

NRC FORM 366
(7-77)

U. S. NUCLEAR REGULATORY COMMISSION

LICENSEE EVENT REPORT

EXHIBIT A

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

01 F L C R P 3 2 0 0 - 0 0 0 0 0 - 0 0 3 4 1 1 1 1 4 5
7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80

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01 REPORT SOURCE L 6 0 5 0 - 0 3 0 2 7 0 4 1 3 8 3 8 0 7 1 2 8 3 9
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EVENT DESCRIPTION AND PROBABLE CONSEQUENCES (10)
02 Since April 13, 1983, FPC received preliminary reports from B&W indicating
03 that 51 of 120 upper core barrel bolts showed ultrasonic flaw indications.
04 FPC embarked on a testing program for those reactor vessel bolts listed in
05 the attachment. The results were that 74 of 96 lower thermal shield
06 bolts and 20 of 72 surveillance specimen holder tubes and 4 of 108
07 tested lower core barrel bolts showed ultrasonic flaw indications.
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SYSTEM CODE: R A (11) CAUSE CODE: E (12) CAUSE SUBCODE: C (13) COMPONENT CODE: X X X X X X X X (14) COMP. SUBCODE: Z (15) VALVE SUBCODE: Z (16)
17 LER/RO REPORT NUMBER: 8 3 (21) EVENT YEAR: 8 3 (22) SEQUENTIAL REPORT NO.: 0 1 8 (24) OCCURRENCE CODE: 0 1 (28) REPORT TYPE: T (30) REVISION NO.: 1 (32)
ACTION TAKEN: F (18) FUTURE ACTION: X (19) EFFECT ON PLANT: Z (20) SHUTDOWN METHOD: Z (21) HOURS: 0 0 0 0 (22) ATTACHMENT SUBMITTED: Y (23) NPRD-4 FORM SUB.: N (24) PRIME COMP. SUPPLIER: N (25) COMPONENT MANUFACTURER: B O 1 5 (26)

CAUSE DESCRIPTION AND CORRECTIVE ACTIONS (27)
10 The flaws were apparently caused by intergranular stress corrosion crack-
11 ing. All 120 upper core barrel bolts were replaced with redesigned bolts
12 made of A-286 material. All 96 of the lower thermal shield bolts and some
13 of the surveillance holder tube bolts were replaced w/Inconel X750 stud/
14 nut fasteners. This rev. documents the results of testing and the
15 corrective action taken.
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FACILITY STATUS: H (28) % POWER: 0 0 0 0 (29) OTHER STATUS: NA (30) METHOD OF DISCOVERY: C (31) DISCOVERY DESCRIPTION: Inspection of P. internals. (32)
ACTIVITY CONTENT: Z (33) RELEASED OF RELEASE: Z (34) AMOUNT OF ACTIVITY: NA (35) LOCATION OF RELEASE: NA (36)
PERSONNEL EXPOSURES: NUMBER: 0 0 0 (37) TYPE: Z (38) DESCRIPTION: NA (39)
PERSONNEL INJURIES: NUMBER: 0 0 0 (40) DESCRIPTION: NA (41)
LOSS OF OR DAMAGE TO FACILITY: TYPE: Z (42) DESCRIPTION: NA (43)
PUBLCITY: ISSUED: N (44) DESCRIPTION: NA (45)
20 N (44) DESCRIPTION: NA (45)
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NAME OF PREPARER: J.L. Bufe / R.H. Thompson PHONE: (904) 795-6486

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SUPPLEMENTARY INFORMATION

REPORT NO.: 50-302/83-18/01T-1

FACILITY: Crystal River Unit 3

REPORT DATE: July 14, 1983

OCCURRENCE DATE: April 13, 1983

IDENTIFICATION OF OCCURRENCE:

Florida Power Corporation has received a preliminary report from Babcock & Wilcox (B&W) indicating that numerous reactor vessel internal bolts may be defective. The possible failure of these bolts is being reported as required by Technical Specification 6.9.1.8.i.

