

Update Report:
Previous Report Date: 2-21-83

(PLEASE PRINT OR TYPE ALL REQUIRED INFORMATION)

CON'T

0	1
7	8

REPORT SOURCE

L	6	0	5	0	-	0	3	2	5	7	0	1	2	3	8	3	8	0	2	2	8	8	3	9
60	61									68	69						74	75						80
DOCKET NUMBER											EVENT DATE						REPORT DATE							

EVENT DESCRIPTION AND PROBABLE CONSEQUENCES (10)

0 2 | While performing routine surveillance during an extended refueling outage, the control
0 3 | operator noticed that one fuel bundle was located around each of the following with-
0 4 | drawn control rods: 22-15, 34-23, 34-27, and 26-43. This event did not affect the
0 5 | health or safety of the public.
0 6 |
0 7 |
0 8 | Technical Specifications 3.9.10.2, 6.9.1.9b

SYSTEM CODE R C 11		CAUSE CODE A 12		CAUSE SUBCODE X 13		COMPONENT CODE F U E L X X 14				COMP. SUBCODE Z 15		VALVE SUBCODE Z 16					
EVENT YEAR 8 3 21 22		SEQUENTIAL REPORT NO. 0 0 7 23 24 25 26		OCCURRENCE CODE 0 3 27 28 29		REPORT TYPE L 30		REVISION NO. 1 31 32									
ACTION TAKEN G 18		FUTURE ACTION Z 19		EFFECT ON PLANT Z 20		SHUTDOWN METHOD Z 21		HOURS 0 0 0 22 37 40		ATTACHMENT SUBMITTED Y 23 41		NPRD-4 FORM SUB. N 24 42		PRIME COMP. SUPPLIER N 25 43		COMPONENT MANUFACTURER G 0 8 0 26 44 47	

CAUSE DESCRIPTION AND CORRECTIVE ACTIONS (27)

CAUSE DESCRIPTION AND CORRECTIVE ACTIONS (27)

1 0 | A procedural inadequacy allowed the four fuel bundles to be placed in separate fuel
1 1 | cells with withdrawn control rods. The procedure did not define responsibility for
1 2 | assuring that fuel was placed in cells with inserted control rods. The rods were
1 3 | inserted and the procedure was revised to require all control rods be inserted prior
1 4 | to fuel movement.

7		8		9								30				32					
FACILITY STATUS						% POWER			OTHER STATUS			METHOD OF DISCOVERY		DISCOVERY DESCRIPTION							
1	5	H	(28)	0	0	0	(29)				NA	A	(31)	Refueling Operations							
7		8		9		10			12			13		44		45		46		80	

ACTIVITY CONTENT
RELEASED OF RELEASE AMOUNT OF ACTIVITY (35) LOCATION OF RELEASE (36)

1 6 Z 33 Z 34 NA NA

7 8 9 10 11 44 45 80

PERSONNEL EXPOSURES					
NUMBER			TYPE	DESCRIPTION (39)	
(1)	(7)	(0)(0)(0)	(37) Z (38)	NA	

PERSONNEL INJURIES		DESCRIPTION		NA	
NUMBER					
0	0	0	(40)		
				8303210445 830228	
				PDR ADOCK 05000325	
				S	PDR

		8		9		11		12		
LOSS OF OR DAMAGE TO FACILITY						(43)				
TYPE						DESCRIPTION				
1		9		Z		(42)		NA		

7 8 9 10
PUBLICITY
ISSUED DESCRIPTION (45) NA NRC USE ONLY
2 0 N (44)

NAME OF PREPARER

R. M. Poulk, Jr.

PHONE:

919-457-9521

Facility: Unit No. 1

Event Date: January 23, 1983

Initial Conditions:

BSEP Unit No. 1 was in an extended refueling outage for condenser tube replacement, Mark I torus modifications, and a major AOG modification. Due to limited storage capacity in the spent fuel pool, 88 fuel bundles remained in scattered locations within the core. Control rod drive maintenance was in progress and control rods 22-19, 30-43, 38-23, and 38-27, which each had one fuel bundle in their cell, were the last rods scheduled to be rebuilt.

