

Docket No. 50-298

JUL 20 1981

Mr. J. M. Pilant, Director
Licensing and Quality Assurance
Nebraska Public Power District
Post Office Box 499
Columbus, Nebraska 68601



Dear Mr. Pilant:

Subject: Information Request Regarding Station Blackout, Unresolved
Safety Issue A-44, Cooper Nuclear Station

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-0660, 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

8107300286 810720
PDR ADOCK 05000298
F PDR

OFFICE ▶	.....	.....	.....	.....	.....	.....	.....
SURNAME ▶	.....	.....	.....	.....	.....	.....	.....
DATE ▶	.....	.....	.....	.....	.....	.....	.....

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.

DISTRIBUTION

- Docket File 50-298 J. Roe
- NRC & Local PDRs J. Heltemes
- TERA ACRS (16)
- GIB Reading I&E (3)
- ORB#2 Reading OELD
- T. Novak P. Norian
- T. Ippolito K. Kniel
- R. Purple S. Norris
- D. Eisenhut B. Siegel
- Enclosures: F. Schroeder
- As Stated T. Murley
- P. Baranowsky
- cc: w/enclosures J. Butts
- See next page

Sincerely,

Thomas A. Ippolito, Chief
Operating Reactors Branch #2
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#2	DL:ORB#2		
SURNAME	PNorian:jb	BSiegel	PPolk	TAIppolito		
DATE	07/17/81	07/17/81	07/17/81	07/17/81		

Mr. J. M. Pilant
Nebraska Public Power District

cc:

Mr. G. D. Watson, General Counsel
Nebraska Public Power District
P. O. Box 499
Columbus, Nebraska 68601

Mr. Arthur C. Gehr, Attorney
Snell & Wilmer
3100 Valley Center
Phoenix, Arizona 85073

Cooper Nuclear Station
ATTN: Mr. L. Lessor
Station Superintendent
P. O. Box 98
Brownville, Nebraska 68321

Auburn Public Library
118 - 15th Street
Auburn, Nebraska 68305

Mr. Dennis Dubois
USNRC
Resident Inspector
P.O. Box 218
Brownsville, NA 68410

TABLE 4

Onsite Emergency Diesel Generator and
Auxiliary Equipment Modification Record

Enclosure 1 - Page 4

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 category of generator 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.

TABLE 1
(Sample)

Diesel Generator Operations Data
Calendar Year 1976

Enclosure 1 - Page 7
Plant Name xxx
Unit No. 1 & 2

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

TABLE 2
(Sample)

Diesel Generator Scheduled Downtime Record
Calendar Year 19__

Enclosure 1 - Page 8
Plant Name _____
Unit No. _____

Reason for Downtime	Hours of Downtime										Comments	
	Reactor shutdown					Reactor not shutdown						
	DC# 1	DC# 2	DC# 3	DC#	DC#	DC# 1	DC# 2	DC# 3	DC#	DC#		
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.
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__

Enclosure 1 - Page 9
Plant Name XXX
Unit No. 162

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, 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	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

Enclosure 1 - Page 10

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.

24/5/0000001-0000017//

1

PAGE 193

ACCESSION NO. 0020159470
 TITLE DIESEL GENERATOR CYLINDER FAILS AT COOPER
 CORPAUTH NEBRASKA PUBLIC POWER DISTRICT
 DATE 1980
 TYPE 0
 MEMO LTR W/LER 80-027 TO U.S. NRC, REGION 4, AUG 8, 1980, DOCKET
 50-298, TYPE--BWR, MFG--GE, AE--BURNS/RDE
 AVAIL AVAILABILITY - NRC PUBLIC DOCUMENT ROOM, 1717 H STREET,
 WASHINGTON, D. C. 20555 (08 CENTS/PAGE -- MINIMUM CHARGE
 \$2.00)
 ABSTRACT DATE OF EVENT - 050880. POWER LEVEL - 000%. CAUSE - PISTON
 ROD PIN BOLTS FAIL. WHILE PERFORMING SURVEILLANCE ON THE #2
 DIESEL GENERATOR AFTER MAINTENANCE, THE #8 LEFT CYLINDER
 FAILED. THE DIESEL IS A KSV-16-T COOPER-BESSEMER. THE CAUSE
 WAS FAILURE OF THE PISTON ROD PIN BOLTS. THEIR FAILURE WAS
 CAUSED BY THE ARTICULATING ROD PIN BOLTS AND PISTON PIN BOLTS
 BEING STRETCHED PROBABLY DURING A PARTIAL PISTON SEIZURE.
 DAMAGED PARTS WERE REPLACED. ALL PISTON BOLTS WERE REPLACED,
 AND TORQUE WAS CHECKED ON ALL BOLTS IN ENGINE.
 COMPONENT CODE ENGINE-ENGINES,INTERNAL COMBUSTION
 SYSTEM CODE EE-EMERG GENERATOR SYS & CONTROLS

