



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

APR 19 1985

Docket No. 50-322

MEMORANDUM FOR: Hugh L. Thompson, Director, Division of Licensing, NRR

FROM: Richard W. Starostecki, Director, Division of Reactor  
Projects, Region I

SUBJECT: POTENTIAL BOARD NOTIFICATION - TDI DIESEL AIR START CHECK  
VALVE CRACK AT SHOREHAM

The purpose of this memorandum is to bring to your attention a problem concerning the TDI diesel air start system at the Shoreham Nuclear Power Station and the possible need for Hearing Board or Commission notification.

The Grand Gulf Station has experienced cracked disc stem guides in Williams-Gauge Co. check valves. A Part 21 Report documenting this problem was issued by TDI on March 12, 1985. Two of the valves in question are used in each of the three TDI engines' air start systems at Shoreham. While conducting inspections on April 2, 1985, for the above-mentioned problem, a 180° circumferential through-wall crack (unrelated to the Grand Gulf problem) was identified by LILCo on an internal center support web within the valve body casting on one of these valves installed on TDI Engine No. 101. Had the crack fully propagated, a portion of the casting could have dislodged and potentially affected engine operability. Region I issued the attached PNO-I-85-22 on April 3, 1985, describing this problem.

LP testing in the center web support area of the six valves, from engine numbers 101, 102, and 103, has been completed. Only one valve, originally installed on EDG-101, has been found to have cracking in this area. The cracking was apparently caused in service by improper internal dimensional tolerances which caused the "shoulder" portion of the lower disc guide (which protects the valve's spring) to hammer against the center web support stop, which eventually cracked. A dimensional as-built sketch of this cracked valve (Tag No. R43\*03V-213A, Serial No. 43378) is attached. The depth of the shoulder (0.194 inches) exceeded the center web piece depth (0.171 inches) into which it was suppose to fit.

Liquid penetrant (LP) testing of seven valve discs (six, plus a spare) for the disc stem guide cracking experienced at Grand Gulf revealed non-repairable linear surface indications on two discs. One disc had a vertical crack on the a 5/8-inch bottom disc guide, and one disc had a circumferential crack in the blend area where the disc and stem guide meet.

The three-inch air start check valves at Shoreham were supplied by TDI as skid-mounted equipment (safety-related, Category I, non-ASME III). They were manufactured by the Williams-Hager Company (identified as Figure No. 329), which was later purchased by the Clow Corporation. The valve disc, including its upper and lower stem guides, is a one-piece cast-equivalent type 304 stainless steel casting.

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Evaluation of the suitability of replacement valves (e.g., TRW Mission Duo-Check II), is being considered by LILCo. Also, failure analysis of the Grand Gulf air start check valve discs is expected to be completed this month. There are also five other Hager-Williams check valves, of similar design (i.e., Figure No. 329) to those in the air start system, which are installed on each TDI engine. These are used in the jacket water and lube oil subsystems and range in size from one and one-half to five inches. LILCo is currently evaluating what actions to take with regard to these valves.

The Shoreham senior resident inspector is following the licensee's inspection progress and their plans for corrective action. I suggest that you may want to consider making a Commission or Board notification on this subject. If you have any questions, please feel free to contact me.



Richard W. Starostecki, Director  
Division of Reactor Projects  
Region I

Attachments:

1. Region I PNO 85-22
2. Dimensional Sketch of Valve 213A
3. Section from Williams-Gauge Operating and Maintenance Instructions

Date: April 3, 1985

PRELIMINARY NOTIFICATION OF EVENT OR UNUSUAL OCCURRENCE--PNO-I-85-22

This preliminary notification constitutes EARLY notice of events of POSSIBLE safety or public interest significance. The information is as initially received without verification or evaluation, and is basically all that is known by the Region I staff on this date.

Facility: Long Island Lighting Company  
Shoreham, New York  
Shoreham Nuclear Power Station  
(DN 50-322)

Licensee Emergency Classification:  
\_\_\_\_ Notification of Unusual Event  
\_\_\_\_ Alert  
\_\_\_\_ Site Area Emergency  
\_\_\_\_ General Emergency  
X Not Applicable

Subject: TDI DIESEL AIR START CHECK VALVE CRACK

On April 2, 1985 the licensee found a crack in a Trans America DeLaval Inc. (TDI) emergency diesel generator (EDG) No. 101 air start check valve body. The air start system associated with each EDG starts the engine upon receipt of an emergency signal. The valves are made by Williams Gauge Co. of Pittsburg, Pennsylvania and each engine has two such valves. The TDI EDGs are not required for low power plant conditions. The reactor is currently subcritical and shutdown, with the mode switch in Refuel.

