UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

SEP 0 9 1985

MEMORANDUM FOR: Edward L. Jordan, Director
Division of Emergency Preparedness
and Engineering Response
Office of Inspection and Enforcement

FROM: Hugh L. Thompson, Jr., Director
Division of Licensing
Office of Nuclear Reactor Regulation

SUBJECT: IE NOTICE REGARDING MAIN STEAM SAFETY VALVE TEST FAILURES AT WYLE LABORATORIES

The purpose of this memorandum is to transmit a proposed IE Information Notice which describes failures of Crosby PWR Main Steam Safety Valves (MSSV) to attain full disc lift during full flow tests performed at Wyle Laboratories for Public Service Company of New Hampshire's (PSNH) Seabrook plant. The tests showed that the disc only traveled 50% of the required distance. A lift of 50% in these valves translates to a flow capacity which is approximately 50% of rated capacity at rated pressure.

The test failures were originally reported by PSNH as a potential design deficiency per 10 CFR 50.55(e). The test reports have been under review by NRR Division of Engineering per the February 5, 1985 request of your Engineering and Generic Communications Branch Chief. Our review, which included discussions with both Crosby and Wyle Laboratories, has been completed. Based on this review, the Mechanical Engineering Branch agrees with the PSNH evaluation which concluded that the vendor specified, factory set guide ring position was too high, resulting in an inadequate lift force on the valve disc. They believe the problem may exist in operating plant MSSVs due to similarities among vendors in valve design and methods for determining ring settings. A preliminary evaluation of the consequences of a 50% degradation in MSSV flow capacity indicates that such a degradation may likely result in overpressurization of the main steam system in some plants should a full load rejection event occur with the steam dump and bypass system and anticipatory reactor trip unavailable. The pressure transient could be more severe in B&W designed units due to the relatively small liquid inventory in the once-through steam generator design.

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The enclosed draft Information Notice describes the Crosby valve test failures and the findings from the Division of Engineering's review of those tests. In light of the significance of this potential equipment deficiency, we recommend that you issue the proposed IE Notice. NRR will continue to investigate the generic implications and safety significance of this equipment deficiency to determine if additional staff action is required.

We have discussed this proposed IEN with R. Oller and Bob Baer of your office.

Frank J. Miraglia for

Hugh L. Thompson, Jr., Director
Division of Licensing
Office of Nuclear Reactor Regulation

Enclosure:
Draft IE Notice

cc: M. Wegner, IE
L. Marsh
J. Durr, RI
R. Baer, IE
J. Knight
F. Cherny
G. Hammer
V. Nerses
H. Nicolaras
R. Oller
J. Stolz
G. Knighton

UNITED STATES
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OFFICE OF INSPECTION AND ENFORCEMENT
WASHINGTON, D.C. 20555
SEPTEMBER , 1985

IE Information Notice No.: 85-xx MAIN STEAM SAFETY VALVE TEST FAILURES AND RING SETTING ADJUSTMENTS

Addressees:

All PWR nuclear power reactor facilities holding an operating license (OL) or a construction permit (CP)

Purpose:

This Information Notice is being provided as a notification of a potentially significant problem pertaining to spring-actuated main steam safety valves (See Figure 1), that may possess less than the full rated flow capacity required for overpressure protection of the secondary cooling system in PWRs. It is expected that recipients will review the information for applicability to their facilities and consider actions, if appropriate, to preclude a similar problem at their facilities. However, suggestions contained in this Information Notice do not constitute NRC requirements; therefore, no specific action or written response is required.

Description of Circumstances:

Between October 16, 1984, and December 1, 1984, Wyle Laboratories conducted several full flow steam tests on two separate main steam safety valves (MSSVs) manufactured by Crosby Valve and Gage Company. These Crosby 6R10 MSSVs are to be installed by Public Service of New Hampshire on the Seabrook main steam system. The tests were conducted in order to determine the adequacy of various MSSV discharge piping arrangements. During the tests the valves were instrumented to measure valve disk lift. The valves were installed on the test facility with the settings of the valve adjusting rings (see Figure 1) as received from the valve vendor. With these ring settings the valve achieved about 50% of the full disk lift required to develop full steam flow capacity within the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code required 3% accumulated overpressure limit. Adequate lift was not achieved for either valve with these factory adjusted ring settings, even for the largest diameter (least flow resistance) vent pipe tested. The guide ring of both valves was subsequently adjusted to a lower position by a significant amount (150 notches) during the course of testing and full disk lift was subsequently achieved.