24/5/0000001-0000017//

2

ACCESSION NO. 0020153932
 TITLE DIESEL GENERATOR OPERABILITY NOT VERIFIED AT COOPER
 CORPAUTH NEBRASKA PUBLIC POWER DISTRICT
 DATE 1979
 TYPE 0
 MEMO LTR W/LER 79-033 TO U.S. NRC, REGION 4, DEC 06, 1979, DOCKET
 50-298, TYPE--BWR, MFG--GE, AE--B+R CONTROL--027805
 AVAIL AVAILABILITY - NRC PUBLIC DOCUMENT ROOM, 1717 H STREET,
 WASHINGTON D.C. 20555, (08 /PAGE -- MINIMUM CHARGE \$2.00)
 ABSTRACT DATE OF EVENT - 110979. POWER LEVEL - 095%. CAUSE - LICENSED
 OPERATOR ERROR. TECH SPECS WAS NOT MET, IN THAT ON NOVEMBER 9,
 1979, DIESEL GENERATOR OPERABILITY SURVEILLANCE PROCEDURE WAS
 NOT PERFORMED ON #1 DIESEL GENERATOR FOR #2 DIESEL GENERATOR
 BEING INOPERABLE. 0800-1600 SHIFT FAILED TO PERFORM THE
 REQUIRED OPERABILITY TEST FOR #1 DG BEING UNDER THE IMPRESSION
 #2 DG WOULD BE MADE OPERABLE. THE FOLLOWING DAY, UPON ASSUMING
 WATCH THEY REALIZED REQUIRED OPERABILITY TEST HAD NOT BEEN
 PERFORMED FOR #1 DG AND IMMEDIATELY PERFORMED THE REQUIRED TEST
 SATISFACTORILY. OCCURRENCE IS BEING DISCUSSED WITH OPERATIONS
 PERSONNEL.
 COMPONENT CODE ENGINE-ENGINES,INTERNAL COMBUSTION
 SYSTEM CODE EE-EMERG GENERATOR SYS & CONTROLS

24/5/0000001-0000017//

3

ACCESSION NO. 0020153817
 TITLE BROKEN OIL HOSE ON DIESEL GENERATOR AT COOPER
 CORPAUTH NEBRASKA PUBLIC POWER DISTRICT
 DATE 1979
 TYPE 0
 MEMO LTR W/LER 79-034 TO U.S. NRC, REGION 4, DEC 06, 1979, DOCKET
 50-298, TYPE--BWR, MFG--GE, AE--B+R CONTROL--027751
 AVAIL AVAILABILITY - NRC PUBLIC DOCUMENT ROOM, 1717 H STREET,
 WASHINGTON D.C. 20555, (08 /PAGE -- MINIMUM CHARGE \$2.00)
 ABSTRACT DATE OF EVENT - 110779. POWER LEVEL - 098%. CAUSE - CAUGHT IN
 CAM CHAIN TENSIONER SPROCKET. DURING NORMAL OPERATION, ANNUAL
 INSPECTION OF THE NO. 2 DIESEL GENERATOR REVEALED A HOSE FROM
 THE DIESEL GENERATOR LUBE OIL HEADER TO THE CAM CHAIN TENSIONER
 WAS BROKEN. THIS MAY HAVE LED TO OPERATION IN A DEGRADED MODE.
 THE HOSE FAILED DUE TO ITS PROXIMITY TO THE CAM CHAIN AND
 TENSIONER SPROCKET. THE HOSE WAS CAUGHT IN THE SPROCKET AND
 WAS RIPPED FROM ITS CONNECTION. THE DAMAGED HOSE WAS REPLACED.
 THE HOSE WAS CLAMPED AWAY FROM THE CAM CHAIN ON BOTH ENGINES.
 THE DIESEL ENGINES ARE MANUFACTURED BY COOPER-BESSEMER (MODEL
 KSV-16T).
 COMPONENT CODE ENGINE-ENGINES,INTERNAL COMBUSTION
 SYSTEM CODE EE-EMERG GENERATOR SYS & CONTROLS