The licensee had been inspecting these valves because of an unrelated cracked disc stem problem experienced at Grand Gulf. Unlike the Grand Gulf problem, however, the crack found on the Shoreham EDG-101 check valve is a 180-degree circumferential through-wall condition on an interbody backseating portion of the valve. A complete 360-degree crack would result in dislodging this segment of the valve body, thereby disabling a portion of the air start system and possibly preventing the engine from starting or continuing to run. The originally planned inspection of the Shoreham air start valves for disk stem cracks has yielded some indications by dye penetrate testing on EDG-102. These are currently being reviewed by LILCo. Inspection of all six TDI engine air start check valves is expected to be completed by the end of this week.

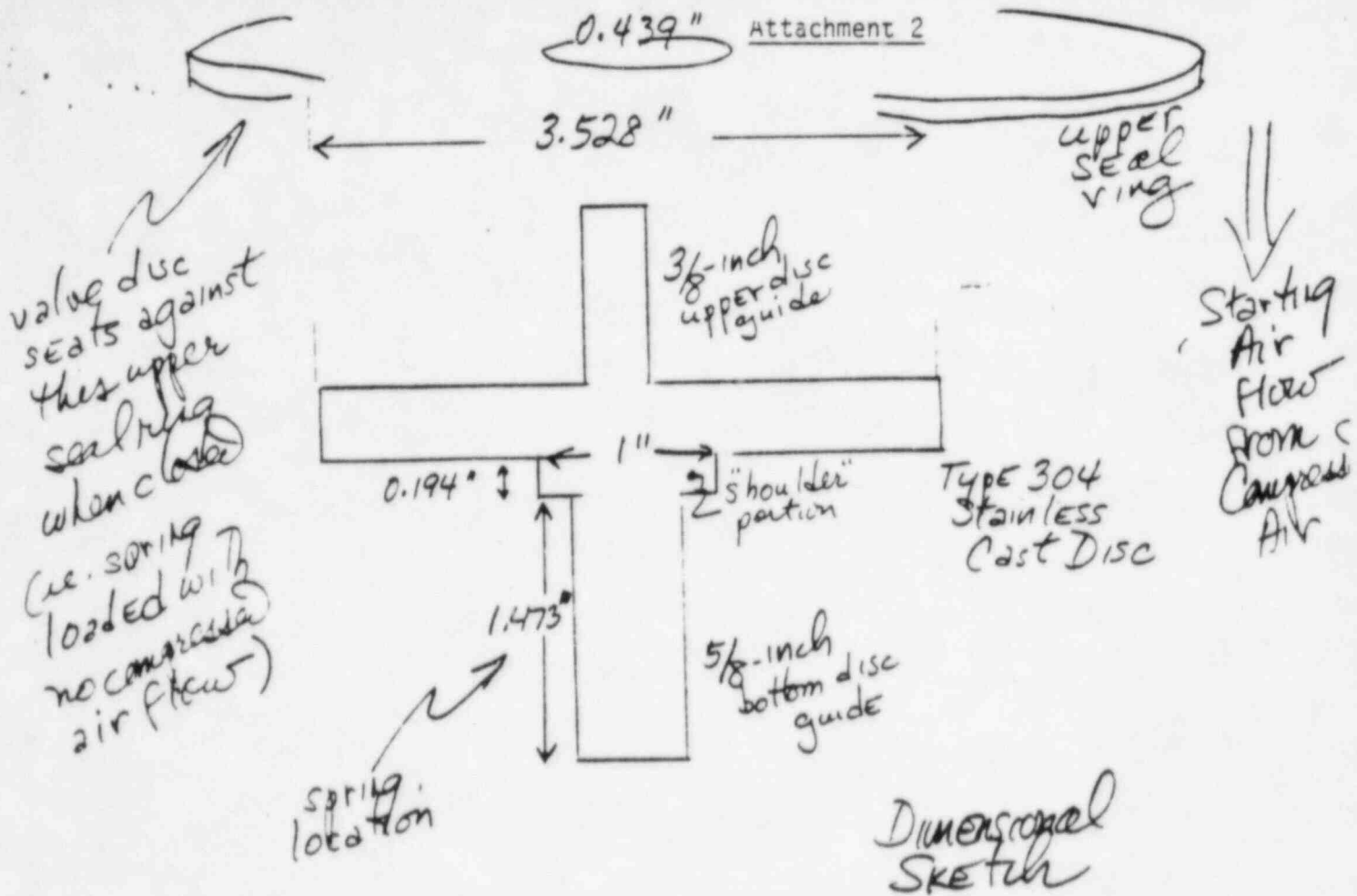
Region I will respond to media inquiries. The State of New York has been informed. The resident inspector is following this matter on site.