Event Description:

The control rod drive units for rods 22-19, 30-43, 38-23, and 38-27 were scheduled to be rebuilt following the completion of all other drive rebuilds when the fuel bundle in each cell would be moved to cells with fully inserted rods. Due to a problem encountered with uncoupling several drive units to be rebuilt, it was decided to work the four drives with fuel bundles. A fuel shuffle sequence had been prepared for relocating those four fuel bundles based on the remaining rod being inserted. At approximately 0300 on January 23, 1983, the fuel bundles were relocated in the core around withdrawn control rods 22-15, 26-43, 34-23, and 34-27. While performing surveillance requirements to assure that all withdrawn control rods had no fuel in the cell (4.9.10.2.1e) at 1245 on January 23, 1983, the fuel shuffle error was identified.

Cause:

The fuel handling procedure being used (FH-11) did not clearly define responsibility to ensure that control rods were inserted prior to fuel movement. The Brunswick Technical Specifications allow fuel movement with rods withdrawn in certain conditions (3.9.10.1 and 3.9.10.2). The Nuclear Engineer believed that the prerequisite Operations group sign-offs on Section K of GP-01 provided the required controls while the Operations personnel believed the fuel movement sheets generated by the Nuclear Engineer provided the controls.

An Engineering Supervisor and an Operations Engineer had discussed the significance of the proposed evolution and the need to provide special instructions during the week prior to the event, but the fuel shuffle was planned to occur on Monday, January 24, 1983. Due to unexpected CRD work constraints, the work was rescheduled on Saturday evening to be performed on Sunday morning. These personnel rescheduling the event did not contact the Engineering Supervisor or Operations Engineer who had discussed the move nor did these two persons leave written instructions, as they knew they would be on-site during the planned Monday shuffle.

Corrective Actions:

The withdrawn control rods around which the four fuel bundles were placed were inserted within one hour. The delay in inserting these rods occurred because they were under clearance when the problem was identified. A verification was also performed on core fuel location and that all control rods with fuel in their cells were inserted.

