

Docket No. 50-409
LS05-81-07-056

JULY 20 1981



Mr. Frank Linder, General Manager
Dairyland Power Cooperative
2615 East Avenue South
La Crosse, Wisconsin 54601

Dear Mr. Linden:

Subject: Information Request Regarding Station Blackout, Unresolved
Safety Issue A-44, LaCrosse Boiling Water Reactor

The NRC staff is currently addressing Unresolved Safety Issue (USI) A-44, Station Blackout. The purpose of this work is to establish the safety significance of an event resulting in a loss of all alternating current power and, if significant, to consider the need for any specific changes. Over the past several years information requests have been forwarded which requested information that is being used in the USI analysis. Your interest and cooperation in the past have been appreciated.

At this time the USI A-44 effort is being directed toward determining the reliability of the onsite standby diesel generators. The enclosed questionnaire has been prepared to provide accurate operating experience to serve as a basis for such a determination. More specifically, its purpose is to obtain more detailed data than were available in previous diesel generator studies such as AEC-00E-ES-002, NUREG/CR-C660, and NUREG/CR-1362.

The questionnaire (enclosure 1) requests information in tabular form and solicits data for the years 1976 through 1980, inclusive. There are four tables enclosed: (1) Diesel Generator Operations Data, (2) Diesel Generator Scheduled Down Time Record, (3) Diesel Generator Unscheduled Down Time Record, and (4) Onsite Emergency Diesel Generator and Auxiliary Equipment Modification Record. Also enclosed are examples of completed tables as well as a clarification of what should be entered. Please note that, although it may appear that only Licensee Event Report (LER) information is sought, data on all diesel generator malfunctions, independent of whether an LER was prepared, is requested.

Please find enclosed LER documentation (enclosure 2) presently docketed for your facility. You are requested to review these and to indicate if there are other reports which have not been enclosed. Finally, please find enclosed a copy of the appropriate portions of your response (enclosure

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Mr. Frank Linder

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JULY 20 1981

3) to our letter of March 6, 1978 which requested related, but different, information. This is being forwarded for your information only and should aid in preparing Tables 1 through 4.

In consideration of the time and effort necessary to obtain this information, the completion of Table 4 should be considered voluntary. However, it should be noted that if operational and hardware modifications are not identified, the positive or negative influence of these features on emergency alternating current power reliability may be lost in the evaluation of the data. The expected effect is that our generic reliability estimates may be lower than that which actually exists.

The above information is requested in accordance with Sections 103.b.(3) and 161.c of the Atomic Energy Act of 1954, as amended. To meet our schedule requirements for the resolution of USI A-44 and to incorporate as much real experience as possible into the reliability model for emergency power systems, it is requested that your response be provided within 120 days of the receipt of this letter. However, if this schedule is inconsistent with priority requirements for other licensing work, please provide us with your proposed date of response within 30 days. We plan to complete our analysis of this data by February 1982. Your data should be provided by that time so that an accurate assessment of onsite alternating current power sources can be made.

Mr. P. Baranowsky has been designated Task Manager for USI A-44. Should you have any questions, please feel free to contact him at (301) 443-5921. Your time and efforts are appreciated.

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 cc: w/enclosures J. Butts
 See next page

Sincerely,

Original signed by

Dennis M. Crutchfield, Chief
Operating Reactors Branch #5
Division of Licensing

This request for information was approved by the Office of Management and Budget under clearance number 3150-0067 which expires May 31, 1983. Comments on burden and duplication may be directed to the Office of Management and Budget, Washington, D. C. 20503.