CONTACT: P. Eselgroth (516) 929-3311 E. Kelly 488-1132

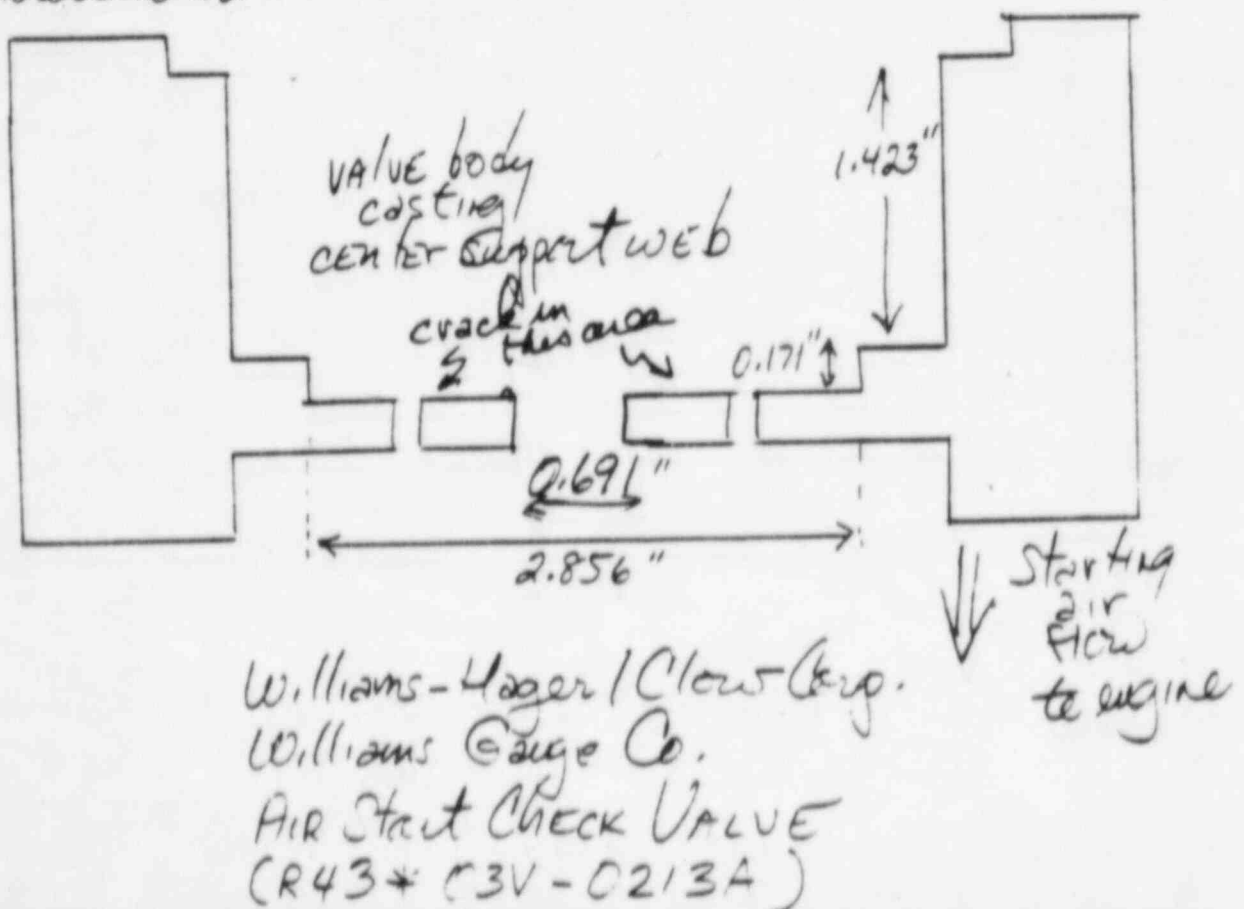
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Clow Series No. 43378



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