since diesel reliability is not suspect due to a loss of an offsite circuit.

Extended Period of EDG Inoperability

The present 72 hour action statement in the Standard Technical Specifications for an inoperable diesel is counterproductive in that it does not always allow sufficient time for comprehensive preventive maintenance, troubleshooting, and/or repair before plant shutdown. Consequently, deferral of comprehensive preventive maintenance until the next extended outage is encouraged by the time limitation. The proposed technical specification should extend the period an EDG can be declared inoperable to at least seven (7) days to perform planned maintenance or testing. This

extended inoperability period would allow the additional time necessary to initiate comprehensive maintenance, troubleshooting, and/or repair an EDG.

Reduction of Fast Starts and Fast Loads

The generic letter proposal to require a fast start and a fast load once per 6 months rather than for each routine surveillance test will reduce unnecessary stress and wear to the EDG caused by the existing Standard Technical Specification surveillance requirements. The allowance of manufacturer recommended prelube and/or warmup procedures during routine testing should minimize the thermal transients experienced during fast starts and fast loads. This proposed change should enhance the operability and reliability of the emergency diesel generators.

Increased Surveillance Testing Per Proposed Table 4.8.1

The generic letter proposed technical specification decouples the diesels so that a failure of one EDG does not affect the surveillance test frequency of the redundant diesel. Changing the specification to a per diesel basis addresses individual diesel reliability and enhances overall reliability by requiring remedial actions only on the diesel generator which is experiencing failures. This proposal also eliminates the 3 day category for testing in the existing Standard Technical Specifications. We believe these proposed changes should enhance EDG reliability.

Credit for Performance of Diesel Overhaul

We propose a different test schedule adapting the general criteria of Regulatory Guide 1.108 and Generic Letter 84-15 with the exception that a transvaluation in number of failures is permitted following a complete diesel overhaul and successful verification testing. The performance of a manufacturer approved diesel overhaul followed by fourteen valid successful surveillance tests, including two fast starts (i.e. the equivalent to one year of fast starts per the Generic Letter), would requalify the diesel as 100% reliable and reset its failure count to zero. This item is included to encourage corrective actions which enhance reliability rather than maintain a punitive testing schedule following corrective action, which may be counterproductive to diesel reliability.

Startup Voltage and Frequency Band Limits

The requirement that voltage and frequency meet specified tolerances ten seconds after an unloaded startup condition is unrealistic. Manufacturers design speed and voltage control equipment to provide the desired regulation under loaded conditions. Acceptance criteria should identify minimum voltage and speed/frequency values to be met within a specified time after start on the bases that if minimums are met, there is assurance that emergency bus loads will be adequately supported in the event of a real emergency. Application of voltage and frequency band limits are more appropriate for the 18-month surveillance tests during which the sequence of diesel start and bus loading is tested.