

June 30, 1989

MEMORANDUM FOR: All NRR Project Managers

FROM: James G. Partlow
Associate Director for Projects
Office of Nuclear Reactor Regulation

SUBJECT: GENERIC LETTER 89-11

The enclosed Generic Letter (GL) informs all boiling water reactor (BWR) licensees and applicants of the staff's resolution of Generic Issue 101, "Boiling Water Reactor Water Level Redundancy." The staff concluded from the evaluation of this issue that no further regulatory actions are needed. The technical basis for this conclusion is documented in NUREG/CR-5112, "Evaluation of Boiling Water Reactor Water-Level Sensing Line Break and Single Failure." NUREG/CR-5112 has been sent to all BWR licensees and construction permit holders.

The GL does not ask for program submittals, therefore, no technical reviews of licensee responses are anticipated. No Lead Project Manager has been assigned to this GL. However, if there should be questions, the NRR technical contact is Tim Collins (x20897).

ORIGINAL SIGNED BY JAMES PARTLOW

James G. Partlow
Associate Director for Projects
Office of Nuclear Reactor Regulation

Enclosure:
Generic Letter 89-11

cc: J. Taylor, EDO
H. Thompson, EDO
All Division Directors, NRR
All Associate Directors, NRR
Project Directors, NRR
Regional Administrators
J. Conran, CRGR
S. Treby, OGC

CONTACT: Peter Wen, NRR
492-1172

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

June 30, 1989

TO: ALL HOLDERS OF OPERATING LICENSES OR CONSTRUCTION PERMITS
FOR BOILING WATER REACTORS

SUBJECT: RESOLUTION OF GENERIC ISSUE 101 "BOILING WATER
REACTOR WATER LEVEL REDUNDANCY" (GENERIC LETTER 89-11)

This generic letter is being issued to:

- (1) inform you of the staff's resolution of the subject generic issue, and
- (2) request that you continue to maintain appropriate procedures and training for the operators so that they may readily identify and mitigate the consequences of a leak or break in a reactor water-level instrument line.

For resolution of Generic Issue (GI) 101, "Boiling Water Reactor [BWR] Water Level Redundancy," instrument line breaks coupled with an additional independent single failure in a control or protection system were evaluated. For the purposes of this evaluation, all BWR plant designs were placed into one of five groups, based on their system characteristics. A plant from each group was then evaluated.

The reactor water-level measurement systems in BWRs consist of a reference water leg, a variable water leg, and a differential pressure measuring transmitter. The reference water leg is connected to a condensing chamber and to the reactor vessel steam space. The variable water leg is connected to the reactor vessel at an elevation below the expected normal range of water level. The actual water level in the reactor vessel is then determined by measuring the differential pressure between the reference water leg and the variable water leg. These pressure sensors provide input to the protection systems and to the control systems.

The GI 101 concern is that a leak or break in the instrument sensing line that is connected to the constant head condensing chamber could cause the reference water leg level to decrease. This decrease in the reference water leg level could cause all the differential pressure instruments connected to that line to indicate a false high reactor water level. Under these conditions, the feedwater system may automatically reduce the feedwater flow into the reactor vessel, causing the actual reactor water level to decrease. The presence of this false high water level signal may also prevent automatic operation of the emergency safety systems, such as High Pressure Coolant Injection System/High Pressure Core Spray System, Reactor Core Isolation Cooling System, or Automatic Depressurization System in some designs, and may confuse the operator when trying to assess the actual water level in the vessel.

June 30, 1989

The NRC staff has completed its evaluation of GI 101 and has concluded that all BWR designs, in conjunction with operator training and procedures, provide adequate protection in the event of an instrument line break in any of the reactor vessel water-level instrument systems. The staff believes that emergency procedures for the operator to identify and mitigate the consequences of instrument line breaks exist at all plants and that the reactor operators are being trained to achieve safe shutdown, if needed. The technical basis for this conclusion is documented in NUREG/CR-5112, "Evaluation of Boiling Water Reactor Water-Level Sensing Line Break and Single Failure." NUREG/CR-5112 has been mailed to all BWR licensees and construction permit holders.