24/5/0000001-0000017//

4

ACCESSION NO. 0020153815
 TITLE DIESEL GENERATOR FAILS AT COOPER
 CORPAUTH NEBRASKA PUBLIC POWER DISTRICT

DATE 1979
 TYPE Q
 MEMO LTR W/LER 79-036 TO U.S. NRC, REGION 4, DEC 10, 1979, DOCKET 50-298, TYPE--BWR, MFG--GE, AE--B+R CONTROL--027748
 AVAIL AVAILABILITY - NRC PUBLIC DOCUMENT ROOM, 1717 H STREET, WASHINGTON D.C. 20555, (08 /PAGE -- MINIMUM CHARGE \$2.00)
 ABSTRACT DATE OF EVENT - 111079, POWER LEVEL - 098%, CAUSE - NOT YET DETERMINED. DURING NORMAL OPERATION WHILE PERFORMING SURVEILLANCE TESTS ON THE NO. 2 DIESEL GENERATOR, FOUR CYLINDER SLEEVES WERE DAMAGED. THERE IS A REDUNDANT DIESEL GENERATOR. THE EXACT CAUSE OF THE OCCURRENCE IS NOT KNOWN AT THIS TIME. THE COMPONENT MANUFACTURER IS PERFORMING AN INVESTIGATION AND AN UPDATED LICENSEE EVENT REPORT WILL BE SUBMITTED AS REQUIRED. ALL DAMAGED PARTS WERE REPLACED AND ALL CYLINDERS WERE INSPECTED ON BOTH DIESEL ENGINES. THE DIESEL ENGINE IS A COOPER-BESSEMER MODEL KSV-16-T.
 COMPONENT CODE ENGINE-ENGINES,INTERNAL COMBUSTION
 SYSTEM CODE EE-EMERG GENERATOR SYS & CONTROLS

24/5/0000001-0000017// 5
 ACCESSION NO. 0020153814
 TITLE DIESEL GENERATOR FAILS TO START AT COOPER
 CORPAUTH NEBRASKA PUBLIC POWER DISTRICT
 DATE 1979
 TYPE Q
 MEMO LTR W/LER 79-037 TO U.S. NRC, REGION 4, DEC 12, 1979, DOCKET 50-298, TYPE--BWR, MFG--GE, AE--B+R CONTROL--027747
 AVAIL AVAILABILITY - NRC PUBLIC DOCUMENT ROOM, 1717 H STREET, WASHINGTON D.C. 20555, (08 /PAGE -- MINIMUM CHARGE \$2.00)
 ABSTRACT DATE OF EVENT - 111379, POWER LEVEL - 082%, CAUSE - DESIGN ERROR. #1 D/G FAILED TO START DURING A TEST. NO. 2 D/G WAS INOPERATIVE. (REF. LER 79-36). ALL LOW PRESSURE CORE COOLING SYSTEMS WERE OPERABLE. REACTOR POWER WAS IMMEDIATELY REDUCED PER TECH. SPECS. NORMAL AND ALL OFFSITE POWER WERE AVAILABLE, AND THIS D/G COULD HAVE BEEN MANUALLY STARTED. THIS EVENT IS REPETITIVE (LER 78-39). FAILURE WAS CAUSED BY SILENCER BYPASS SOLENOID STOPPING IN MID POSITION DUE TO INSUFFICIENT AIR SUPPLY. UNTIL DESIGN OF THIS SYSTEM CAN BE REVIEWED & MODIFIED, SILENCER BYPASS VALVE WAS OPENED & AIR SUPPLY TO SOLENOID VALVE CAPED ON BOTH DIESEL ENGINES. APPLICABLE MODEL NUMBERS ARE: ENGINE (COOPER BESSEMER KSV-16-T); VALVE (ASCO B344A72).
 COMPONENT CODE ENGINE-ENGINES,INTERNAL COMBUSTION
 SYSTEM CODE EE-EMERG GENERATOR SYS & CONTROLS

