

VIRGINIA ELECTRIC AND POWER COMPANY  
RICHMOND, VIRGINIA 23261

USNRC REGION II  
ATLANTA, GEORGIA

Aug.  
83 ~~1~~ 1 All: 13

W. L. STEWART  
VICE PRESIDENT  
NUCLEAR OPERATIONS

July 28, 1983

Mr. James P. O'Reilly  
Regional Administrator  
Region II  
U. S. Nuclear Regulatory Commission  
101 Marietta Street, Suite 2900  
Atlanta, Georgia 30303

Serial No. 358A  
NO/JHL:acm  
Docket No. 50-339  
License No. NPF-7

Dear Mr. O'Reilly:

VIRGINIA ELECTRIC AND POWER COMPANY  
NORTH ANNA POWER STATION UNIT NO. 2  
RESPONSE TO ITEM 4 OF IEB 82-02

Enclosed is the Virginia Electric and Power Company response to Item 4 of IE Bulletin No. 82-02 (Degradation of Threaded Fasteners in the Reactor Coolant Pressure Boundary of PWR Plants) for North Anna Unit No. 2

Very truly yours,

*W. L. Stewart*  
W. L. Stewart

Enclosure

cc: Mr. M. B. Shymlock  
NRC Resident Inspector  
North Anna Power Station

RESPONSE TO ITEM 4 OF IEB 82-02:  
DEGRADATION OF THREADED FASTENERS IN THE REACTOR COOLANT  
PRESSURE BOUNDARIES OF PWR PLANTS

The following information is being submitted as required by Action Item 4 of IEB 82-02 for North Anna Unit 2.

- 4a. Action Item 1 has been completed. Procedures have been developed and implemented to incorporate the maintenance training and work practices referenced in Action Item 1. Further maintenance training, general review of the proper work practices to be utilized with threaded fasteners, is pending. Also completed are the quality assurance measures to be utilized for the proper selection, procurement and application of fastener lubricants.
- 4b. For Action Item 2 of IEB 82-02 all threaded fasteners identified in the response to Action Item 3 of IEB 82-02 were inspected - at least visually. Where it was necessary to remove threaded fasteners for maintenance the fasteners were either reinspected as required prior to reuse or replaced. See Supplement 1 for the identification of the fasteners inspected.
- 4c. The following (Supplement 2) are the results of the inspections performed on the items referred to in Supplement 1.

The total staff time spent to prepare a written response for Item 4 was 48 hours.

The radiation exposure attributed to the initial and subsequent visual inspection was 420 mR excluding NDT inspections.

SUPPLEMENT 1

IDENTIFICATION OF RCPB BOLTING MATERIAL WITHIN THE  
SCOPE DEFINED IN IEB 82-02

BASIS

- (1) Steam Generator and Pressurizer manway closures
- (2) Valve bonnets and pump flange connections in piping  
6" or greater

BOLTING MATERIAL TO BE CONSIDERED

	<u>UNIT 2</u>
1. <u>Loop Stop Valves</u>	.
A Loop T <sub>H</sub>	MOV-2590
T <sub>H</sub>	MOV-2591
B Loop T <sub>C</sub>	MOV-2592
T <sub>H</sub>	MOV-2593
C Loop T <sub>C</sub>	MOV-2594
T <sub>H</sub>	MOV-2595
T <sub>C</sub>	
2. <u>Loop Stop Bypass Valves</u>	
A Loop	MOV-2585
B Loop	MOV-2586
C Loop	MOV-2587
3. <u>Reactor Cooling Pump Casing     And Seal Housing</u>	2A RCP 2B RCP 2C RCP
4. <u>Steam Generator Manway Bolting     (Primary side only)</u>	2A 2B 2C
5. <u>Pressurizer Manway Bolting</u>	2-RC-E-2
6. <u>Residual Heat Removal System     Isolation Valves</u>	MOV-2720A MOV-2720B MOV-2700 MOV-2701
7. <u>S. I. Accumulator Discharge to the Loops</u>	
SI-1K-1A (ATc)	2-SI-153
	2-SI-151
SI-TK-1B (BTc)	2-SI-170
	2-SI-188
SI-TK-1C (CTc)	2-SI-187
	2-SI-185