These types of full flow tests are not normally performed by either reactor owners or the valve vendor on MSSVs, nor are such tests required for capacity certification according to the ASME Code, Section III. In general, these valves are capacity certified by tests on much smaller size valves, and the capacities then extrapolated to larger size valves. The MSSVs on most PWRs, while not necessarily the same model or supplied by the same vendor, are like those at Seabrook in that they are generally at the upper end of the valve size range. This raises the concern that full flow functional demonstration of some valve types may never have been performed, and that due to incorrect ring settings, the valve may not be capable of providing relief capacity in accordance with facility design requirements.

Based on the full flow tests performed at Wyle Laboratories, Public Service Company of New Hampshire (PSCNH) has concluded that the guide ring setting for the Seabrook MSSVs should be adjusted downward 150 notches to ensure full flow capacity. The MSSVs will be installed at Seabrook with the guide ring adjusted downward 150 notches from the as delivered, factory adjusted setting.

No specific action or written response is required by this Information Notice. If you have any questions about this matter, please contact the Regional Administrator of the appropriate regional office or this office.

Edward L. Jordan, Director
Division of Emergency Preparedness
and Engineering Response
Office of Inspection and Enforcement

Technical Contact: G. Hammer, NRR
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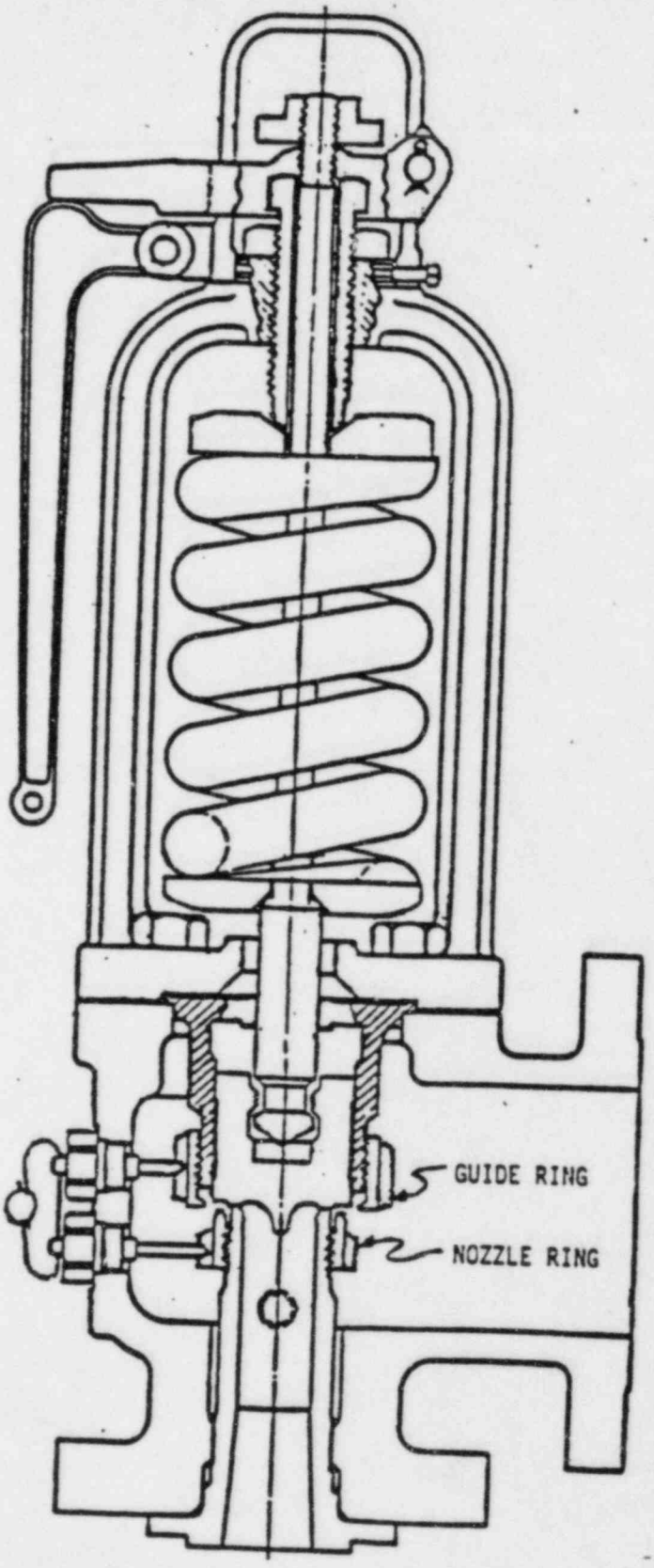

FIG. 1

TYPICAL MAIN STEAM SAFETY VALVE