24/5/0000001-0000017// 6
 ACCESSION NO. 0020149688
 TITLE DIESEL GENERATOR FAILS TO REACH FULL SPEED AT COOPER
 CORPAUTH NEBRASKA PUBLIC POWER DISTRICT, BROWNVILLE, NE
 DATE 1977
 TYPE Q
 MEMO 3 PGS, LTR W/LER 50-298-78-39 TO NRC OFFICE OF I & E, REGION IV, JAN. 5, 1979, DOCKET 50-298, TYPE--BWR, MFG--GE, AE--BURNS & ROE
 AVAIL AVAILABILITY - NRC PUBLIC DOCUMENT ROOM, 1717 H STREET, WASHINGTON, D. C. 20555 (08 CENTS/PAGE -- MINIMUM CHARGE \$2.00)
 ABSTRACT DATE OF EVENT - 120678, POWER LEVEL - 98%. CAUSE - INLET AIR DAMPER FAILS TO OPEN. DURING NORMAL OPERATION WHILE PERFORMING SURVEILLANCE PROCEDURE 6.3.12.1, AFTER HAVING NUMBER ONE DIESEL GENERATOR OUT OF SERVICE FOR MAINTENANCE, THE DIESEL ENGINE FAILED TO REACH FULL SPEED. THE REDUNDANT SYSTEMS HAD BEEN TESTED AND WERE OPERABLE. COOPER-BESSEMER DIESEL ENGINE TYPE KSV-16-T INLET AIR SHUTDOWN DAMPER FAILED TO OPEN DUE TO REDUCED CONTROL AIR PRESSURE. ASCO SOLENOID VALVE MODEL 8344 WAS STUCK IN MID POSITION. THESE SOLENOID VALVES WERE CLEANED ON BOTH DIESEL ENGINES. ANNUAL INSPECTION WAS REVISED TO INCLUDE INSPECTION OF THESE SOLENOID VALVES.
 COMPONENT CODE ENGINE-ENGINES,INTERNAL COMBUSTION
 SYSTEM CODE EE-EMERG GENERATOR SYS & CONTROLS

24/5/0000001-0000017// 7
 ACCESSION NO. 0020142386
 TITLE SHORT TERM REACTIVITY INCREASE WITH A PERIOD OF LESS THAN 5

SECONDS AT COOPER
 NEBRASKA PUBLIC POWER DISTRICT, BROWNVILLE, NE
 1978
 Q
 3 PGS, LTR W/RO 50-298-78-35 TO NRC OFFICE OF I & E, REGION IV,
 DEC. 8, 1978, DOCKET 50-298, TYPE--BWR, MFG--GE, AE--BURNS &
 ROE
 AVAIL AVAILABILITY - NRC PUBLIC DOCUMENT ROOM, 1717 H STREET,
 WASHINGTON, D. C. 20555 (08 CENTS/PAGE -- MINIMUM CHARGE
 \$2.00)
 ABSTRACT DATE OF EVENT - 112478. POWER LEVEL - 27%. CAUSE - RR MG SET
 SPEED INCREASED. WHILE TROUBLESHOOTING THE REACTOR
 RECIRCULATION MG SET 1B SPEED CONTROL 1 AMP FUSE F2 IN THE
 DRIVE AMPLIFIER CIRCUIT WAS PULLED OUT AND CHECKED. THIS
 RESULTED IN MOVING THE SCOOP TUBE IN AND CAUSED AN INCREASE IN
 SPEED OF THE RR MG SET 1B. SUBSEQUENTLY, THERE WAS A RAPID
 INCREASE IN POWER LEVEL. THE RR MG SET 1B WAS TRIPPED. THE
 INCREASE IN SPEED OF THE RR MG SET 1B WHICH RESULTED IN A
 SUDDEN POWER LEVEL CHANGE WHEN THE FUSE F2 WAS PULLED OUT
 AGREES WITH THE DESIGN CONCEPT AS DESCRIBED IN VENDOR
 SUPPLEMENTARY INSTRUCTIONS. A TAG WAS ATTACHED TO THE RR MG
 SET 1B SCOOP TUBE DRIVE NOT TO PULL OUT THE LOWER FUSE (F2)
 WHEN THE RR MG SET IS RUNNING.
 COMPONENT CODE XXXXXX-OTHER COMPONENTS
 SYSTEM CODE RB-REACTIVITY CONTROL SYSTEMS

