

Dr. J. Ernest Wilkins, Jr., Chairman
 Advisory Committee on Reactor Safeguards
 U.S. Nuclear Regulatory Commission
 Washington, D.C. 20555-0001

February 17, 1994

filed/PDR
52-001
52-004

Dear Dr. Wilkins:

SUBJECT: DIVERSITY IN THE METHOD OF MEASURING WATER LEVEL IN THE REACTOR PRESSURE VESSELS OF THE ADVANCED AND SIMPLIFIED BOILING-WATER REACTOR DESIGNS

This letter responds to the December 16, 1993, letter related to your review of the advanced boiling-water reactor (ABWR) design at the 404th ACRS meeting on December 9 through 11, 1993. In that letter, the ACRS gave its position on the need for diversity in the method of measuring the water level in reactor pressure vessels in the ABWR and simplified boiling-water reactor (SBWR) designs. Specifically, your letter concluded that the ACRS does not believe that the staff has made a case for a water-level indication system in ABWRs that differs from the method currently used in operating boiling-water reactors that have been licensed in the United States. Since issuing the advance copy of the final safety evaluation report (FSER) for the ABWR to the Commission and to the ACRS in late December, the staff has decided not to pursue its position described in the draft Commission paper dated November 15, 1993, and in the FSER.

Accordingly, the staff will revise its discussion of this issue in the FSER to indicate the resolution of the previously open item. In addition, the staff will send you a markup of the FSER section to reflect this change as soon as it is completed.

The staff has not completed enough of the review of the SBWR to recommend a position for that design. When that review has progressed sufficiently, the staff will inform the Commission and ACRS if it proposes a position that differs from its position on the ABWR.

We appreciate the Committee's timely comments on this issue.

Sincerely,
Original signed by
 James M. Taylor
 Executive Director
 for Operations

cc: Chairman Selin
 Commissioner Rogers
 Commissioner Remick
 Commissioner de Planque
 SECY

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DATE	02/08/94	02/9/94	02/07/94	02/08/94	02/9/94

OFC	ADA&:NRR	ADT:NRR	D:NRR	EDG
NAME	DCrutchfield	WRussell	JTMurkey	JTaylor
DATE	02/9/94	02/11/94	02/11/94	02/17/94

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ACTION

EDO Principal Correspondence Control

FROM: DUE: 01/14/94

EDO CONTROL: 0009621
DOC DT: 12/16/93
FINAL REPLY:

J. Ernest Wilkins, Jr.
ACRS

Received
12/21/93

TO:
James M. Taylor

FOR SIGNATURE OF : ** GRN **
Executive Director

CRC NO:

DESC: DIVERSITY IN THE METHOD OF MEASURING REACTOR
PRESSURE VESSEL WATER LEVEL IN THE ADVANCED AND
SIMPLIFIED BOILING WATER REACTOR DESIGN

ROUTING:
Taylor
Sniezek
Thompson
Blaha
Mat Taylor
Beckjord, RES
Bernero, NMSS
Jordan, AEOD
Cyr, OGC

DATE: 12/20/93

ASSIGNED TO: NRR CONTACT: Murley

SPECIAL INSTRUCTIONS OR REMARKS:

Prepare response to ACRS for EDO signature.
Put Commissioners and SECY on cc (shown on
original) for reply.

NRR RECEIVED: DECEMBER 20, 1993
NRR ACTION: DAR:CRUTCHFIELD
NRR ROUTING: TEM/FJM
JC
WR
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H PASTIS
NRR MAIL ROOM

ACTION
DUE TO NRR DIRECTOR'S OFFICE
BY *Jan 11*



UNITED STATES
NUCLEAR REGULATORY COMMISSION
ADVISORY COMMITTEE ON REACTOR SAFEGUARDS
WASHINGTON, D. C. 20555

December 16, 1993

Mr. James M. Taylor
Executive Director for Operations
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Dear Mr. Taylor:

SUBJECT: DIVERSITY IN THE METHOD OF MEASURING REACTOR PRESSURE
VESSEL WATER LEVEL IN THE ADVANCED AND SIMPLIFIED BOILING
WATER REACTOR DESIGNS

During the 404th meeting of the Advisory Committee on Reactor Safeguards, December 9-11, 1993, we discussed a proposal, advanced by representatives of the NRC staff, that General Electric Nuclear Energy (GENE) be required to install reactor pressure vessel (RPV) water level instrumentation that is diverse in operation from that presently employed on the Advanced Boiling Water Reactor (ABWR) and Simplified Boiling Water Reactor (SBWR) designs. During this meeting, we had the benefit of discussions with representatives of the NRC staff and GENE. We also had the benefit of the referenced documents.

We heard opposing views from the staff and GENE on the need for diversity in the method of measuring RPV water level in the ABWR and SBWR. The staff argues that "... two independent and diverse methods for measuring the RPV level should be required because of the importance of RPV level instrumentation to BWRs and because operating experience has shown the potential for failure of redundant level instruments due to common cause." The argument given by GENE is that the ABWR water level instrumentation is rugged, simple, and highly redundant with no known remaining operational problems. GENE further argues that alternate vessel level measurement technologies are unqualified for this application.

The staff has concluded that the differential pressure level measurement system employed in current BWRs provides adequate indication of reactor vessel water level. The staff has also concluded that the presently proposed ABWR level instrumentation meets the minimum requirements of all applicable General Design Criteria. It is the staff's interpretation, however, that this proposed instrumentation may not be in compliance with the relevant post-TMI requirement as codified in 10 CFR 50.34(f).

EDO --- 009621

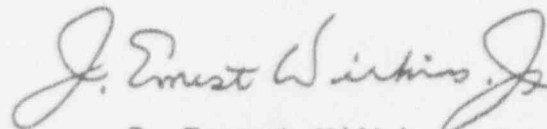
9/10/10/167

December 16, 1993

We do not believe that a case has been made by the staff for a water level indication system in advanced BWRs that is different from that currently used in operating BWRs.

Additional comments by ACRS Members Ivan Catton and Thomas S. Kress are presented below.

Sincerely,



J. Ernest Wilkins, Jr.
Chairman

Additional Comments by ACRS Members Ivan Catton and Thomas S. Kress

We agree that the present method of measuring vessel water level is sufficient for adequate protection for BWRs and that it is not appropriate to backfit new diversity into existing plants. Nevertheless, an objective of advanced and passive plants is to provide a higher level of safety assurance. We believe that the availability of at least three alternative level measuring methods affords an opportunity to provide this higher level of assurance in this important area. We agree with the staff's recommendation that installation of diverse vessel level instrumentation be required for the ABWR and SBWR designs.

References:

1. Proposed Draft SECY Paper (undated), from James M. Taylor, EDO, for the Commissioners, Subject, Diversity in the Method of Measuring Reactor Pressure Vessel Level in Advanced Boiling Water Reactor and Simplified Boiling Water Reactor (Draft Predecisional)
2. Memorandum dated December 10, 1993, from P. Boehnert, ACRS, for ACRS Members, Subject: ACRS Review of Proposed Requirement for Diverse Vessel Water Level Instrumentation for ABWR/SBWR - Additional Information on Diverse Level Instrumentation for German and Swedish BWR Plants