

FROM:

Northern States Power Company  
 Minneapolis, Minn.  
 R.O. Duncanson, Jr.

TO:

Dr. Morris

CLASSIF:

U

POST OFFICE

REG. NO:

DESCRIPTION: (Must Be Unclassified)

Ltr pursaunt to Appendix A, Tech. Specs.  
 of POL DPR-22 trans following report:

ENCLOSURES:

Abnormal Occurrence Report #3  
 Appendix A--Exerpts from Reactor &  
 Control Room Log.

(2 cys encls rec'd)

REMARKS:

DATE OF DOCUMENT:

9-29-70

DATE RECEIVED:

10-5-70

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ACTION NECESSARY ☐NO ACTION NECESSARY ☐CONCURRENCE ☐COMMENT ☐

DATE ANSWERED:

BY:

FILE CODE:

50-263

-miss  
-Applic.

REFERRED TO

DATE

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DATE

Muller

10-5

w/9 cys for Action

DIST:

Reg File

AEC PDR

OGC Rm 506A

Compliance(2)

H. Price &amp; Staff

D. Thompson

Morris/Schroeder

Skovholt

DTIR-Laughlin

NSIC-Buchanan

DeYoung

Boyd

DO NOT REMOVE

ACKNOWLEDGED

3180

WNS

U.S. ATOMIC ENERGY COMMISSION

MAIL CONTROL FORM

FORM AEC-3265

(8-60)

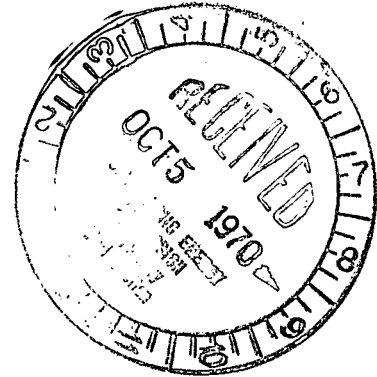
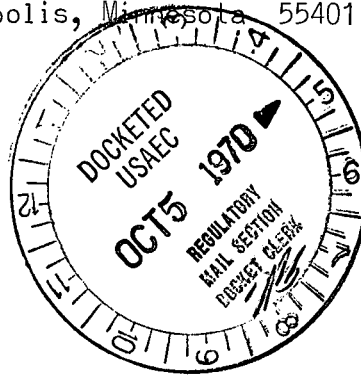
# NSP

Regulatory Docket File  
Regulatory Docket File

## NORTHERN STATES POWER COMPANY

Minneapolis, Minnesota 55401

September 29, 1970



Dr. Peter A Morris, Director  
Division of Reactor Licensing  
United States Atomic Energy Commission  
Washington, D.C. 20545

Dear Dr. Morris:

MONTICELLO NUCLEAR GENERATING PLANT  
Docket No. 50-263 License No. DPR-22  
Reporting of Abnormal Occurrences

A condition has occurred at the Monticello Nuclear Generating Plant recently which we are reporting to your office in accordance with provisions of Appendix A, Technical Specification, of the Provisional Operating License DPR-22. The occurrence was classified as an Abnormal Occurrence as defined in Section 1.A.4 of the Technical Specifications and requires reporting in accordance with Section 6.6.B.3 of the Specifications. The Region III Compliance office has been notified in accordance with the requirements of Section 6.6.A of the Technical Specifications.

The condition occurred during a loss of power test when breakers from the 1AR transformer and the No. 12 Diesel Generator failed to close to supply power to one of the essential 4 kv buses. The problem, which was associated with the undervoltage relaying on the essential bus, was corrected on the following day. The attached Abnormal Occurrence Report No. 3 describes the occurrence in detail.

Yours very truly,

A handwritten signature in cursive script, appearing to read "R.O. Duncanson, Jr.".