24/5/0000001-0000017// 8
 ACCESSION NO. 0020142293
 TITLE DIESEL GENERATOR TRIPS AT COOPER
 CORPAUTH NEBRASKA PUBLIC POWER DISTRICT, BROWNVILLE, NE
 DATE 1978
 TYPE Q
 MEMO 3 PGS, LTR W/RO 50-298-78-31 TO NRC OFFICE OF I & E, REGION IV,
 SEPT. 28, 1978, DOCKET 50-298, TYPE--BWR, MFG--GE, AE--BURNS &
 ROE
 AVAIL AVAILABILITY - NRC PUBLIC DOCUMENT ROOM, 1717 H STREET,
 WASHINGTON, D. C. 20555 (08 CENTS/PAGE -- MINIMUM CHARGE
 \$2.00)
 ABSTRACT DATE OF EVENT - 091278. POWER LEVEL - 84%. CAUSE - MAIN
 BEARING OVERHEATED. WHILE PERFORMING MONTHLY DIESEL
 OPERABILITY TEST, THE DG NO. 2 TRIPPED ABOUT 1 MINUTE AFTER
 ATTAINING R. D. SPEED. COOPER-BESSEMER DIESEL ENGINE TYPE
 KSV-16-T MA BEARING OVERHEATED. MAIN BEARING NUMBER 10 WAS
 DAMAGED DUE TO MINIMAL OIL FLOW DURING ENGINE COASTDOWN.
 FOREIGN PARTICLES WERE SUSPECTED IN THE OIL. THE BEARING WAS
 REPLACED, OIL SUMP CLEANED AND OIL CHANGED. ADEQUATE OIL FLOW
 TO ALL BEARINGS WAS VERIFIED.
 COMPONENT CODE ENGINE-ENGINES, INTERNAL COMBUSTION
 SYSTEM CODE EE-EMERG GENERATOR SYS & CONTROLS

24/5/0000001-0000017// 9
 ACCESSION NO. 0020137892
 TITLE CARBON DIOXIDE SYSTEM DISCHARGES IN DIESEL GENERATOR ROOM AT
 COOPER
 CORPAUTH NEBRASKA PUBLIC POWER DISTRICT, BROWNVILLE, NE
 DATE 1978
 TYPE Q
 MEMO 3 PGS, LTR W/RO 50-298-78-15 TO NRC OFFICE OF I & E, REGION IV,
 APRIL 27, 1978, DOCKET 50-298, TYPE--BWR, MFG--GE, AE--BURNS &
 ROE
 AVAIL AVAILABILITY - NRC PUBLIC DOCUMENT ROOM, 1717 H STREET,
 WASHINGTON, D. C. 20555 (08 CENTS/PAGE -- MINIMUM CHARGE
 \$2.00)
 ABSTRACT DATE OF EVENT - 033078. POWER LEVEL - 72%. CAUSE - SMOKE
 DETECTOR FAILURE. DURING NORMAL OPERATION, THE CARBON DIOXIDE
 SYSTEM IN DIESEL GENERATOR 2 WAS DISCHARGED DUE TO INCORRECT
 OPERATION OF THE SMOKE DETECTOR. THE SMOKE DETECTOR,
 RANDALL-DOUGLAS TYPE PS-714, MALFUNCTIONED, INITIATED AN ALARM,
 AND DISCHARGED CARBON DIOXIDE SYSTEM INTO THE ROOM. THE SMOKE
 DETECTOR WAS REPLACED AND SYSTEM RETESTED. THE DEFECTIVE UNIT
 WAS SENT TO THE MANUFACTURER FOR ANALYSIS AND THE MANUFACTURER
 REPORTS THE DEFECTIVE UNIT HAD EXPERIENCED EXCESSIVE VOLTAGE.
 THE POWER SUPPLY TO THE SMOKE DETECTOR CHECKED SATISFACTORILY
 AND WILL BE FURTHER EVALUATED.

