



UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION I
631 PARK AVENUE
KING OF PRUSSIA, PENNSYLVANIA 19406

April 4, 1980

Docket Nos. 50-277
50-278

Philadelphia Electric Company
ATTN: Mr. S. L. Daltroff
Vice President
Electric Production
2301 Market Street
Philadelphia, Pennsylvania 19101

Gentlemen:

The enclosed IE Bulletin No. 80-07, "BWR Jet Pump Assembly Failure," is forwarded to you for action. A written response is required. If you desire additional information regarding this matter, please contact this office.

Sincerely,


Boyce H. Grier
Director

Enclosures:

1. IE Bulletin No. 80-07 with Attachments
2. List of Recently Issued IE Bulletins

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UNITED STATES
NUCLEAR REGULATORY COMMISSION
OFFICE OF INSPECTION AND ENFORCEMENT
WASHINGTON, D.C. 20555

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Page 1 of 4

BWR JET PUMP ASSEMBLY FAILURE

Description of Circumstances:

On February 2, 1980, Commonwealth Edison Company (CECo) reported that a jet pump failed in Dresden Unit 3 while operating at about 67 percent of full power in a coastdown mode to a refueling shutdown. Observed changes in plant parameters during the event indicated an individual jet pump failure had occurred. In accordance with T.S., an orderly plant shutdown was begun to bring the unit to cold shutdown within 24 hours.

The plant parameter changes reported by the licensee were (1) generator electrical output decreased from 539 to 511 MW electrical, (2) core thermal power decreased as indicated by decreased APRM readings and steam flow to the turbine, (3) indicated total core flow increased from 97.6 to 104.7 x 10⁶ lb./hr., (4) core plate differential pressure decreased from 16.1 to 13.8 psid., and (5) B recirculation loop flow increased from 49 to 54 x 10³ gpm while A recirculation loop flow remained at 49 x 10³ gpm. These changes were readily observed by the operator in the control room and it was postulated that a jet pump had failed. Individual jet pump readings were taken, the jet pump operability surveillance was performed, and an apparent failure of jet pump No. 13 was determined.

Following vessel head removal and defueling, TV camera and visual inspections of the jet pumps and vessel annulus revealed the hold-down beam assembly of the suspect jet pump had broken across its ligament sections at the mean diameter of the bolt thread area. Failure of the beam assembly resulted in pump decoupling at the diffuser connection. Subsequent insitu ultrasonic examination of all other jet pump hold-down beams, using a special UT technique developed by General Electric (GE), revealed ultrasonic indications of cracking at the same location in 6 of the remaining 19 beams examined. Initial estimates of crack depth ranged from 6 to 20 mils. A sketch of the typical jet pump assembly is shown in Figures 1 and 2.

On March 15-16, 1980, insitu ultrasonic examination of jet pump hold-down beam assemblies at Quadra (during refueling). One beam was found to contain a crack in excess of 100 mils depth in the same location as Dresden.

On March 28, 1980, Boston Edison reported that insitu ultrasonic examination revealed crack indications in three (3) hold-down beams in Unit 1.

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No. of pages: 7