

CONTROL BLOCK

(PLEASE PRINT OR TYPE ALL REQUIRED INFORMATION)

01 N C M G S 1 3 0 0 0 0 0 0 0 0 0 0 3 4 1 1 1 1 4 5
7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 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

CONT

01 REPORT SOURCE L 5 0 5 0 0 0 3 6 2 7 0 7 2 5 8 3 9 0 8 3 1 8 3 9
7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 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

EVENT DESCRIPTION AND PROBABLE CONSEQUENCES (10)

02 On 7/25, 27 and 8/10/83 (Mode 1), and 8/12/83 (Mode 3), 8/21/83 (Mode 5), 8/24/83
03 (Mode 4), and 8/25/83 (Mode 3), pressurizer heater group 1B was declared inoperable
04 due to various reasons including: load center breaker trip, ground fault indica-
05 tion, failure to maintain system pressure, and failure of the vacuum contactor
06 to close. These violate T.S.3.4.3 which is reportable per T.S.6.9.1.11(b) and
07 similar to RO-369/83-02 and 83-35. During the times that group 1B was inoperable
08 at least two groups of pressurizer heaters were operable. Health and safety of
09 the public were unaffected.

09 C J 11 X 12 Z 13 X X X X X X X 14 Z 15 Z 16
17 8 3 18 0 6 5 19 0 3 20 L 21 0
22 23 24 25 26 27 28 29 30 31 32 33
34 X 35 X 36 Z 37 Z 38 0 0 0 0 39 Y 40 N 41 L 42 X 9 9 9
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

CAUSE DESCRIPTION AND CORRECTIVE ACTIONS (27)

10 These incidents are attributed to various component malfunctions or failures
11 (including blown fuses in the pressurizer heater power circuit, and a bad trans-
12 former in the vacuum contactor ground fault monitor circuit), and design deficiency.
13 The fuses and transformer were replaced, and the ground fault circuit modified.
14 A followup report will be submitted addressing failures of the vacuum contactor
15 to close.

15 X 28 1 0 0 29 Modes 1,3,4,5 30 A 31 Control Room Alarms 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

16 Z 33 Z 34 NA 35 NA 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

17 0 0 0 37 Z 38 NA 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

18 0 0 0 40 NA 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

19 Z 42 NA 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

20 N 44 NA 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

NAME OF PREPARER Phillip B. Nardoci

PHONE (704) 373-7432

DUKE POWER COMPANY
MCGUIRE NUCLEAR STATION
REPORTABLE OCCURRENCE REPORT NO. 369/83-65

REPORT DATE: August 31, 1983

FACILITY: McGuire Unit 1, Cornelius, NC

IDENTIFICATION: Pressurizer Heater Group 1B Inoperable

DESCRIPTION: Unit 1 pressurizer heater group 1B was declared inoperable on July 25, 1983 when the load center breaker (1ELXB-4D) tripped and would not reset from the control board. The load center breaker was closed and pressurizer heater group 1B declared operable the same day. The Unit was in Mode 1 at 100% power at the time of the incident, which is attributed to Component Malfunction.

On July 27, 1983 pressurizer heater group 1B was declared inoperable due to a ground fault indication. That same day, the ground fault indication cleared and the heater group was declared operable. The Unit was in Mode 1 at 100% power when the incident occurred. This is attributed to Component Malfunction.

On August 10, 1983 pressurizer heater group 1B was declared inoperable due to its failure to maintain system pressure. Two blown fuses in the pressurizer heater power circuit and a bad transformer in the vacuum contactor ground fault monitor circuit were replaced, and the heater group declared operable on August 11, 1983. At the time of the incident the Unit was in Mode 1 at 100% power. This incident is attributed to Component Failure.

On August 12, 1983 pressurizer heater group 1B was declared inoperable because the vacuum contactor would not close in MANUAL. The heater group was declared operable on August 13, 1983 after it functioned properly for an entire shift. The Unit was in Mode 3 at the time of the incident which is attributed to Component Malfunction.

As a result of the B pressurizer heater group control problems which had occurred during the previous two weeks, troubleshooting of the control circuits was performed but no problems with the control circuits could be found.

On August 21, 1983 the B pressurizer heater group was again declared inoperable because the feeder breaker (1ELXB-4D) would trip and lockout within ten minutes after the vacuum contactor was closed. The Solid State Trip Device on breaker 1ELXB-4D was modified to disable the unused ground fault trip circuit. The B pressurizer heater group was placed back in service and declared operable on August 22, 1983. The Unit was in Mode 5 at the time of the incident, which is attributed to Design Deficiency.

On August 24, 1983 the B pressurizer heater group was declared inoperable because the vacuum contactor would not close in manual. After a blown 500 AMP fuse in the vacuum contactor was replaced, the vacuum contactor still would not close. Before the problem could be located the vacuum contactor began to function properly and pressurizer heater group 1B was declared operable on August 25, 1983. The Unit was in Mode 4 at the time of the incident which is attributed to Component Malfunction.

On August 25, 1983 the vacuum contactor would not close in MANUAL and was declared inoperable. Before any corrective action could be taken, it began to operate and was declared operable the same day. The Unit was in Mode 3 at the time of the

incident which is attributed to Component Malfunction.

All of the inoperable declarations were made pursuant to technical Specification 3.4.3, which requires that two groups of pressurizer heaters be operable in Modes 1, 2, and 3.