COMPONENT CODE INSTRU-INSTRUMENTATION AND CONTROLS
SYSTEM CODE AB-FIRE PROTECTION SYS & CONT

24/5/0000001-0000177/ 10

ACCESSION NO. 00Z0137891
TITLE CARBON DIOXIDE SYSTEM DISCHARGES IN DIESEL GENERATOR ROOM AT COOPER
CORPAUTH NEBRASKA PUBLIC POWER DISTRICT, BROWNVILLE, NE
DATE 1978
TYPE Q
MEMO 3 PGS. LTR W/RO 50-298-78-14 TO NRC OFFICE OF I & E, REGION IV, APRIL 27, 1978, DOCKET 50-298, TYPE--BWR, MFG--GE, AE--BURNS & ROE

AVAIL AVAILABILITY - NRC PUBLIC DOCUMENT ROOM, 1717 H STREET, WASHINGTON, D. C. 20555 (08 CENTS/PAGE -- MINIMUM CHARGE \$2.00)

ABSTRACT DATE OF EVENT - 041378. POWER LEVEL - 0%. CAUSE - POOR ELECTRICAL CONNECTION IN SMOKE DETECTOR. DURING THE REFUELING SHUTDOWN, THE CARBON DIOXIDE SYSTEM IN DIESEL GENERATOR 2 ROOM DISCHARGED DUE TO A FAILURE OF THE SMOKE DETECTOR. INTERMITTENT OPERATION OF THE 12V DC POWER SUPPLY CAUSED BY A POOR ELECTRICAL CONNECTION ON A ZENER DIODE DAMAGED THE SMOKE DETECTOR WHICH DISCHARGED CARBON DIOXIDE IN THE DIESEL GENERATOR NUMBER 2 ROOM. THE INTERMITTENT OPERATION OF THE 12V POWER SUPPLY HAS BEEN CORRECTED, THE SMOKE DETECTOR REPLACED, AND CORRECT OPERATION OF THE SYSTEM VERIFIED.

COMPONENT CODE INSTRU-INSTRUMENTATION AND CONTROLS
SYSTEM CODE AB-FIRE PROTECTION SYS & CONT

24/5/0000001-0000177/ 11

ACCESSION NO. 00Z0136449
TITLE AUXILIARY SWITCHES INSIDE DG OUTPUT BREAKERS FAIL TO CLOSE AT COOPER
CORPAUTH NEBRASKA PUBLIC POWER DISTRICT, BROWNVILLE, NE
DATE 1978
TYPE Q
MEMO 3 PGS. LTR W/RO 50-298-78-6 TO NRC OFFICE OF I & E, REGION IV, FEB. 10, 1978, DOCKET 50-298, TYPE--BWR, MFG--GE, AE--BURNS & ROE

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

ABSTRACT DATE OF EVENT - 011778. POWER LEVEL - 79%. CAUSE - TORPID OPERATION OF LINKAGE ASSEMBLY. IMMEDIATELY AFTER COMPLETION OF DIESEL GENERATORS OPERABILITY TESTS, READY TO TRANSFER LIGHTS ON BD-C FAILED TO LIGHT. THE AUXILIARY SWITCHES INSIDE THE DG'S OUTPUT BREAKERS FAILED TO CLOSE. THIS WOULD PREVENT THE AUTOMATIC CLOSING OF 4160 V BREAKERS 1-S AND 1-G. THE AUXILIARY SWITCHES FAILURE WAS CAUSED BY TORPID OPERATION OF THE LINKAGE ASSEMBLY. THE OPERATING CAM AND LINKAGES IN 4160 V BREAKERS EG1 AND EG2 WERE CLEANED, LUBRICATED, AND MANUALLY CYCLED. THE AUXILIARY SWITCHES AND LINKAGES ARE PARTS OF GE BREAKER TYPE AMH-4, 78-250-00.

