Enclosure 3

NSP

NORTHERN STATES POWER COMPANY

414 Nicollet Mall
Minneapolis, Minnesota 55089

January 20, 1978

Director of Nuclear Reactor Regulation
U. S. Nuclear Regulatory Commission
Washington, D.C. 20555

PRAIRIE ISLAND NUCLEAR GENERATING PLANT
Docket Nos. 50-282 License Nos. DPR-42
50-306 DPR-60

Questionnaire on Diesel Generators

In response to your request of December 15, 1977, one completed copy of the questionnaire is attached.

L. O. Mayer

L. O. Mayer, PE
Manager of Nuclear Support Services

LOM/AAH/mjt

cc: J G Keppler
G Charnoff

7802700037

A014 1/5 0/1 HEAD TO HEAD

8108060045 810720
PDR ADOCK 05000263
F PDR

X. 1. Give the accumulated time-load operating record for each diesel-generator unit from installation to the present (Running Hours):

Preoperational test Date 11/2/72

Engine Serial No.	Surv. Testing & Maintenance Hrs. No Load	Loaded	Emergency and Other Service Hrs.	Total Hours
0057	118	237	402	757
0059	122	246	353	721

2. Surveillance test load (percent of continuous rating) 100%

3. Give the projected or planned time-load operation for each diesel-generator unit during the next 12 months.

Surveillance & Maintenance Hrs.	Emergency and other Service Hrs.	Total Hours	
30	0	30	

4. Provide the following summary of the periodic surveillance testing experience:

a. Starting date of surveillance testing (OL date) December 1973
b. Periodic test interval weekly & biweekly
c. Total number of surveillance tests performed 200
d. Total number of test failures 4

failure to start 1 failure to accept load 2
failure to carry load 1 failures due to operator error 0
failure due to equipment not being operative during emergency conditions 0

e. Supply a copy of the surveillance test procedures with this completed questionnaire.

Plant Name _____

Unit No. _____

TABLE 1

Diesel Generator Operations Data
Calendar Year 19__

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 Failure (Refer to attached LERs or Table 3)
Tech. Spec Req'd Test						
DG Actual Demand Starts not for Testing						
Miscellaneous Tests (Specify Type)						

TABLE 2

Diesel Generator Scheduled Downtime Record
Calendar Year 19__

Plant Name _____
Unit No. _____

Reason for Downtime	Hours of Downtime										Comments
	Reactor shutdown					Reactor not shutdown					
	DG#	DG#	DG#	DG#	DG#	DG#	DG#	DG#	DG#	DG#	
Scheduled Maintenance											
Time DG is unavailable for emergency service because of required tests											

TABLE 3

Diesel Generator Unscheduled Downtime Record
Calendar Year 19__

Plant Name _____
Unit No. _____

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

TABLE 4

Onsite Emergency Diesel Generator and Auxiliary Equipment Modification Record

Plant Name _____

Unit No. _____

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.

Plant Name xxx
Unit No. 1 & 2

TABLE 1
(Sample)

Diesel Generator Operations Data
Calendar Year 1976

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 LERs or Table 3)
Tech. Spec Req'd Test						
Monthly Surveillance	1	12	2	100	30 min; 0 min	LER # 1 & 4
(1 hour)	2	12	0	100	--	
(1 start/test)	3	12	1	100	0 min	LER #2
Refueling Outage	1	1	0	100	--	
(12 hours)	2	1	0	100	--	
(1 start/test)	3	1	1	100	1 hour	LER # 3
Misc. Tech Spec	1	2	0	100	--	Table 3 No. 9
Req'd Tests	2	4	0	100	--	
(Start Only)	3	2	0	100	--	
(1 start/test)						
DG Actual Demand Starts not for Testing						
SIAS Signal	1	1	0	0	--	LER # 8 Multiple start of 3 DGs
(1 hour)	2	1	0	0	--	" " "
	3	1	0	0	--	" " "
Miscellaneous Tests (Specify Type)						
Verify Repairs	1	6	0	1	0 min	Table 3 # 10
(not full test)	2	4	0	0		
(Start Only)	3	4	0	0		

TABLE 2
(Sample)

Diesel Generator Scheduled Downtime Record
Calendar Year 19__

Plant Name _____
Unit No. _____

Reason for Downtime	Hours of Downtime										Comments
	Reactor shutdown					Reactor not shutdown					
	DG# 1	DG# 2	DG# 3	DG#	DG#	DG# 1	DG# 2	DG# 3	DG#	DG#	
Scheduled Maintenance											
Preventive Maintenance Semi-annual & Annual	24	16	--					16			
Equipment Modification						8	8	8			Modified lube oil on each diesel. Diesels down at different times.
								1			
Time DG is unavailable for emergency service because of required tests											
Down 4 hrs per test		8				48	40	48			Diesel cannot be automatically started during test or for three hours afterwards