The NRC is, therefore, not proposing that the BWR licensees and applicants take any action. However, the staff is providing to all licensees and applicants of BWR plants the results of the analysis conducted for this review. This information is presented in NUREG/CR-5112. Plant-specific design features, such as common sensing lines for the water-level instrumentation, automatic initiation logic for vital protection systems, inhibition of vital protection systems, and additional single failures of safety-related and non-safety-related systems, were considered. The results, including the value impact analyses of the alternatives considered for plant improvements for BWR plant designs, are provided for information. Each addressee is expected to review the information to verify that the design of its facility has been correctly represented. It may also be prudent for some licensees to consider a reassessment of plant procedures and operator training to ensure that plant operators can readily detect and mitigate a leak or break of a sensing line.

No written response or specific action is required by this letter. Therefore, no clearance from the Office of Management and Budget is required.

If you have any questions on this matter, please contact the technical contact listed below or your project manager.

Sincerely,



James G. Partlow
Associate Director for Projects
Office of Nuclear Reactor Regulation

Enclosure: List of Recently Issued NRC Generic Letters

Technical Contact: Tim Collins, NRR
(301) 492-0897
Andrew J. Szukiewicz, RES
(301) 492-3914

ENCLOSURE

LIST OF RECENTLY ISSUED GENERIC LETTERS

Generic Letter No.	Subject	Date of Issuance	Issued To
89-11	GENERIC LETTER 89-11: RESOLUTION OF GENERIC ISSUE 101 "BOILING WATER REACTOR WATER LEVEL REDUNDANCY"	6/30/89	ALL BWR PLANTS & ALL LISTINGS APPLICABLE TO GENERIC LETTERS & VENDORS, ETC.
89-10	GENERIC LETTER 89-10: SAFETY-RELATED MOTOR-OPERATED VALVE TESTING AND SURVEILLANCE	6/28/89	LICENSEES TO ALL POWER REACTORS, BWRS, PWRS, AND VENDORS IN ADDITION TO GENERAL CODES APPLICABLE TO GENERIC LETTERS
89-09	ASME SECTION III COMPONENT REPLACEMENTS	5/8/89	ALL HOLDERS OF LIGHT WATER REACTOR OPERATING LICENSES
89-08	ISSUANCE OF GENERIC LETTER 89-08: EROSION/CORROSION - INDUCED PIPE WALL THINNING - 10 CFR §50.54(f)	5/2/89	LICENSEES TO ALL POWER REACTORS, BWRS, PWRS, AND VENDORS IN ADDITION TO GENERAL CODES APPLICABLE TO GENERIC LETTERS
89-07	GENERIC LETTER 89-07, POWER REACTOR SAFEGUARDS CONTINGENCY PLANNING FOR SURFACE VEHICLE BOMBS	4/28/89	LICENSEES TO ALL BWRS, PWRS, AND VENDORS IN ADDITION TO GENERAL CODES APPLICABLE TO GENERIC LETTERS
89-06	TASK ACTION PLAN ITEM I.D.2 - SAFETY PARAMETER DISPLAY SYSTEM - 10 CFR §50.54(f)	4/12/89	LICENSEES OF ALL POWER REACTORS, BWRS, PWRS, HTGR, AND NSSS VENDORS IN ADDITION TO GENERAL CODES APPLICABLE TO GENERIC LETTERS
89-05	PILOT TESTING OF THE FUNDAMENTALS EXAMINATION	4/4/89	LICENSEES OF ALL POWER REACTORS AND APPLICANTS FOR A REACTOR OPERATOR'S LICENSE UNDER 10 CFR PART 55

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James G. Partlow
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A formal CRGR review is not required per memo from E. Jordan to E. Beckjord,