(2)

8. Safety Injection to Loops

A Loop T <sub>c</sub>	2-SI-92
	2-SI-91
B Loop T <sub>c</sub>	2-SI-100
	2-SI-99
C Loop T <sub>c</sub>	2-SI-106
	2-SI-105
Header to Loops	MOV-2890C
	MOV-2890D
A Loop T <sub>H</sub>	2-SI-118
	2-SI-117
	2-SI-128
B Loop T <sub>H</sub>	2-SI-113
	2-SI-112
C Loop T <sub>H</sub>	2-SI-125
	2-SI-124
	2-SI-126
Header to Loops	MOV-2890A
	MOV-2890B

9. Pressurizer Safety Valves

SV-2551A  
SV-2551B  
SV-2551C

SUPPLEMENT 2  
RESULTS OF THREADED FASTENER INSPECTION UNIT 2

BOLTING MATERIAL	MATERIAL EXAMINED IN PLACE/REMOVED	INSPECTION RESULTS
1. <u>Loop Stop Values</u>		
"A" Loop T <sub>H</sub> MOV-2590	IN PLACE	When inspected each valve had a slight packing leak which allowed a small amount of boric acid solution to contact a few of the fasteners. The valve was visually inspected with the plant at operating temperature and pressure. No leakage was noted.
"A" Loop T <sub>C</sub> MOV-2591	"	
"B" Loop T <sub>H</sub> MOV-2592	"	
"B" Loop T <sub>C</sub> MOV-2593	"	
"C" Loop T <sub>H</sub> MOV-2594	"	
"C" Loop T <sub>C</sub> MOV-2595	"	
2. <u>Loop Stop Bypass Valves</u>		
"A" Loop MOV-2585	IN PLACE	MOV-2585 and 2586 had slight packing leaks. The fasteners were visually inspected and found undamaged. MOV-2587 was visually inspected. No leakage was noted.
"B" Loop MOV-2586	"	
"C" Loop MOV-2587	"	
3. <u>Reactor Coolant Pump Casing and Seal Housing</u>		
"2A" RCP	IN PLACE	No damage was noted to the fasteners.
"2B" RCP	"	
"2C" RCP	"	

SUPPLEMENT 2  
RESULTS OF THREADED FASTENER INSPECTION UNIT 2

BOLTING MATERIAL	MATERIAL EXAMINED IN PLACE/REMOVED	INSPECTION RESULTS
4. <u>Steam Generator Manway Bolting (Primary Side Only)</u>		
"2A"	REMOVED	The fasteners were removed and inspected visually and by Magnaflux inspection IAW 2210 and 2211 of ASME XI. No problems were found.
"2B"	"	
"2C"	"	
5. <u>Pressurizer Manway Bolting</u>		
2-RC-E-2	IN PLACE	No damage to the fasteners was noted.
6. <u>Residual Heat Removal System Isolation Valves</u>		
2-RH-MOV-2720A	IN PLACE	Both MOV-2720A and B had slight packing leaks which allowed a small amount of Boric Acid solution to contact a few of the fasteners. The packing was adjusted and the fasteners visually inspected. No degradation of the fasteners was found.
2-RH-MOV-2720B	"	
7. <u>S.I. Accumulator Discharge To The Loops</u>		
<u>SI-TK-1A (AT<sub>C</sub>)</u>		
2-SI-153	IN PLACE	Each valve inspected visually. No problems with fasteners noted.
2-SI-151	"	



