

CONTROL BLOCK: ☐

(PLEASE PRINT OR TYPE ALL REQUIRED INFORMATION)

0	1	N	C	M	G	S	2	0	0	-	0	0	0	0	0	0	0	4	1	1	1	1	4	5	
7	8	LICENSEE CODE					12	13	LICENSEE NUMBER					19	20	LICENSEE TYPE					30	31	CAT		32

CONT

0	1	L	5	0	5	0	0	0	3	7	0	7	0	8	0	8	3	8	0	9	0	7	8	3	9		
7	8	REPORT SOURCE					12	13	DOCKET NUMBER					14	15	EVENT DATE					16	17	REPORT DATE				

EVENT DESCRIPTION AND PROBABLE CONSEQUENCES (10)

0 2 During unit startup, rod withdrawal limits established to prevent a positive
0 3 moderator temperature coefficient were exceeded. This violates T.S.3.1.1.3
0 4 which is reportable per T.S.6.9.1.11(b). Since a conservative estimate of MTC
0 5 shows that the value remained below zero throughout the incident, there was no
0 6 effect of the safety of the reactor or the operator's ability to control it.
0 7 Health and safety of the public were unaffected.

0	9	R	B	11	A	12	A	13	C	O	N	R	O	D	14	Z	15	Z	16
7	8	SYSTEM CODE		CAUSE CODE		CAUSE SUBCODE		COMPONENT CODE				COMP SUBCODE		VALVE SUBCODE					
17	18	EVENT YEAR		SEQUENTIAL REPORT NO.		OCCURRENCE CODE		REPORT TYPE		REVISION NO.									
19	20	ACTION TAKEN		FUTURE ACTION		EFFECT ON PLANT		SHUTDOWN METHOD		HOURS		ATTACHMENT SUBMITTED		NPRD-4 FORM SUB.		PRIME COMP. SUPPLIER		COMPONENT MANUFACTURER	
21	22	G		H		Z		Z		0		0		Y		N		Z	
23	24	18		19		20		21		22		23		24		25		26	

CAUSE DESCRIPTION AND CORRECTIVE ACTIONS (27)

1 0 This event resulted from the control operator's failure to follow the startup
1 1 procedure when calculating the estimated critical rod position for the startup.
1 2 The reactor was placed in a more conservative configuration. Procedures were
1 3 revised to further ensure necessary actions are taken. Appropriate personnel
1 4 will be counseled.

1	5	X	28	0	0	0	29	Mode 2	B	31	Review of Startup	32
7	8	FACILITY STATUS		% POWER		OTHER STATUS		METHOD OF DISCOVERY		DISCOVERY DESCRIPTION		
1	6	Z	33	Z	34	NA	35	NA	36			
7	8	ACTIVITY CONTENT RELEASED OF RELEASE		AMOUNT OF ACTIVITY		LOCATION OF RELEASE						
1	7	0	0	0	37	Z	38	NA	39			
7	8	PERSONNEL EXPOSURES NUMBER		TYPE		DESCRIPTION						
1	5	0	0	0	40	NA	41	NA	42			
7	8	PERSONNEL INJURIES NUMBER		TYPE		DESCRIPTION						
1	9	Z	42	NA	43	NA	44	NA	45			
7	8	LOSS OF OR DAMAGE TO FACILITY TYPE		DESCRIPTION								
1	0	N	44	NA	45	NA	46	NA	47			
7	8	PUBLICITY ISSUED		DESCRIPTION								

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PDR ADOCK 05000370
S PDR

IE22 1/1

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DUKE POWER COMPANY

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HAL B. TUCKER
VICE PRESIDENT
NUCLEAR PRODUCTION

83 SEP 20

AT: 24

September 7, 1983

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 2
Docket No. 50-370
LER/RO-370/83-39

Dear Mr. O'Reilly:

Please find attached Reportable Occurrence Report RO-370/83-39. This report concerns T.S. 3.1.1.3, "The moderator temperature coefficient (MTC) shall be:
a. Less positive than 0 delta K/K/°F for the all rods withdrawn, beginning of cycle life, hot zero thermal power condition...". 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 / BS

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

OFFICIAL COPY

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DUKE POWER COMPANY
MCGUIRE NUCLEAR STATION
REPORTABLE OCCURRENCE REPORT NO. 370/83-39

REPORT DATE: September 7, 1983

FACILITY: McGuire Unit 2, Cornelius, NC

IDENTIFICATION: Control Rod Withdrawal Exceeded the Limits of the Startup Procedure During the August 9, 1983 Unit 2 Startup

DESCRIPTION: On August 9, 1983, the control operator, calculating the estimated critical rod position (ECP) for unit startup per procedure "Reactivity Balance Calculation Procedure", failed to consult the Data Book curve for control rod position versus boron concentration to prevent a positive moderator temperature coefficient as directed by the startup procedure. The resulting ECP was less conservative than required by the Data Book and procedure. Reactor startup was accomplished using the ECP of D control rod bank 90 steps withdrawn. (Actual critical rod position was 87 steps with a boron concentration of 1242 ppm.) The reactor was stabilized at 10E3 cps (source range) for the 18 month source range calibration.

Approximately 4 hours later, during review of the startup, the discrepancy was discovered and identified as a possible violation of Technical Specification 3.1.1.3. Three hours later D bank had been inserted (following completion of the source range calibration) to zero steps withdrawn and reactor coolant had been diluted to 1190 ppm boron.

The event resulted from the control operator's failure to follow the startup procedure and consult the Data Book, and is attributed to Personnel Error.

EVALUATION: To prevent operating with a positive moderator temperature coefficient (MTC), data was gathered at the beginning of core life and curves were drawn and placed in the Data Book. These rod withdrawal limits were transmitted to the NRC via a T.S. 3.1.1.3a/6.9.2 Special Report submitted June 2, 1983. The Controlling Procedure for Unit Startup includes a precaution which reads "Do not exceed withdrawal limits per the Data Book curve." The caution appears immediately prior to step 3.2.50 which directs the operator to calculate the startup ECP per procedure "Reactivity Balance Calculation procedure".

The control operator did not consult the Data Book prior to calculating the ECP. He thought a rough ECP of 120 steps withdrawn on D bank had been calculated earlier, and that rod withdrawal limits had been considered at that time. The operator could also have been influenced by recent Unit 1 startups in which ECPs have been about 80 steps withdrawn on D bank.

When the error was discovered, it was assumed that MTC was greater than zero and action taken to place the reactor in a more conservative configuration. Had the review overlooked the error, the operators would have discovered it during the next step in the startup procedure. Step 3.2.60.1 reads "Maintain rods within the rod withdrawal limits per the Data Book curve."

The estimated MTC was determined with D bank 87 steps withdrawn and 1242 ppm boron. Using the curves "Determination of Rod Withdrawal Limits to Prevent a Positive Moderator Temperature Coefficient" (Ref. the June 2, 1983 Special Report), it was

found that the MTC was most likely always less than zero during the startup. This was a slightly conservative estimate since the curves were measured with no poisons in the core.

CORRECTIVE ACTION: The reactor was placed in a more conservative configuration.

The following signoff step was added to the "Reactivity Balance Calculation Procedure": "Caution: Ensure that none of these rod positions violate the rod withdrawal limits for the affected unit outlined in the Data Book."

This event will be covered with appropriate station personnel, and they will be reminded that procedures must be followed. Supervisors and other reviewers of critical calculations will be reminded of their obligation to ensure that the work is correct.

SAFETY ANALYSIS: Since a conservative estimate of MTC shows that the value remained below zero throughout the incident, there was no effect on the safety of the reactor or the operator's ability to control it. The health and safety of the public were not affected.