COMPONENT CODE KTBK-CIRCUIT CLOSERS/INTERRUPTERS
SYSTEM CODE EE-EMERG GENERATOR SYS & CONTROLS

24/5/0000001-0000177/ 12

ACCESSION NO. 00Z0130113
TITLE DIESEL GENERATOR MALFUNCTIONS AT COOPER
CORPAUTH NEBRASKA PUBLIC POWER DISTRICT, BROWNVILLE, NE
DATE 1977
TYPE Q
MEMO 3 PGS. LTR W/RO 50-298-77-46 TO NRC OFFICE OF I & E, REGION IV, OCT. 10, 1977, DOCKET 50-298, TYPE--BWR, MFG--G.E., AE--BURNS & ROE

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

ABSTRACT DATE OF EVENT - 091277. POWER LEVEL - 90%. CAUSE - WATER LEAKED INTO ENGINE PANEL. DURING NORMAL OPERATION, THE DIESEL GENERATOR 1 CONTROL POWER FAILURE ANNUNCIATOR ALARMED. ABOUT 5 MINUTES LATER, THE 125 V DC BUS A GROUND ANNUNCIATOR ALARMED IN THE CONTROL ROOM. SINCE THE ALARM WHICH MONITORS ABNORMAL CONDITIONS OF THE DG WAS INOPERABLE, THE OPERATOR MANUALLY

OPENED THE CONTROL POWER FEEDER BREAKER CAUSING THE DG TO
BECOME INOPERABLE. WATER LEAKED INTO THE PANEL AND SHORTED THE
POWER SUPPLY FOR THE LOCAL ANNUNCIATOR. HOLES AROUND PIPES
PENETRATING THROUGH THE CEILING HAVE BEEN SEALED.

COMPONENT CODE ANNUNC-ANNUNCIATOR MODULES
SYSTEM CODE EE-EMERG GENERATOR SYS & CONTROLS

24/5/0000001-0000017// 13

ACCESSION NO. 0020130101
TITLE STOPS ON BOTH RECIRC MG SETS FOUND SET NONCONSERVATIVE AT COOPER
CORPAUTH NEBRASKA PUBLIC POWER DISTRICT, BROWNVILLE, NE
DATE 1977
TYPE 0
MEMO 3 PGS, LTR W/RO 50-298-77-43 TO NRC OFFICE OF I & E, REGION IV,
SEPT. 30, 1977, DOCKET 50-298, TYPE--BWR, MFG--G.E., AE--BURNS
& ROE

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

ABSTRACT DATE OF EVENT - 083177. POWER LEVEL - 0%. CAUSE - IMPROPER
INITIAL SET. DURING A SHUTDOWN, THE MECHANICAL AND ELECTRICAL
STOPS OF THE RECIRC MOTOR GENERATOR SETS WERE CHECKED AND FOUND
TO BE ABOUT 120% AND 112% OF RATED CORE FLOW, RESPECTIVELY.
THE STOPS WERE BELIEVED TO HAVE BEEN SET AT 10% DURING THE
STARTUP TEST PROGRAM. THE LIMITS HAD BEEN IMPROPERLY SET.
THEY HAVE BEEN RESET TO ABOUT 102%.

COMPONENT CODE XXXXXX-OTHER COMPONENTS
SYSTEM CODE CB-COOLANT RECIRC SYS & CONTROLS

24/5/0000001-0000017// 14

ACCESSION NO. 0020129818
TITLE FUEL OIL RETURN LINE TO DG DAY STORAGE TANK SHEARED AT COOPER
CORPAUTH NEBRASKA PUBLIC POWER DISTRICT, BROWNVILLE, NE
DATE 1977
TYPE 0
MEMO 3 PGS, LTR W/RO 50-298-77-47 TO NRC OFFICE OF I & E, REGION IV,
SEPT. 16, 1977, DOCKET 50-298, TYPE--BWR, MFG--G.E., AE--BURNS
& ROE

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

ABSTRACT DATE OF EVENT - 091277. POWER LEVEL - 85%. CAUSE - FATIGUE
DUE TO LOOSE HANGER. DURING SURVEILLANCE TESTING, THE FUEL OIL
RETURN LINE TO DIESEL GENERATOR 1 DAY TANK FROM THE DG 1
PRESSURE CONTROL RELIEF VALVE WAS FOUND TO HAVE SHEARED AT THE
DAY TANK INLET. A RIGID PIPE HANGER SUPPORTING THE RETURN LINE
HAD WORKED LOOSE PERMITTING EXCESSIVE VIBRATION WHICH CAUSED
FATIGUE OF THE INLET CONNECTION. THE BREAK WAS IMMEDIATELY
REPAIRED. THE SUPPORT WAS REINFORCED TO PREVENT EXCESSIVE
MOVEMENT.