TABLE 3
(Sample)

Diesel Generator Unscheduled Downtime Record
Calendar Year 19__

Plant Name XXX
Unit No. 1&2

LER Abstract No. (Refer to attached LER Abstracts)	Downtime Hours				Comments - If any of the reported failures would not have been a failure under emergency conditions, please explain here. Refer to attached LERs or the failures listed in Table 1.
	Total Hours	Trouble-shooting	Parts, Delivery, 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	Diesel started in 15 sec instead of required 10 sec
5	0	0	0	0	Secondary air pressure low. Primary air satisfactory.
6	0	0	0	0	Secondary air pressure low. Primary air satisfactory.
7	0	0	0	0	Diesel started in 20 sec instead of required 10 sec.
8	0	0	0	0	False DG start signal. DG satisfactory
No LER					
9	0	0	0	0	Required DG starts after the failure of one diesel.
10	0	0	0	0	Starts to verify repairs.

TABLE 4
(Sample)

Onsite Emergency Diesel Generator and
Auxiliary Equipment Modification Record

Plant Name _____
Unit No. _____

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.

CCESSION NO. 00Z0161775
ITLE DIESEL GENERATOR INOPERABLE AT PRAIRIE ISLAND 2
ORPAUTH NORTHERN STATES POWER CO.
ATE 1980
YPE Q
EMO LTR W/LER 80-030 TO U.S. NRC, REGION 3, NOV 7, 1980. DOCKET 50-306, TYPE--PWR, MFG--WEST, AE--PIONEER, DCS NO. 8011110341
VAIL AVAILABILITY - NRC PUBLIC DOCUMENT ROOM, 1717 H STREET, WASHINGTON, D. C. 20555 (05 CENTS/PAGE -- MINIMUM CHARGE $2.00)
BSTRACT DATE OF EVENT - 100880. POWER LEVEL - 100%. CAUSE - EDUCTOR HOSE BURST. DURING SURVEILLANCE TEST, D2 DIESEL GENERATOR TRIPPED ON HIGH CRANKCASE PRESSURE WHEN THE EDUCTOR HOSE FAILED. EDUCTOR HOSE BURST. HOSE WAS REPLACED. REMAINING HOSES ON BOTH DIESEL ENGINES WERE INSPECTED. EDUCTOR SYSTEM HOSES ON BOTH DIESEL ENGINES HAVE BEEN REPLACED.
OMPONENT CODE ENGINE-ENGINES,INTERNAL COMBUSTION
YSTEM CODE EE-EMERG GENERATOR SYS & CONTROLS

47/5/0000001-0000004// 2
CCESSION NO. 00Z0137897
ITLE DIESEL GENERATOR COOLING WATER PUMP INOPERABLE MOMENTARILY AT PRAIRIE ISLAND 2
ORPAUTH NORTHERN STATES POWER CO., MINNEAPOLIS, MN
ATE 1978
YPE Q
EMO 2 PGS, LTR W/LER 78-007/03L-0 TO NRC OFFICE OF I & E, REGION III, APRIL 24, 1978, DOCKET 50-306, TYPE--PWR, MFG--WEST., AE--PIONEER SERV.
VAIL AVAILABILITY - NRC PUBLIC DOCUMENT ROOM, 1717 H STREET, WASHINGTON, D. C. 20555 (05 CENTS/PAGE -- MINIMUM CHARGE $2.00)
BSTRACT DATE OF EVENT - 032978. POWER LEVEL - 0%. CAUSE - PERSONNEL ERROR. DURING A UNIT 1 REFUELING SURVEILLANCE TEST, UNIT 1 RESPONSE TO SAFEGUARDS SIGNAL WAS PERFORMED. DURING THE TEST, A MAINTENANCE MAN PLACED AN ELECTRICAL JUMPER BEFORE HE WAS INSTRUCTED TO DO SO, THEREBY LOCKING OUT NO. 12 DIESEL COOLING WATER PUMP. CONTROL ROOM ANNUNCIATION OF THE CONDITION OCCURRED AND THE JUMPER WAS REMOVED AND THE LOCKOUT RELAY RESET. THE ENGINE WAS INOPERABLE ABOUT ONE MINUTE.
OMPONENT CODE ZZZZZZ-COMPONENT CODE NOT APPLICABLE
YSTEM CODE WA-STATION SERV WATER SYS & CONT