CONDITIONS PRIOR TO OCCURRENCE:

Mode 6 (Refueling)

DESCRIPTION OF OCCURRENCE:

On April 13, 1983, Florida Power Corporation received a preliminary report from Babcock & Wilcox indicating 25 of 61 upper core barrel bolts ultrasonically tested may be defective. Since April 13, as a result of extensive ultrasonic testing, Florida Power Corporation has found additional defect indications on reactor vessel internal bolts. The results of the tests are described on the attachment.

DESIGNATION OF APPARENT CAUSE:

A preliminary study by B&W has indicated that defects in the upper core barrel (UCB) bolts were caused by intergranular stress corrosion.

ANALYSIS OF OCCURRENCE:

The integrity of the core was maintained because the number of UCB bolts which passed ultrasonic (UT) inspection was much higher than the number of bolts needed to hold the core barrel (with the core) in place. There was no effect upon the health or safety of the general public.

CORRECTIVE ACTION:

The following corrective action was taken:

1. All 120 UCB bolts were replaced with bolts which:
 - A. Were machined out of a single piece of A-286 material.
 - B. Had a redesigned transition region between the head and shank to minimize local stress.
 - C. Were peened in advance to reduce surface stress in use.
 - D. Were installed with torque values and pre-stress methods that resulted in a peak stress of 78,000 psi which is well below the measured yield stress of 100,000-134,000 psi for the A-286 material.
2. All 96 lower thermal shield bolts were replaced with stud/nut fasteners made of Inconel X750.

3. Surveillance specimen holder tube (SSHT) bolts which showed UT flaw indications were replaced with stud/nut fasteners made of Inconel X750 such that there were at least three (3) good (no UT flaw indications) fasteners per upper and lower bracket.
4. None of lower core barrel bolts, flow distributor bolts, guide block bolts, and upper thermal shield bolts were replaced. At Refuel V the lower core barrel bolts will be reinspected and their status reevaluated.

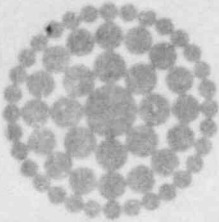
FAILURE DATA:

This is the 18th event reported under Technical Specification 6.9.1.8.i.

REACTOR VESSEL INTERNAL BOLTS

RESULTS OF ULTRASONIC TESTS

BOLT LOCATION	TOTAL NO. OF BOLTS	NO. OF BOLTS TESTED	NO. OF INDICATIONS	NO. OF BOLTS REPLACED
Upper Core Barrel	120	120	51	120
Lower Core Barrel	120	108	4	0
Flow Distributor to Lower Grid	120	114	0	0
Upper Thermal Shield (Upper Restraint Block)	60	60	0	0
Lower Thermal Shield	96	96	74	96
Surveillance Holder Tube	72	72	20	17
Guide Block Bolts	24	24	0	0



USNRC REGION II
ATLANTA, GEORGIA

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**Florida
Power**
CORPORATION

July 12, 1983
3F-0783-09

Mr. James P. O'Reilly
Regional Administrator, Region II
Office of Inspection & Enforcement
U.S. Nuclear Regulatory Commission
101 Marietta Street N.W., Suite 2900
Atlanta, GA 30303

Subject: Crystal River Unit 3
Docket No. 50-302
Operating License No. DPR-72
Licensee Event Report No. 83-018/01T-1

Dear Mr. O'Reilly:

Enclosed is Licensee Event Report No. 83-018/-01T-1 and the attached supplementary information sheet, which are submitted in accordance with Technical Specification 6.9.1.8.i. This report supplies supplementary information to our initial report dated April 27, 1983.

Should there be any questions, please contact this office.

Sincerely,

G. R. Westafer
Manager
Nuclear Licensing and Fuel Management

RT:mm

Enclosure

cc: Document Control Desk
U. S. Nuclear Regulatory Commission
Washington, D.C. 2055

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