COMPONENT CODE PIPEXX-PIPES, FITTINGS
SYSTEM CODE EE-EMERG GENERATOR SYS & CONTROLS

24/5/0000001-0000017// 15

ACCESSION NO. 0020120711
TITLE DIESEL GENERATOR LOUSES ELECTRIC GOVERNOR CONTROL AT COOPER
CORPAUTH NEBRASKA PUBLIC POWER DISTRICT, BROWNVILLE, NE
DATE 1976
TYPE 3
MEMO 2 PGS, LTR W/LER 76-45 TO NRC OFFICE OF I & E, REGION IV, NOV.
29, 1976, DOCKET 50-298, TYPE--BWR, MFG--G.E., AE--BURNS & ROE

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

ABSTRACT CAUSE - FUSE CONTACT SURFACES OXIDIZED. DURING COLD SHUTDOWN
WHILE PERFORMING SURVEILLANCE, DIESEL GENERATOR 2 LOST ELECTRIC
GOVERNOR CONTROL AND GENERATOR VOLTAGE. THE POTENTIAL
TRANSFORMER FUSE CONTACT SURFACES BECAME OXIDIZED, RESTRICTING
CURRENT FLOW, CAUSING LOSS OF CONTROL POWER. THE CONTACT
SURFACES WERE BURNISHED AND CLEANED.

24/5/0000001-0000017// 16

ACCESSION NO. 0020120281
TITLE BREAKER FAILS TO CLOSE AFTER DIESEL GENERATOR STARTS AT COOPER

CORPAUTH NEBRASKA PUBLIC POWER DISTRICT, BROWNVILLE, NE
DATE 1976
TYPE Q
MEMO 2 PGS. LTR W/LER 76-47 TO NRC OFFICE OF I & E, REGION IV, NOV.
29, 1976, DOCKET 50-298, TYPE--BWR, MFG--G.E., AE--BURNS & ROE
AVAIL AVAILABILITY - NRC PUBLIC DOCUMENT ROOM, 1717 H STREET,
WASHINGTON, D. C. 20545 (08 CENTS/PAGE -- MINIMUM CHARGE
\$2.00)
ABSTRACT CAUSE - BLOWN FUSE. WHILE TESTING DURING COLD SHUTDOWN,
BREAKER EGI FAILED TO CLOSE AFTER DIESEL GENERATOR 1 HAD
STARTED AND REACHED NORMAL SPEED AND VOLTAGE. THE FUSE IN THE
CIRCUIT FOR RELAY 59 WAS BLOWN DUE TO DISCONNECTING ONLY ONE
WIRE WHILE TESTING THE RELAY 2 DAYS EARLIER. THIS PREVENTED
THE BREAKER FROM CLOSING. THE FUSE WAS REPLACED AND TEST
PROCEDURE REVISED.

24/5/0000001-0000017// 17
ACCESSION NO. 0020118236
TITLE FUEL LINE TO INJECTOR OF DIESEL GENERATOR BURST AT COOPER
CORPAUTH NEBRASKA PUBLIC POWER DISTRICT, BROWNVILLE, NE
DATE 1976
TYPE Q
MEMO 2 PGS. LTR W/LER 76-34 TO NRC OFFICE OF I & E, REGION IV, SEPT.
13, 1976, DOCKET 50-298, TYPE--BWR, MFG--G.E., AE--BURNS & ROE
AVAIL AVAILABILITY - NRC PUBLIC DOCUMENT ROOM, 1717 H STREET,
WASHINGTON, D. C. 20545 (08 CENTS/PAGE -- MINIMUM CHARGE
\$2.00)
ABSTRACT CAUSE - NOT STATED. DURING A TEST WITH THE REACTOR AT 72%
POWER, THE FUEL LINE TO AN INJECTOR OF DIESEL GENERATOR 1
BURST. THE LINE WAS REPLACED AND TESTED. THE OTHER INJECTOR
LINES ON BOTH DIESEL GENERATORS WERE INSPECTED.