OFFICE	DST:GIB	DL:ORB#2	DL:ORB#5	DL:ORB#5		
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Mr. Frank Linder

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July 20, 1981

cc w/enclosures:

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Table 3 Diesel Generator Unscheduled Downtime Record

Calendar Year 19 _____

LER Abstract No. (Refer to attached LER Abstracts)	Downtime Hours		Parts, Delivered, etc.	Repair/Replace	Comments -- If any of the reported failures would not have been a failure under emergency conditions, please explain here. Refer to attached LERs of the failures listed in Table 1.
	Total Hours	Available-Showing			

Plant Name _____

Unit No. _____

Onsite Emergency Diesel Generator at
Auxiliary Equipment Modification Record

TABLE 4

Equipment or procedure modified	Date of Mod.	Reason for Modification and Desired Improvement	Description of Modification

TABLE ENTRIES
EXPLANATION/CLARIFICATION

Table 1

Reason for DG Operation and Scheduled Duration of Run: This column contains the different categories of diesel generator operation. The categories are structured such that the start and run conditions are similar for all of the tests in a category. In this column, enter the scheduled run duration for each of the test categories. Also enter the number of diesel generator starts that are done for each type of test. For example, if on the monthly test there is one start from the local controls and one start from the remote controls, the number of starts per test is two. If two or more diesels are started simultaneously for any reason, please record it as a multiple start.

DG No.: Enter each diesel generator's identification number in this column as shown in the example.

Number of Starts: Enter the sum of the successful and unsuccessful start attempts for each category. If there are several starts for each test, include all of them, but be certain to record the number of starts per test in column one.

Number of Failures: Enter the sum of the failures for each category. A failure is counted if the objectives of the test are not achieved. A subsystem failure that does not cause failure of the diesel generator system is not counted as a failure. If the diesel generator did not start, run, and load as required by the test, a failure should be recorded. However, if the diesel generator would have supplied power in some capacity for an emergency, please explain in Table 3. For example, if the diesel started on the second attempt or the diesel was tripped to repair a minor oil leak that would not have been a problem in an emergency, this should be noted in Table 3.

Percent Loading of DG (KW): Enter the percentage that the diesel is loaded for each category. The continuous kilowatt rating is considered to be 100%.

Duration of Run Before Stop for each DG Failure: Record the run-time for each failure. If the diesel failed to start, the run-time would be 0 min.

Identification of Failures: Attached to this questionnaire are abstracts of the LERs related to the diesel generators. The abstracts are numbered starting with one. Refer to this number to identify the failures, but if there was a failure for which there is no abstract, assign the failure a number and include it in Table 3.

Table 2

Reason for Downtime: Enter in this column the categories of schedule maintenance that make the diesel generator unavailable for emergency service. If the diesel generator is unavailable for emergency service during surveillance testing, report that also.

Table 2 (cont'd)

Hours of Downtime: Enter the number of hours that the diesel generator is unavailable for emergency service. Report the hours under the column reactor shutdown or reactor not shutdown as appropriate.

Comments: Comment on time to return to service after maintenance has begun, or other pertinent information.

Table 3

LER Abstract No. (Refer to attached LER Abstracts): The attached LERs are numbered starting from one. Refer to this LER number in column one. Each LER abstract should have an entry in this table. If there was a failure not included in the attached abstracts, please assign it a number and enter it in this table.

Downtime Hours: Enter the number of hours that the diesel generator is unavailable for emergency service. Subdivide these total hours into troubleshooting, parts delivery, and repair or replacement.

Comments: Use this column to comment on the downtime and the failure. If the reported failure was only a technical specification violation, but would not be a complete failure of the diesel generator to supply power or would only be a delay, please elaborate in this column.

Table 4

Equipment or procedure modified: List in this column the equipment or procedures related to the emergency onsite power system that have been modified since the reactor became critical.

Date of Mod.: Enter the date that the modification was completed.

Reason for Modification and Desired Improvement: Report the reason for the modification and the desired or observed improvement in the system.

Description of Modification: Briefly describe what modification was made.