EVALUATION: The 1B pressurizer heater group is protected and controlled by circuit breakers, fuses and a contactor. The load center feeder breaker for the B pressurizer heater group is 1ELXB-4D. This breaker has a trip/lockout function on overcurrent with a manual reset on the breaker. After the load center breaker has tripped either manually or from a Low Pressurizer Level signal from the Process Control System, the MANUAL/AUTO SELECTOR SWITCH must be in the MANUAL position before 1ELXB-4D can be closed. On July 25, 1983 after verifying that the trip was not caused by overcurrent, 1ELXB-4D was closed while making sure the AUTO/MANUAL SWITCH was in MANUAL. No determination can be made as to the position of AUTO/MANUAL SWITCH during the unsuccessful attempts to close 1ELXB-4D, but it did close with the AUTO/MANUAL Switch in MANUAL.

The ground fault indication on pressurizer heater group 1B on July 27, 1983 disappeared after two hours with no maintenance action taken.

After B pressurizer heater group appeared unable to maintain reactor coolant system pressure on August 10, 1983, two blown fuses (Bussman LPS-RK-90) in the back-up pressurizer heater panel were replaced. The vacuum contactor would not work consistently, and during the troubleshooting activities a bad transformer (open primary) was found in the ground fault indicating circuit. It was replaced with a new transformer of the same type (General Electric Model 9T51B85). After this maintenance action operators were able to close the vacuum contactor. Circuit analysis revealed that the ground fault monitor circuit in which the transformer was replaced has no control function and only provided a ground fault indication on the local ground monitor panel. This has no effect on the operation of the vacuum contactor.

On August 12, 1983 the B pressurizer heater group was declared inoperable when the vacuum contactor would not close in MANUAL. The problem had disappeared during the next shift when the operator cycled the vacuum contactor in MANUAL.

Troubleshooting on August 18, 1983 as a result of the previous incidents could not find any problems with the B pressurizer heater group circuitry.

No cause could be found for feeder breaker 1ELXB-4D tripping on overcurrent on August 21, 1983, but a problem was suspected with the breaker itself. However, bench testing of the breaker and its trip device found both acceptable.

On August 22, 1983, a modification was performed on the power shield (Solid State Trip Device, ITE Type SS-4G) of 1ELXB-4D to disable the ground trip circuit, which is not used for the pressurizer heaters. Since the pressurizer heaters are ungrounded (high impedance to ground), this circuit was not intended to give a trip and was eliminated by placing a jumper across terminals 1 and 3 on the input of the ground trip circuit. This modification was also performed for heater group 1A. (A similar modification had been made to the non-essential pressurizer heater feeder

breakers two years ago.)

The incidents on August 10, 12, 24, and 25, 1983 when the vacuum contactor would not close in MANUAL appear to have been caused by the intermittent failure of a component in the vacuum contactor control circuit. This circuit will be investigated and a followup report submitted addressing the causes and corrective action taken to cure the intermittent failures of the vacuum contactor to close.

The August 24 incident in which the 500 amp fuse blew was the first failure of this size fuse in the heater circuits. Duke Power Company will continue to monitor all of the pressurizer heater problems and try to resolve them.

CORRECTIVE ACTIONS: Blown fuses in the Pressurizer Heater power circuits were replaced soon after they were identified. The damaged transformer in the ground fault monitoring circuit was replaced. The unused ground fault circuit of the power shield on 1ELXB-4D was disabled. A similar modification was also performed for heater group 1A. Proper operation of the circuit breaker 1ELXB-4D verified the adequacy of the modification to the power shield.

Duke Power Company will evaluate the application of Bussman 90 amp fuses used to protect individual heaters in light of high ambient temperatures in the panel area. A modification to increase the capacity of the transformers in the ground fault monitoring circuit will be implemented.

Duke Power Company will continue to troubleshoot the vacuum contactor circuit whenever the 1B pressurizer heater group is not needed to support operation. Proper operation of the contactor and ground fault system will be verified following the completion of troubleshooting and modification work. This report will be reviewed with appropriate personnel to make them aware of the problems encountered to date.

SAFETY ANALYSIS: During the time that pressurizer heater group 1B (which receives essential power) was inoperable, heater group 1A (essential power) was operable. In addition, groups 1C and 1D were also operable (non-essential power).

The Technical Specifications requirement to have at least two pressurizer heater groups operable enhances the capability of the plant to control Reactor Coolant System pressure and establish natural circulation. At least two groups of pressurizer heaters were operable during these incidents (although only one received essential power). The health and safety of the public were unaffected by these incidents.

DUKE POWER COMPANY

P.O. BOX 33189
CHARLOTTE, N.C. 28242

August 31, 1983

HAL B. TUCKER
VICE PRESIDENT
NUCLEAR PRODUCTION

USNRC REGION II
ATLANTA, GEORGIA
83 SEP 12 48:19
TELEPHONE
(704) 373-4531

Mr. James 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-369/83-65

Dear Mr. O'Reilly:

Please find attached Reportable Occurrence Report RO-369/83-65. This report concerns T.S. 3.4.3, "The Pressurizer Shall Be Operable With...At Least Two Groups of Pressurizer Heaters Each Having a Capacity of at Least 150 kw." This incident was considered to be of no significance with respect to the health and safety of the public.

A followup report will be submitted addressing the causes and corrective action taken to correct the intermittent failures of the vacuum contactor to close.

Very truly yours,

H.B. Tucker
Hal B. Tucker

PBN:jfw
Attachment

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

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

Records Center
Institute of Nuclear Power Operations
1100 Circle 75 Parkway, Suite 1500
Atlanta, Georgia 30339

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