

U.S. NUCLEAR REGULATORY COMMISSION
LICENSEE EVENT REPORTAPPROVED BY ONE
3130-0011
EXPIRES 4-30-82

CONTROL BLOCK

(PLEASE PRINT OR TYPE ALL REQUIRED INFORMATION)

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CONT

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EVENT DESCRIPTION AND PROBABLE CONSEQUENCES 10

02 On 9/28/83 containment spray system (NS) train "B" was declared inoperable due to
03 a loss of power indication to the CPCS pressure transmitter. On 9/29/83 (with NS
04 train B still out) nuclear service water (RN) train A was declared inoperable due
05 to water in the oil reservoir of RN pump 1A. These constitute degraded modes per
06 T.S.3.6.2 and 3.7.4. Since RN is required for NS operability, both NS trains were
07 inoperable. This is reportable per T.S.6.9.1.10(b). Although still capable of limited
08 operation, the NS system was not required during this incident. Health and safety of
09 the public were unaffected.

09 X X 11 X 12 Z 13 X X X X X X 14 Z 15 Z 16
17 LER/NO REPORT NUMBER 83 18 084 19 01 20 T 21 0
22 ACTION TAKEN 23 FUTURE ACTION 24 EFFECT ON PLANT 25 SHUTDOWN METHOD 26 HOURS 27 ATTACHMENT SUBMITTED 28 NFRD-4 FORM SUB. 29 PRIME COMP. SUPPLIER 30 COMPONENT MANUFACTURER 31
32 X 33 Z 34 Z 35 Z 36 Z 37 0000 38 Y 39 N 40 L 41 X 42 9 43 9 44 9 45 9 46 9 47 9 48 9 49 9 50 9 51 9 52 9 53 9 54 9 55 9 56 9 57 9 58 9 59 9 60 9 61 9 62 9 63 9 64 9 65 9 66 9 67 9 68 9 69 9 70 9 71 9 72 9 73 9 74 9 75 9 76 9 77 9 78 9 79 9 80 9 81 9 82 9 83 9 84 9 85 9 86 9 87 9 88 9 89 9 90 9 91 9 92 9 93 9 94 9 95 9 96 9 97 9 98 9 99 100

CAUSE DESCRIPTION AND CORRECTIVE ACTIONS 27

10 The power supply for the containment pressure control system failed and was subse-
11 quently replaced. The drain line for RN pump 1A seal catch basin was clogged,
12 allowing water to back up and enter the outboard bearing. The oil reservoir was
13 refilled. The failure to identify the impact of RN train A on NS train A's oper-
14 ability is attributed to personnel error. Appropriate personnel were counseled and
15 T.S. reference manual revised.

15 F 28 100 29 NA 30 B 31 Tech. Spec. Log Review 32
33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100

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NAME OF PREPARER Phillip B. Nardoci

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Duke Power Company
McGuire Nuclear Station
Reportable Occurrence Report No. 369/83-84

Report Date: October 14, 1983

Facility: McGuire Unit 1, Cornelius, North Carolina

Identification: Both Trains of Containment Spray System Inoperable

Description: While in Mode 1 at 100% power on September 28, 1983, Containment Spray System (NS) Train B was declared inoperable. This declaration was made following the identification of a loss of power indication for the DC power supply to the Train B Containment Pressure Control System (CPCS) pressure transmitter. Two trains of the NS System are required to be operable by Technical Specification 3.6.2.

On September 29, 1983, in order to perform a retest of Nuclear Service Water System (RN) valve 1RN-68 following maintenance, an operator was sent to inspect Nuclear Service Water System Pump 1A. The operator noted water in the oil reservoir for the outboard pump bearing and reported this to the Control Room. The decision to declare the pump inoperable was made by the Shift Supervisor and the Assistant Operating Engineer. Both trains of the RN System are required to be operable by Technical Specification 3.7.4.