Diesel Generator Operations Data
Calendar Year 1976

TABLE 1
(Sample)

Reason for DG Operation, & scheduled Duration of Run	DG No.	Number of Starts	Number of Failures	Percent Loading of DG (KW)	Duration of Run Before Stop For Each DG Failure	Identification of Failures (Refer to attached IERs or Table 3)
Tech. Spec Req'd Test						
Monthly Surveillance (1 hour)	1	12	2	100	30 min; 0 min	IER # 1 & 4
(1 start/test)	2	12	0	100	--	
	3	12	1	100	0 min	IER # 2
Refueling Outage (12 hours)	1	1	0	100	--	
(1 start/test)	2	1	0	100	--	
	3	1	1	100	1 hour	IER # 3
Misc, Tech, Spec Req'd Tests (Start Only)	1	2	0	100	--	Table 3 No. 9
(1 start/test)	2	4	0	100	--	
	3	2	0	100	--	
DG Actual Demand Starts not for Testing						
SIAS Signal (1 hour)	1	1	0	0	--	IER # 8 Multiple start of 3 DGs
	2	1	0	0	--	"
	3	1	0	0	--	"
Miscellaneous Tests (Specify Type)						
Verify Repairs (not full test)	1	6	0	1	0 min	Table 3 # 10
(Start Only)	2	4	0	0		
	3	4	0	0		

Diesel Generator Unscheduled Downtime Record
Calendar Year 19__

TABLE 3
(Sample)

Comments - If any of the reported failures would not have been failures under emergency conditions, please explain here. Refer to attached LERs or the failures listed in Table 1.

LER Abstract No. (Refer to attached LER Abstracts)	Downtime Hours			
	Total Hours	Trouble-shooting	Parts, Delivered, etc.	Repair/replace
1	4	1	1	2
2	3	0.5	1	1.5
3	12	1	10	1
4	0	0	0	0
5	0	0	0	0
6	0	0	0	0
7	0	0	0	0
8	0	0	0	0
No LER	0	0	0	0
9	0	0	0	0
10	0	0	0	0

Diesel started in 15 sec instead of required 10 sec
Secondary air pressure low, Primary air satisfactory,
Secondary air pressure low, Primary air satisfactory,
Diesel started in 20 sec instead of required 10 sec,
False DG start signal, DG satisfactory

Required DG starts after the failure of one diesel,
Starts to verify repairs.

Onsite Emergency Diesel Generator and
Auxiliary Equipment Modification Record

TABLE 4
(Sample)

Equipment or procedure modified	Date of Mod.	Reason for Modification and Desired Improvement	Description of Modification
Lube oil system	2/76	Improve turbo charger lubrication for emergency starts.	Soak-back pump was removed and replaced with a continuous lube oil pump. New pump also continuously lubricates the crankshaft.
Relay cabinets	1/78	Prevent dirt from fouling relay contacts.	Cabinet doors with gaskets were installed.
Instrument Relocation	6/79	Eliminate vibration damage to instruments	Control and monitoring instrument panel was relocated from the engine skids to a free standing panel mounted on the engine room floor.

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ACCESSION NO. 0020147214
 TITLE DIESEL GENERATOR TRIPS ON OVERSPEED AT LACROSSE
 CORPAUTH DAIRYLAND POWER COOPERATIVE
 DATE 1979
 TYPE Q
 MEMO LTR W/LER 78-014 TO U.S. NRC, REGION 3, JAN 18, 1979, DOCKET 50-409, TYPE--BWR, MFG--AC, AE--S+L CONTROL--023505
 AVAIL AVAILABILITY - NRC PUBLIC DOCUMENT ROOM, 1717 H STREET, WASHINGTON D.C. 20555, (08 /PAGE -- MINIMUM CHARGE \$2.00)
 ABSTRACT DATE OF EVENT - 121578, POWER LEVEL - 049%, CAUSE - OVERSPEED SWITCH SET TOO LOW. DURING A SURVEILLANCE TEST ON THE 1B EMERGENCY DIESEL GENERATOR, THE UNIT TRIPPED ON INDICATED OVERSPEED. SUBSEQUENT RESTARTS WERE SATISFACTORY. THE PROBLEM WAS DUPLICATED ON DECEMBER 18, 1978. THE UNIT WAS DECLARED INOPERABLE TO PERMIT REPAIRS. THE ELECTRIC OVERSPEED SWITCH REQUIRED READJUSTMENT AS IT WAS SET AT 1980 RPM INSTEAD OF 2010-2015 RPM. THE LOWER SETPOINT CAUSED OVERSPEED TRIPS ON THE INITIAL COLD START ONLY. THE SWITCH SETPOINT WAS READJUSTED BY A REPRESENTATIVE OF THE MANUFACTURER.
 COMPONENT CODE INSTRU-INSTRUMENTATION AND CONTROL
 SYSTEM CODE EE-EMERG GENERATOR SYS & CONTROLS