47/5/0000001-0000004// 3
CCESSION NO. 00Z0125227
ITLE DIESEL GENERATOR INOPERABLE FROM LOSS OF CONTROL POWER AT PRAIRIE ISLAND 2
ORPAUTH NORTHERN STATES POWER CO., MINNEAPOLIS
ATE 1977
YPE Q
EMO 2 PPS, LTR W/RO P-RO-77-14 TO NRC OFFICE OF I & E, REGION III, MAY 12, 1977, DOCKET 50-306, TYPE--PWR, MFG--WEST., AE--PIONEER SERV.
VAIL AVAILABILITY - NRC PUBLIC DOCUMENT ROOM, 1717 H STREET, WASHINGTON, D. C. 20545 (05 CENTS/PAGE -- MINIMUM CHARGE $2.00)
BSTRACT DATE OF EVENT - 041277. POWER LEVEL - 100%. CAUSE - SHORTED LIGHT SOCKET. A LIGHT SOCKET FOR DIESEL GENERATOR D2 GOVERNOR READY LIGHT SHORTED CAUSING THE CONTROL POWER FUSE TO BLOW. CONTROL POWER WAS RESTORED IN ABOUT 2 HOURS. LIGHT MODULES FOR BOTH DG'S WERE MODIFIED BY ADDING RESISTORS IN SERIES WITH THE READY LIGHTS (RONAN MODEL X18-200).
OMPONENT CODE INSTRU-INSTRUMENTATION AND CONTROLS
SYSTEM CODE EE-EMERG GENERATOR SYS & CONTROLS

47/5/0000001-0000004// 4
CCESSION NO. 00Z0118241
ITLE DIESEL GENERATOR TRIPS AT PRAIRIE ISLAND 2
ORPAUTH NORTHERN STATES POWER CO., MINNEAPOLIS, MN
ATE 1976
YPE Q
EMO 2 PGS, LTR W/P-RO-76-38 TO NRC OFFICE OF I & E, REGION III, SEPT. 20, 1976, DOCKET 50-306, TYPE--PWR, MFG--WEST., AE--PIONEER SERV.

AVAIL AVAILABILITY - NRC PUBLIC DOCUMENT ROOM, 1717 H STREET, WASHINGTON, D. C. 20545 (08 CENTS/PAGE -- MINIMUM CHARGE $2.00)

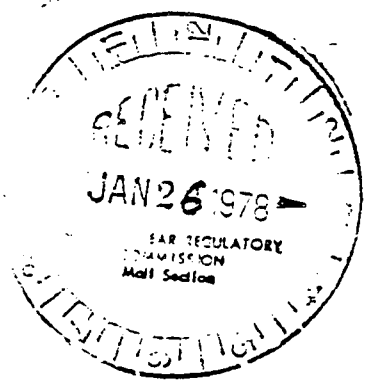
ABSTRACT CAUSE - DISCONNECTED PIPE. DURING TESTING WITH THE REACTOR AT 100% POWER, DIESEL GENERATOR 1 TRIPPED ON HIGH CRANKCASE PRESSURE. THE PIPE CONNECTING THE CRANKCASE EDUCTOR TO THE SCAVENGING AIR PIPE HAD BECOME DISCONNECTED. HOSE CLAMPS ON THE CONNECTING PIPE WERE APPARENTLY NOT RETIGHTENED AFTER PREVENTIVE MAINTENANCE WAS DONE IN AUGUST. THE PIPE WAS RECONNECTED. THE REDUNDANT DIESEL GENERATOR WAS CHECKED. HOSE CLAMPS WERE FOUND LOOSE AND WERE TIGHTENED.

Enclosure 3

NSP

NORTHERN STATES POWER COMPANY

414 Nicollet Mall
Minneapolis, Minnesota 55089



January 20, 1978

Director of Nuclear Reactor Regulation
U. S. Nuclear Regulatory Commission
Washington, D.C. 20555

PRAIRIE ISLAND NUCLEAR GENERATING PLANT
Docket Nos. 50-282 License Nos. DPR-42
50-306 DPR-60

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L. O. Mayer

L. O. Mayer, PE
Manager of Nuclear Support Services

LOM/AAH/mjt

cc: J G Keppler
G Charnoff

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A014
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0/1
HEAD TO HEAD

X. 1. Give the accumulated time-load operating record for each diesel-generator unit from installation to the present (Running Hours):

Preoperational test Date 11/2/72

Engine Serial No.	Surv. Testing & Maintenance Hrs. No Load	Loaded	Emergency and Other Service Hrs.	Total Hours
0057	118	237	402	757
0059	122	246	353	721

2. Surveillance test load (percent of continuous rating) 100%

3. Give the projected or planned time-load operation for each diesel-generator unit during the next 12 months.

Surveillance & Maintenance Hrs.	Emergency and other Service Hrs.	Total Hours	
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a. Starting date of surveillance testing (OL date) December 1973
b. Periodic test interval weekly & biweekly
c. Total number of surveillance tests performed 200
d. Total number of test failures 4

failure to start 1 failure to accept load 2
failure to carry load 1 failures due to operator error 0
failure due to equipment not being operative during emergency conditions 0

e. Supply a copy of the surveillance test procedures with this completed questionnaire.