The RN System provides support necessary to the operability of the NS System by cooling the NS heat exchanger and the air handling unit motor cooler for the NS pump. The inoperable declaration of RN Pump 1A therefore caused the NS Train A to be inoperable, resulting in no operable NS trains and placing the unit outside the Action Statement of Technical Specification 3.6.2. This inoperability was confined to the recirculation mode of operation of the NS System. When a Limiting Condition for Operation (LCO) and Action Statement are not met, the unit is required to be placed in a mode in which the specification does not apply. This action is required to be initiated within 1 hour, pursuant to Technical Specification 3.0.3.

The impact of the inoperable RN train upon the single remaining operable NS train was not realized when RN Pump 1A was tagged out. Therefore, the requirements of Technical Specification 3.0.3 were not met. The discovery that both NS trains had in fact been inoperable was made when NS Train B was being cleared from the Technical Specification Action Item Log (TSAIL). This situation existed for approximately five hours.

Evaluation: Troubleshooting of the DC power supply for the CPCS Pressure Transmitter revealed that it was not providing the required 48 volt DC output. With the pressure transmitter unable to provide a signal to the alarm module, the relays controlled by this module (which provide the open permissive for two NS valves) could not be energized. Temporary jumpers were placed across the contacts necessary to energize the relays providing the open permissive signal to the NS valves, restoring Train B to operable status. This action was taken when it appeared that there would be a delay in obtaining a new power supply. The interlock function of the CPCS was still operable since the pressure transmitter supplying the stop/start permissive signal to the NS pump was still operable.

When water was discovered in the oil reservoir for the outboard bearing of RN Pump 1A, the train was declared inoperable and pump motor breakers were opened. Sludge (mud and possible organic growth) was found clogging the drain line for the outboard seal catch basin. The RN System takes suction from untreated lake water. The clogging of the drain line is thought to have gradually accumulated from pump seal leakage.

When RN Pump 1A was declared inoperable, NS Train B was still out of service. At the time that RN Train A was declared inoperable, the impact upon NS Train A was not considered. RN Train A provides cooling water to the heat exchanger and air handling unit motor cooler for NS Pump 1A. NS Train A is rendered inoperable by the loss of RN Train A.

The Technical Specification Reference Manual - Section IV provides a list of related Technical Specifications with applicable modes to be considered when a system is declared inoperable. As a result of this incident, the list of related Technical Specifications was reviewed and it was discovered that the RN System's impact upon NS (Technical Specification 3.6.2) was not addressed by the reference manual.

Other systems which depend upon RN for operability and are required during the Mode 1 are the Chemical and Volume Control (NV) System, Auxiliary Feedwater (CA) System, Component Cooling Water (KC) System, Control Area Ventilation (VC) System and the Diesel Generator (D/G). All of these systems had the redundant train operable when RN train became inoperable.

The requirement exists to declare dependent systems inoperable when a support system is taken out of service. The common but not totally uniform approach used when declaring a support system inoperable is to list dependent systems in the TSAIL. This approach was not applied when RN Pump 1A was declared inoperable.

Compliance with Technical Specification Action Statement 3.8.1.1 was also not achieved during this incident. With D/G 1A inoperable due to RN Pump 1A, the Action Statements a) and c) of the associated specification were applicable. This required a) that an active test of D/G 1B's operability be performed by starting the D/G and verifying generator parameters, and c) that required equipment relying on D/G 1B as an emergency power source, and the turbine-driven CA pump, be verified to be operable. Since the dependency of systems upon RN Train A was not evaluated and D/G 1A was not declared in the TSAIL, these actions were not met.

Corrective Action: While a new power supply was being obtained (Lambda Model LCS-CC-48; 48 VDC, 3.7 amp power supply) for the pressure transmitter, the relays controlled by the alarm module were energized by the use of jumpers. This restored NS Train B by simulating a constant open permissive for the two affected NS valves. The new power supply was installed and the jumpers removed on September 30, 1983. These actions restored the pressure transmitter for NS Train B to operable status.