R.O. Duncanson, Jr., P.E.  
Gen. Supt. of Power Plants-Mechanical  
Chairman-Monticello Safety Audit Committee

ROD/caf

Attachment

3180 d

September 20, 1970

MONTICELLO NUCLEAR GENERATING PLANT

Abnormal Occurrence Report No. 3

1. Summary Description of Occurrence

On Sunday, September 20, 1970 at 10:20 hours, an abnormal occurrence resulted during a test of the emergency power sources to 4.16 KV bus No. 16. When bus No. 16 was deenergized the breakers from the standby power sources (1AR transformer & No. 12 diesel) failed to automatically close to energize the bus. The investigation of the cause of the failure was completed the following day.

2. Detailed Description of the Occurrence

a. Summary of Conditions

At the time of the occurrence, approximately 3/4 of the fuel had been loaded into the reactor, all control rods were fully inserted, and fuel-loading operations had ceased for the day. The reactor was in a cold shutdown condition with the reactor vessel head removed.

b. Account and Analysis of the Occurrence

Prior to the occurrence, certain switching operations were performed in preparation for the loss of power test on No. 16 bus. The 480 volt load center No. 104, which is normally supplied through No. 104 load center transformer from No. 16 bus, was transferred to No. 103 load center, which is supplied from No. 15 bus by closing breakers 52-409 and 52-309, and opening breaker 52-401. The control switch for No. 11 diesel was placed in "pull to lock" to prevent a start when No. 16 bus was de-energized.

These changes completed the preparations for the loss of power test.

Breaker 152-408 was tripped to de-energize bus No. 16 and the bus voltage decayed to zero. The No. 12 diesel started properly, however, the breaker from 1AR transformer (152-511) and the No. 12 diesel breaker (152-502) did not close.

A similar loss of power test was then performed on No. 15 bus and all automatic functions operated properly.

The normal sequence of events in a loss of power to either No. 15 or No. 16 bus is as follows:

1. Bus voltage drops as the bus is de-energized.
2. Both diesels receive a start signal.
3. An automatic transfer to the 1AR transformer occurs in 5 seconds if the transformer is available.
4. If the bus remains de-energized the timer continues to run. At ten seconds the breaker from 1AR transformer is locked out and the diesel generator breaker is closed.

On Monday, September 21, 1970 an investigation was conducted to determine the cause of the failure. The loss of power test was repeated on No. 16 bus. The breakers again failed to close. At this time, with the No. 16 bus deenergized, it was observed that the undervoltage relay (127-6) that initiates the power source transfer had failed to drop out.

During Preop Testing a similar failure had occurred and the relay was replaced. Bechtel startup personnel had experienced similar problems at other facilities using this type of relay. Recognizing the previous experience with this type of relay, additional testing was performed during the preop test program, to demonstrate that the installed relays were operable. Replacement relays of a different design have been on order since July 1970.

Temporary repairs were completed on Monday, September 21. The repair connected an HGA relay in parallel with the present undervoltage relay. The HGA relay thus serves as a backup device. A backup HGA relay was also installed in the transfer circuit for Bus No. 15. The changes were tested on Monday, September 21, and found to operate properly.

c. Significance or Consequence of the Occurrence

The undervoltage relay failure prevented automatic restoration of power to No. 16 bus. Since the transfer circuitry for No. 15 bus operated properly and considering that there is no irradiated fuel on site there was no direct safety hazard from this occurrence.

3. Recommendations for the Prevention of Similar Future Occurrences

- a. Install the new undervoltage relays before power operation.
- b. Evaluate the desirability of a permanent installation of parallel undervoltage relays to initiate a power source transfer to the essential 4 kv buses.
- c. When the new relays are installed, planned testing program should be developed to verify the reliability of the transfer circuit. This testing program should be discussed by the Operations Committee.

Appendix A: Exerpts from Reactor and Control Room Log.

