



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

PDR

MEMORANDUM FOR: Charles E. Rossi, Director
Division of Operational Events Assessment
Office of Nuclear Reactor Regulation

AEOD/E90-09

FROM: Thomas M. Novak, Director
Division of Safety Programs
Office for Analysis and Evaluation
of Operational Data

SUBJECT: ADDITIONAL FACTORS AFFECTING THE LIFT SETPOINT OF PRESSURIZER
SAFETY VALVES

Enclosed is an Engineering Evaluation report concerning additional factors affecting the lift setpoint of pressurizer safety valves which were not previously addressed in NRC Information Notice (IN) No. 89-90 "Pressurizer Safety Valve Lift Setpoint Shift." IN 89-90 was issued to inform licensees about potential problems resulting from operating pressurizer safety valves in environments different from those used to establish the lift setpoint of the valves. The IN primarily focused on problems encountered by setting the lift setpoint of safety valves with steam under the seat, and then operating the valves with a loop seal containing water.

The Reactor Systems Branch (SRXB), Division of Systems Technology of NRR, is also discussing this issue with the Westinghouse Owners' Group regarding failures of pressurizer safety valves. However, from discussions with SRXB staff, it appears this effort is also primarily focused upon the loop seal issue.

Root cause analyses of unexpected shifts in the lift setpoint of pressurizer safety valves, conducted by seven licensees, have identified additional factors contributing to the setpoint shifts. Some of these factors could cause a setpoint shift of as much as 150 psi. These factors include:

- changes in temperature of the valve body and bonnet,
- leakage across the valve seat,
- excess loading of the safety valve tailpipe (nozzle loading),
- calibration of reactor coolant system (RCS) pressure control instrumentation, and
- presence of non-condensable gases in the pressurizer vapor space.

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C.E. Rossi

The reduction in lift setpoints of pressurizer safety valves could result in primary system leakage, and cause unnecessary challenges to plant safety systems. Conversely, an increase in lift setpoint causes a reduction in safety margin in the protection of the RCS against overpressure transients. Accordingly, these additional factors affecting the lift setpoint of pressurizer safety valves are important, and warrant further licensee attention.

We recommend that the enclosed proposed supplement to NRC Information Notice No. 89-90 be sent to all PWR licensees and construction permittees to alert them to these additional factors affecting the lift setpoint of pressurizer safety valves.

For further information regarding this study, please contact Mark Padovan (x24445) of my staff.

Original signed by

Thomas M. Novak, Director
Division of Safety Programs
Office for the Analysis and Evaluation
of Operational Data

Enclosures:
As stated

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