SUPPLEMENT 2  
RESULTS OF THREADED FASTENER INSPECTION UNIT 2

BOLTING MATERIAL	MATERIAL EXAMINED IN PLACE/REMOVED	INSPECTION RESULTS
7. <u>S.I. Accumulator Discharge</u> <u>To The Loops (cont.)</u>		
<u>SI-TK-1B (BT<sub>G</sub>)</u>		
2-SI-170	IN PLACE	Each valve inspected visually. No problems with fasteners noted.
2-SI-168	"	
<u>SI-TK-1C (CT<sub>G</sub>)</u>		
2-SI-185	IN PLACE	2-SI-185 was visually inspected but no problems with the fasteners were noted.
2-SI-187	REMOVED	Valve bonnet on 2-SI-187 was found to have been leaking. Most of the fasteners were covered with boric acid and residue. The valve was disassembled and a new gasket installed. The valve was reassembled with new studs and nuts. The original studs were covered with boric acid and rust but could not be non-destructively tested because they were destroyed while removing.
<u>"A" Loop T<sub>H</sub></u>		
2-SI-118	REMOVED	Each valve visually inspected. No leakage and no problems with the fasteners on 2-SI-117 and 2-SI-128 were noted. Valve 2-SI-118 was noticed to have a body to bonnet gasket leak. The valve was disassembled and inspected. A new gasket and all studs and nuts were replaced. The original fasteners were rejected because of boric acid and rust on the threads.
2-SI-117	IN PLACE	
2-SI-128	"	

SUPPLEMENT 2  
RESULTS OF THREADED FASTENER INSPECTION UNIT 2

BOLTING MATERIAL	MATERIAL EXAMINED IN PLACE/REMOVED	INSPECTION RESULTS
7. <u>S.I. Accumulator Discharge</u> <u>To The Loops (cont.)</u>		
"B" Loop T <sub>H</sub>		
2-SI-128	IN PLACE	Each valve visually inspected. No problems with the fasteners were noted.
2-SI-113	"	
2-SI-125	"	
"C" Loop T <sub>H</sub>		
2-SI-124	IN PLACE	Each valve visually inspected. No problems with the fasteners were found.
2-SI-126	"	
<u>Header to Loops</u>		
MOV-2890A	MOV-2890A-IN PLACE	Each valve visually inspected. MOV-2890A had a slight packing leak which allowed a small amount of boric acid solution to contact the fasteners. The packing was readjusted and no damage to the fasteners was noted. Valve MOV-2890B packing was leaking badly and most of the fasteners were covered with boric acid residue. The studs and nuts were removed, visually and Magnaflux inspected IAW 2210 and 2220 of ASME Section XI, and found undamaged. The valve was reassembled using the same nuts and studs and repacked.
MOV-2890B	MOV-2890B-REMOVED	



SUPPLEMENT 2  
RESULTS OF THREADED FASTENER INSPECTION UNIT 2

BOLTING MATERIAL	MATERIAL EXAMINED IN PLACE/REMOVED	INSPECTION RESULTS
8. <u>Safety Injection to Loops</u>		
"A" Loop T <sub>C</sub>		
2-SI-92	IN PLACE	Each valve visually inspected. No problems with the fasteners were noted.
2-SI-91	"	
"B" Loop T <sub>C</sub>		
2-SI-100	IN PLACE	Each valve visually inspected. No problems with the fasteners on 2-SI-100 were noted. The 2-SI-99 valve was leaking through the body to bonnet gasket. The valve was disassembled, inspected and a new gasket installed. The valve was reassembled with new studs and bolts. The original studs were covered with boric acid but were not non-destructively tested because they were damaged during removal.
2-SI-99	REMOVED	
"C" Loop T <sub>C</sub>		
2-SI-106	IN PLACE	Each valve visually inspected. No problems with the fasteners were noted.
2-SI-105	"	
<u>Header to Loops</u>		
MOV-2890C	IN PLACE	Each valve visually inspected. No problems with the fasteners were noted.
MOV-2890D	"	

SUPPLEMENT 2  
RESULTS OF THREADED FASTENER INSPECTION UNIT 2

BOLTING MATERIAL	MATERIAL EXAMINED IN PLACE/REMOVED	INSPECTION RESULTS
9. <u>Pressurizer Safety Valves</u>		
SV-2551A	REMOVED	The valves were disassembled and the studs and nuts were examined visually and by Magnaflux inspection. No problems were noted with any of the fasteners.
SV-2551B	"	
SV-2551C	"	