Prepared by:

J. H. Jacobson

Occurrence Investigator

APPENDIX A

Exerpts from Reactor and Control Room Log

September 20, 1970

TIME

- 1010 The following operation's are in connection with a loss of power test on #16 bus.
- 1010 Close 52-409, closed 52-309
- 1012 Opened 52-401
- 1016 Placed #11 diesel in "pull to lock"
- 1020 Tripped 152-408, voltage went to 0 on 16 bus 1AR breaker did not close, #12 diesel breaker did not close: Reason unknown at this time.
- 1026 Pulled #12 diesel breaker to "pull to lock".
- 1027 Closed 152-408 to return #16 bus to service.
- 1028 Put #12 diesel to stop.
- 1030 Returned #11 diesel to Normal.
- 1035 Late Entry. When #16 bus was energized the #12 CRD pump restarted automatically which indicated that it did not load shed as it should have.
- 1045 Closed 52-401, opened 52-309 and 52-409 #104 LC now being supplied from normal source which is #16 bus.
- 1045 #12 diesel shutdown, #12 emergency SW pump shutdown.
- 1145 Transferred #103 Load Center from normal feed to alternate feed of #104 Load Center.
- 1200 #11 diesel shutdown, #11 emergency service water pump shutdown.
- NOTE The following switching was performed for Surveillance Testing on #11 diesel generator.
- 1146 Opened ACB-152-308 normal feed to #15 bus.
- 1146 #11 diesel generator started and ACB-152-511 #1AR Transf. Bkr. to #15 Bus Auto closed.
- 1147 Pull to Lock ACB-152-511, after ~5 sec. #11 Diesel Gen. Bkr. Auto closed & restored power to #15 bus.
- 1148 Opened ACB-152-511 and closed 152-308, Surveillance test completed and successfull.

TIME

1270 Returned #103 Load Center to its normal supply.

NOTE In reference to #12 diesel generator and 1AR breakers not closing on loss of power test it will be thoroughly checked out tomorrow when experts are here. Mr. Sparrow was notified and he notified G. Jacobson and Morgan Clarity.

1450 Completed checks on #11 D.G. Air Compressors and Fuel oil transfer systems and all o.k.

September 21, 1970

0900 #12 Diesel Gen. Bared over for Surveillance Test.

0908 Placed #12 diesel control switch to Auto, and #12 diesel gen. bkrs. to Auto.

0915 Transferred #104 Load Center to its alternate source #103 Load Center in preparation for Surveillance Testing on #12 Diesel Gen.

0920 Placed #11 Diesel Gen. Bkr. & Control switch in the pull-to-lock position so that #11 Diesel would not start during #12 Diesel Gen. was tested.

0925 Opened Bkr 152-308 to initiate Auto start of #12 Diesel Gen., #12 Diesel Gen. started but Bkr. did not close on to #16 Bus, #1AR Bkr. 152-610 did not close on #16 Bus, #12 Diesel Gen. Voltage was ~ 4550 & cycles was 63.

0930 Closed Bkr-152-308 to restore power to #16 Bus.

0931 Cleared Auto start signal to #11 & 12 Diesel Gen. Placed #11 Diesel Gen. Bkr & CS in the Auto position & Placed #12 Diesel Gen. Bkr in Pull-to-Lock.

0935 Returned to #104 Load Center to its normal source of power #16 Bus.

0955 Placed #12 Diesel Gen. Bkr. in the Auto position.

1925 Pulled trip fuses on non-essential Load Centers fed from #16 Bus for Loss-of-Power test.

1928 Performed Loss-of-Power test on #16 Bus #12 Diesel started on Loss-of-Power and supplied power to 16 Bus, also verified 1AR would supply power.

1932 16 Bus returned to normal and Trip fuses installed.

1932 #12 Diesel shutdown and control switch returned to Auto.

2000 Pulled trip fuses on non-essential Load Centers fed from 15 Bus for Loss-of-Power test.

TIME

- 2004 Performed Loss-of-Power test on 15 Bus verified #11 Diesel Auto. start on Loss-of-Power, and that Diesel came on line and supplied power to #15 Bus. Also verified that the 1AR transformer would supply power to 15 Bus.
- 2006 #15 Bus returned to normal and trip fuses installed.
- 2008 #11 Diesel shutdown and Control Switch placed in Auto.