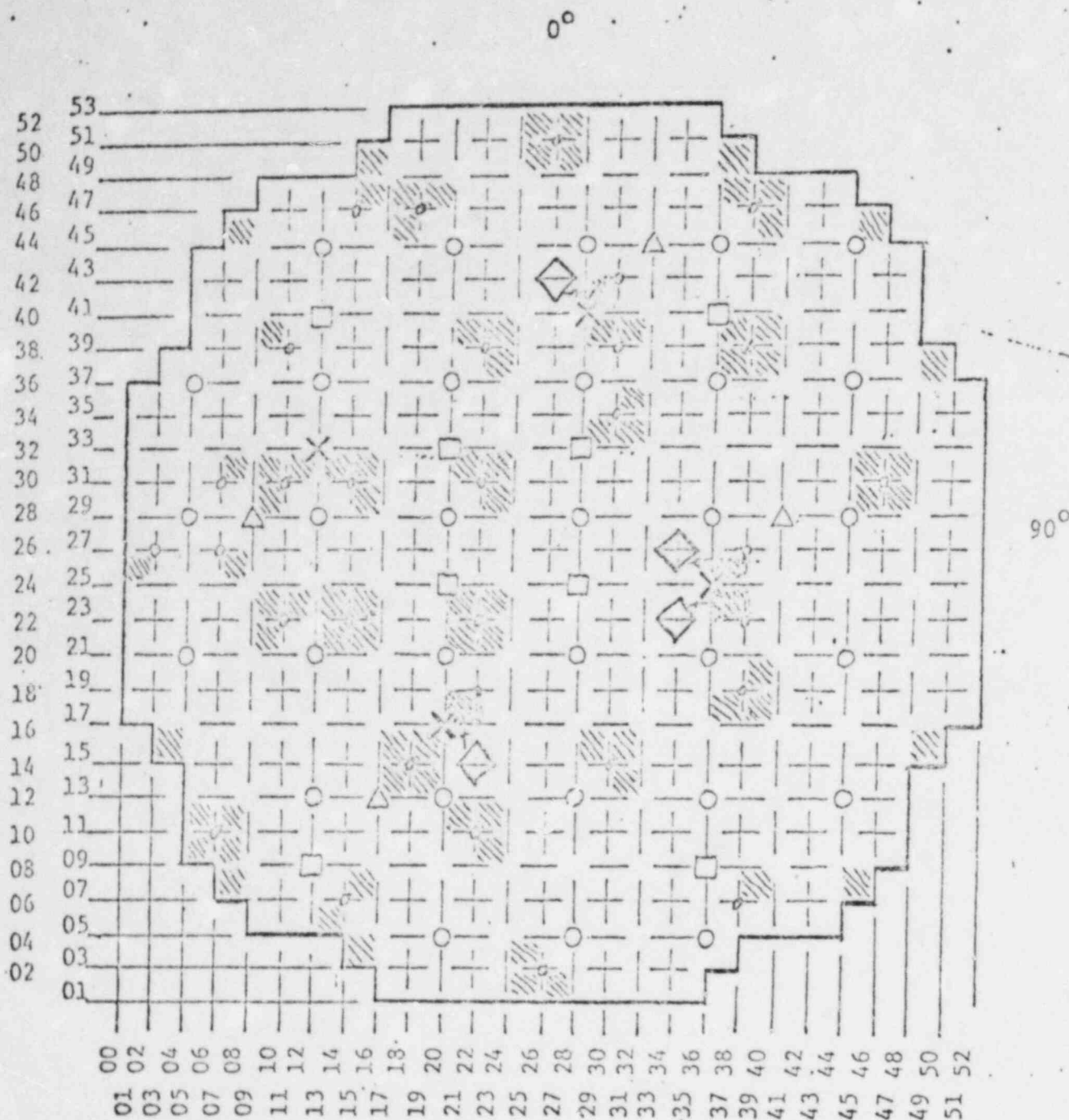
A shutdown margin check was performed for the core configuration immediately following the fuel shuffle and the results were compared with the shutdown margin calculated prior to the fuel moves. In both cases, K_{eff} was determined to be 0.89733, or a 8.698% $\Delta K/K$ shutdown margin. The technical specification requirement is $\geq 0.38\% \Delta K/K$.

FH-11 has been revised to include the following:

1. Fuel will not be moved with any control rod withdrawn.
2. Require positive verification of control rod insertion prior to loading fuel into a cell.
3. Require the core status board not only reflect fuel location status, but also control rod blade status
4. Require that the movement sheets specify all core alterations and require SRO concurrence.
5. Provide specific instructions on the preparation of fuel movement sheets to ensure technical specification requirements and independent verification requirements are met.


This event has also been reviewed by licensed operators and Nuclear Engineers.


NOTE: Arrows denote locations where fuel assemblies were moved to cells with control rods withdrawn.



No. of Fuel Assemblies 560
 No. of Control Elements 137
 Circumscribed Core Dia. 170.5
 Equiv. Core Diameter 160.5

○ No. of In-Core Assemblies 31
 □ No. of Intermed. Chamb. (IRM) 8
 X No. of Startup Chamb. (SRM) 4
 Total No. of Instr. Tubes 43
 ▲ No. of Neutron Sources 5
 Removed after initial fuel cycle

 Installed Fuel Assemblies 87

 Withdrawn Control Rod


 Inserted Control Elements/Rods

Figure 1 Core Arrangement (Top View) on 1-23-83