NRC FORM 366 (7-77)

U.S. NUCLEAR REGULATORY COMMISSION

LICENSEE EVENT REPORT

CONTROL BLOCK: (1) (PLEASE PRINT OR TYPE ALL REQUIRED INFORMATION)

Line	Field	Value
01	LICENSEE CODE (2)	S C H B R 2
01	LICENSE NUMBER (3)	0 0 - 0 0 0 0 0 - 0 0
01	LICENSE TYPE (4)	4 1 1 1 1
01	CAT (5)	
01 CON'T	REPORT SOURCE (6)	L
01	DOCKET NUMBER (7)	0 5 0 0 0 2 6 1
01	EVENT DATE (8)	0 4 2 6 7 9
01	REPORT DATE (9)	0 8 1 5 7 9

EVENT DESCRIPTION AND PROBABLE CONSEQUENCES (10)

02 During shutdown for the 1979 refueling outage, small pin hole leaks were discovered
03 on four canopy seal welds (1 lower and 3 middle canopy seal welds). Similar leaks
04 were discovered and repaired during the 1976 and 1978 refueling outages. (Ref.
05 HBR2-RO-76-20 and HBR2-RO-78-04) Due to the minute leakage occurring from the
06 defects, no adverse consequences resulted from the occurrence.
07
08

Line	SYSTEM CODE (11)	CAUSE CODE (12)	CAUSE SUBCODE (13)	COMPONENT CODE (14)	COMP. SUBCODE (15)	VALVE SUBCODE (16)
09	C I	E	C	C R D R V E	Z	Z

LER/RO REPORT NUMBER (17)	EVENT YEAR		SEQUENTIAL REPORT NO.		OCCURRENCE CODE	REPORT TYPE		REVISION NO.
	7 9	—	0 1 1	/	0 1	X	—	1

ACTION TAKEN (18)	FUTURE ACTION (19)	EFFECT ON PLANT (20)	SHUTDOWN METHOD (21)	HOURS (22)	ATTACHMENT SUBMITTED (23)	NPRD-4 FORM SUB. (24)	PRIME COMP. SUPPLIER (25)	COMPONENT MANUFACTURER (26)
B	X	Z	Z	0 0 0 0	Y	Y	N	W 1 2 0

CAUSE DESCRIPTION AND CORRECTIVE ACTIONS (27)

10 Pin hole leaks found at locations K6, L5, M6, & N7 are believed to possibly be the
11 result of weld degradation taking place in areas where a minimum amount of filler metal
12 might have been deposited during the original welding process. The defects were
13 repaired and non-destructive examination of all repair welds performed. In addition,
14 the repair welds were pressure tested.

Line	FACILITY STATUS (28)	% POWER (29)	OTHER STATUS (30)	METHOD OF DISCOVERY (31)	DISCOVERY DESCRIPTION (32)
15	H	0 0 0	NA	B	Outage inspection

Line	ACTIVITY RELEASED (33)	CONTENT OF RELEASE (34)	AMOUNT OF ACTIVITY (35)	LOCATION OF RELEASE (36)
16	Z	Z	NA	NA

PERSONNEL EXPOSURES

Line	NUMBER (37)	TYPE (38)	DESCRIPTION (39)
17	0 0 0	Z	NA

PERSONNEL INJURIES

Line	NUMBER (40)	DESCRIPTION (41)
18	0 0 0	NA

LOSS OF OR DAMAGE TO FACILITY (43)

Line	TYPE (42)	DESCRIPTION
19	Z	NA

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PUBLICITY

Line	ISSUED (44)	DESCRIPTION (45)
20	Z	NA

NRC USE ONLY

rmd

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GPO 917-926

SUPPLEMENTARY INFORMATION
FOR
REPORTABLE OCCURRENCE 79-11

I. Cause Description & Analysis:

On April 26, 1979, while inspecting the reactor vessel head, small pinhole leaks were found on four canopy seal welds. The canopy seal welds are tertiary reactor coolant pressure boundaries. The degradation of a reactor coolant pressure boundary constitutes a reportable occurrence in accordance with Technical Specification Paragraph 6.9.2.a.3. The locations of the weld defects are as follows:

1. Lower canopy seal at location K6
2. Middle canopy seal at location L5
3. Middle canopy seal at location M6
4. Middle canopy seal at location N7

The defects are apparently the result of weld degradation since leaks have not been found at any other location on the vessel head stub assemblies.

The failures are located in the filler material and heat affected zones of the seal welds. It is believed that the configuration of the consummable inserts used in the original Robinson canopy seal welds might have resulted in a minimum amount of filler metal being deposited in some locations. The defects could also be related to interpass temperature control or gas purge problems that might have been encountered. Furthermore, the failures may be related to a thermal cycling which these welds might undergo during reactor heat up and cool down.

All failures which have occurred to date are local to the canopy seal welds and in no way indicate a concern with the load bearing machined and threaded region of the mechanism.

The machined and threaded surfaces of each vessel head stub assembly provide primary and secondary pressure boundaries, respectively, for the reactor coolant. The threaded portions of the seal are forged or cast. The threaded region consists of ACME threads which are chrome plated and conservatively designed. The seal welds contain only the minute leakage that might occur past the machined and threaded joint. Therefore, the pinhole leaks do not result in any adverse effects to plant operation or to the public health and safety.

II. Corrective Action:

The weld defects were repaired April 27 through May 2, 1979. All welds passed liquid penetrant examinations; however, during plant pressurization (at approximately 400 psig) leaks were found within the repairs of the mechanisms at locations K6 and L5. Upon investigation it was discovered that a small area in the K6 repair weld had apparently undergone excessive grinding and then ruptured upon pressurization. The repair weld leak on

L5 was located at the end of the repair weld where total fusion of the filler and base metals had not been achieved.

These failures were subsequently repaired May 26 through May 30, 1979. Both repair welds passed liquid penetrant examination; however, upon pressure testing (at approximately 2335 psig) K6 failed again. This second repair failure consisted of two linear indications on either side of the repair weld. This was viewed as unique since linear indications had not been previously observed. It was these unique indications that lead to the belief regarding the consumable insert as discussed above. This failure was again repaired June 12 through June 20, 1979. However, several procedure changes were incorporated which are believed to ensure the repair weld integrity.

The indications were ground and holes drilled at each end of the indications so as to inhibit any further growth of the defect. In addition, the canopy was flushed with hot water for an extended length of time prior to the Argon purge so as to remove any boric acid which might have been deposited in the canopy. Following the weld repair, several beads were overlaid 180° around the canopy seal so as to add an extra quantity of weld metal at the defect and 90° to each side of it. The weld was liquid penetrant tested following each step in the weld repair. The weld repair passed the subsequent pressure testing.

III. Corrective Action to Prevent Further Occurrence:

NSSS supplier is continuing its investigation of this type failure in an effort to identify the precise failure mechanism. Further corrective action will be contingent upon the results of this investigation.