

## REGULATORY INFORMATION DISTRIBUTION SYSTEM (RIDS)

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 FACIL:50-261 H. B. Robinson Plant, Unit 2, Carolina Power and Ligh 05000261  
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 STARKEY,R.B. Carolina Power & Light Co.  
 RECIP.NAME RECIPIENT AFFILIATION  
 Region 2, Atlanta, Office of the Director

SUBJECT: LER 80-019/03L-0:on 800822,during refueling outage shutdown,  
 small pinhole leaks & linear defects on canopy seal welds  
 discovered.Caused by weld degradation.Defects repaired &  
 nondestructive examination performed.

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	SFTY PROG EVA42	1	1	STRUCT ENG BR44	1	1
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SUPPLEMENTAL INFORMATION

FOR

LICENSEE EVENT REPORT 80-019

- I. Cause Description and Analysis: On August 22, 1980, a preliminary inspection of the reactor vessel head revealed possible leaks indicated by boric acid deposits on as many as six CRDM canopy seal welds. A further investigation on August 29, 1980, verified leaks on three lower canopy seal welds. Small pinhole leaks were found on two canopy seal welds and small linear defects were discovered on another canopy seal weld. The canopy seal welds are tertiary reactor coolant pressure boundaries. This degradation constitutes a reportable occurrence in accordance with Technical Specification paragraph 6.9.2.b.4. The weld defects and their locations are as follows:

1. Four pinhole leaks at location D4.
2. Three pinhole leaks at location L5.
3. Two linear defects (approximately 3/8" and 1") at location K6.

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 except in the filler material and heat affected zones of the seal welds.

It is believed that the configuration of the consumable 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 identified leaks do not result in any adverse effects to plant operation or to the public health and safety.

II. Corrective Action: All weld defects were repaired and all repair welds were subject to liquid penetrant examinations.

The two small linear defects on K6 were located 3" apart with the larger one starting  $\frac{1}{2}$ " away from a previous weld repair overlay. The indications were ground out and holes were drilled at each end of the indications so as to inhibit any further growth of the defect. Following the weld repair, three beads were overlaid extending from the previous overlay to approximately 1" past the farthest indication. This was done to add an extra quantity of weld metal at the defect. The weld was liquid penetrant tested following each step in the weld repair.

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.

Attachment to LER 80-019

Item 39:

Personnel Exposure Description:

- (a) Describe the magnitude of the estimated maximum dose rate to which workers were exposed: 3 rem/hr at contact.
- (b) Identify categories to which workers were exposed, how many exposed in each category, and the estimated total man-rem dose received by each category:

8 Engineers	-	6.925 Rem received.
3 Welders	-	3.661 Rem received.
2 Mechanics	-	2.615 Rem received.
2 Technical Specialists	-	3.585 Rem received.
2 Level II NDE	-	3.418 Rem received.