42/5/0000001-0000005//

2

ACCESSION NO. 0020140800
 TITLE DIESEL GENERATOR REMOVED FROM SERVICE FOR OIL CHANGE AT LA CROSSE
 CORPAUTH DAIRYLAND POWER COOPERATIVE, LA CROSSE, WI
 DATE 1978
 TYPE Q
 MEMO 4 PGS, LTR W/RO 78-10 TO NRC DIRECTORATE OF REGULATORY OPERATIONS, REGION III, SEPT. 15, 1978, DOCKET 50-409, TYPE--BWR, MFG--GE, AE--SGT & LUNDY
 AVAIL AVAILABILITY - NRC PUBLIC DOCUMENT ROOM, 1717 H STREET, WASHINGTON, D. C. 20555 (08 CENTS/PAGE -- MINIMUM CHARGE \$2.00)
 ABSTRACT DATE OF EVENT - 091178, POWER LEVEL - 81%, CAUSE - OIL DILUTED WITH DIESEL FUEL OIL 1A DIESEL GENERATOR WAS TAKEN OUT OF SERVICE FOR 1 HOUR AND 12 MINUTES DURING REACTOR OPERATION TO CHANGE ENGINE SUMP LUBE OIL. LUBE OIL WAS DILUTED WITH DIESEL FUEL OIL. PARTIAL DILUTION OF LUBE OIL WAS ATTRIBUTED TO RESIDUAL FUEL OIL IN INJECTORS. FOLLOWING OIL CHANGE, TESTING WAS PERFORMED ON BOTH DIESEL GENERATORS TO VERIFY OPERABILITY.
 COMPONENT CODE ENGINE-ENGINES, INTERNAL COMBUSTION
 SYSTEM CODE EE-EMERG GENERATOR SYS & CONTROLS

42/5/0000001-0000005//

3

ACCESSION NO. 0020121290
 TITLE STARTING TIME FOR DIESEL GENERATOR EXCEEDS LIMIT AT LACROSSE
 CORPAUTH DAIRYLAND POWER CORP., LA CROSSE, WI
 DATE 1977
 TYPE Q
 MEMO 3 PGS, LTR W/RO 76-16 TO NRC DIRECTORATE OF REGULATORY OPERATIONS, REGION III, JAN. 3, 1977, DOCKET 50-409, TYPE--BWR, MFG--AC, AE--SGT & LUNDY
 AVAIL AVAILABILITY - NRC PUBLIC DOCUMENT ROOM, 1717 H STREET, WASHINGTON, D. C. 20545 (08 CENTS/PAGE -- MINIMUM CHARGE \$2.00)
 ABSTRACT DATE OF EVENT - 120378, POWER LEVEL - 85%, CAUSE - COOLANT HEATER INOPERABLE. DURING TESTING WITH THE REACTOR AT 85% POWER, STARTING TIME FOR DIESEL GENERATOR 1A WAS 13 SECONDS, EXCEEDING THE 10 SECOND LIMIT. THE 1500 WATT ELECTRIC IMMERSION-TYPE HEATER IN THE COOLING SYSTEM OF THE ENGINE WAS INOPERATIVE DUE TO A LOOSE POWER LEAD. THE WIRE HAD SEPARATED FROM ITS TERMINAL CONNECTING LUG DUE TO A COMBINATION OF ENGINE VIBRATION AND AN INCOMPLETE CRIMP OF THE LUG SLEEVE ON THE WIRE AT THE TIME OF MANUFACTURE OF THE HEATER ASSEMBLY.
 COMPONENT CODE HEATER-HEATERS, ELECTRIC
 SYSTEM CODE EE-EMERG GENERATOR SYS & CONTROLS