The RN Pump 1A outboard seal catch basin drain line was cleared. The bearing was inspected for damage and flushed with oil. The oil reservoir was then refilled with clean oil.

In order to prevent future failures to identify inoperable dependent systems when a support system is declared inoperable, a memorandum was issued on September 30, 1983. This memorandum was addressed to all Senior Reactor Operator license holders, and stated the policy of declaring all dependent systems inoperable (and making the appropriate TSAIL entries) whenever a support system is declared inoperable. Technical Specification Reference Manual - Section IV was updated to include the impact of RN System on NS System operability.

Safety Analysis: When the NS Train B was initially declared inoperable, Train A was fully functional and capable of performing the designed safety function if required. This was not the case for four hours and forty minutes on September 29, 1983. During this time both NS trains were technically inoperable.

In the case of a large loss-of-coolant accident (LOCA), the degraded NS System would still have been capable of performing to a limited extent. Assuming the maximum flow rates for all systems taking suction from the Fueling Water Storage Tank (FWST), approximately 30 minutes would have been required to exhaust this supply. During this time, NS Train A would be capable of spraying cool water from the FWST into containment and mitigating containment pressure peaks. The loss of RN Pump 1A, and resultant loss of cooling water to the AHU motor cooler for NS Pump 1A would not have had an immediate effect on a single train accident scenario. The AHU for cooling the motor of NS Pump 1A is located in the top of Room 502 on the 695' elevation. This AHU is directed to blow downwards on the NS pump and motor, located in the center of the approximately 10' x 15' x 15' room. Without RN flow to the AHU coil, the fan would continue to circulate air in the room and provide some degree of cooling to the NS pump motor. It is estimated that the motor could operate for several hours before overheating became a concern.

In the recirculation mode of operation after a postulated LOCA, operation of NS Train A could not have been assured. Design pressure of the containment could be exceeded under these conditions; however, recent calculations have shown the containment to be capable of withstanding pressures of three to four times design pressure. Furthermore, in the event of an accident requiring the functioning of the systems supported by RN Train A, the operators could have initiated action more promptly to restore the train. In addition, nuclear service water from Train B or from the unit could have been made available by opening the associated cross-connect valves. Another means of opening the NS isolation valves would have been to install jumpers to energize appropriate relays, giving an open permissive.

The starting history of D/G 1B shows that one valid failure has occurred in 187 start attempts. Although the required active operable verification was not performed, it can be assumed that D/G 1B was operable. Had an attempt been made to verify the operability of systems indicated by Action c, all Train B components would have been determined operable at that time.

No incidents occurred at McGuire during the time of NS System operability; therefore, the health and safety of the public were not affected by this incident.

DUKE POWER COMPANY

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HAL B. TUCKER
VICE PRESIDENT
NUCLEAR PRODUCTION

October 14, 1983

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83 OCT 19 A 9:20

Mr. J. P. O'Reilly, Regional Administrator
U. S. Nuclear Regulatory Commission
Region II
101 Marietta Street, NW, Suite 2900
Atlanta, Georgia 30303

Subject: McGuire Nuclear Station Unit 1
Docket No. 50-369
LER/RO-369/83-84

Dear Mr. O'Reilly:

Please find attached Reportable Occurrence Report RO-369/83-84. This report concerns T.S. 3.6.2, "Two Independent Containment Spray Systems Shall Be Operable..."; and T.S. 3.7.4, "At Least Two Independent Nuclear Service Water Loops Shall Be Operable." This incident was considered to be of no significance with respect to the health and safety of the public.

Very truly yours,

H.B. Tucker
Hal B. Tucker

PBN:dyh
Attachment

cc: Document Control Desk
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

Mr. W. T. Orders
Senior Resident Inspector-NRC
McGuire Nuclear Station

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Institute of Nuclear Power Operations
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