42/5/0000001-0000005//

4

ACCESSION NO. 0020120422
 TITLE DIESEL FUEL OIL SAMPLES FAIL TO MEET TECH SPECS AT LA CROSSE
 CORPAUTH DAIRYLAND POWER COOP., LA CROSSE, WI

DATE 1976
 TYPE Q
 MEMO 6 PGS. LTR W/RO 76-15 TO NRC DIRECTORATE OF REGULATORY OPERATIONS, REGION III, NOV. 18, 1976, DOCKET 50-409, TYPE—BWR, MFG—AC, AE—SGT & LUNDY
 AVAIL AVAILABILITY - NRC PUBLIC DOCUMENT ROOM, 1717 H STREET, WASHINGTON, D. C. 20545 (08 CENTS/PAGE — MINIMUM CHARGE \$2.00)
 ABSTRACT CAUSE - SAMPLES TAKEN FROM TANK BOTTOM. EMERGENCY DIESEL FUEL OIL SAMPLES TAKEN WHILE THE REACTOR WAS SHUT DOWN DID NOT MEET THE TECH SPEC REQUIREMENTS FOR WATER AND SEDIMENT CONTENT. THE OIL WAS PUMPED OUT, TANKS CLEANED, AND REFILLED. SAMPLES HAD BEEN TAKEN FROM THE ACTUAL TANK BOTTOM. THE BOTTOM ACTS AS A TRAP FOR SETTLED WATER AND SEDIMENT. THEREFORE, SAMPLES FROM HERE ARE NOT REPRESENTATIVE OF THE FUEL OIL. THE INLET OF OIL SUCTION LINES IS LOCATED ABOUT 3 INCHES ABOVE THE BOTTOM. A REDEFINITION OF THE SAMPLE POINT IS BEING SOUGHT.

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ACCESSION NO. 0020118750
 TITLE EMERGENCY DIESEL GENERATOR FAILS TO CARRY FULL TEST LOAD AT LA CROSSE
 CORPAUTH DAIRYLAND POWER CORP., LA CROSSE, *
 DATE 1976
 TYPE Q
 MEMO 4 PGS. LTR W/RO 76-09 TO NRC DIRECTORATE OF REGULATORY OPERATIONS, REGION III, OCT. 15, 1976, DOCKET 50-409, TYPE—BWR, MFG—AC, AE—SGT & LUNDY
 AVAIL AVAILABILITY - NRC PUBLIC DOCUMENT ROOM, 1717 H STREET, WASHINGTON, D. C. 20545 (08 CENTS/PAGE — MINIMUM CHARGE \$2.00)
 ABSTRACT CAUSE - MANUAL FUEL SHUTOFF NOT RESET COMPLETELY. DURING A TEST WITH THE REACTOR AT 94% POWER, EMERGENCY DIESEL GENERATOR FAILED TO CARRY THE FULL TEST LOAD. INVESTIGATION FOUND THAT THE MANUAL FUEL SHUTOFF WAS NOT RESET COMPLETELY DUE TO PAINT ON THE CONTROL CABLE RESTRICTING ITS MOVEMENT. THE CABLE WAS CLEANED AND NORMAL ACTION RESTORED.