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

ACRSR-1483

PDR

August 14, 1992

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

Dear Mr. Taylor:

SUBJECT: SUPPLEMENT 1 TO GENERIC LETTER 83-28, "REQUIRED ACTIONS
BASED ON GENERIC IMPLICATIONS OF SALEM ATWS EVENTS"

During the 388th meeting of the Advisory Committee on Reactor Safeguards, August 6-8, 1992, we reviewed the proposed Supplement 1 to Generic Letter (GL) 83-28, "Required Actions Based on Generic Implications of Salem ATWS Events," and considered the Differing Professional Opinion which Mr. Charles Morris of the NRR staff has submitted in this regard. Our Subcommittee on Control and Electrical Power Systems held a meeting on August 4, 1992, to review this matter. During this review, we had the benefit of discussions with members of the NRC staff, including Mr. Morris. We also had the benefit of the documents referenced.

GL 83-28, issued following the failure of the reactor trip breakers (RTBs) to open on demand at the Salem plant, requested that licensees implement a set of long-term corrective actions. These actions included: (1) institution of hardware modifications to ensure automatic actuation of the shunt trip mechanism in conjunction with the undervoltage trip relay for any automatic reactor trip signal, and (2) establishment of a comprehensive program of preventive maintenance and surveillance to ensure reliable RTB operation. In addition, licensees were requested to implement Action Items 4.2.3 and 4.2.4 of the GL, conduct life-testing of the RTBs, and periodically replace the breakers and components in accordance with their demonstrated life.

The Westinghouse Owners Group sponsored RTB tests of approximately 6500 cycles in response to Action Item 4.2.3 of the GL and submitted the results for NRC staff review during May 1985. The staff was concerned that the test breakers had not been thermally aged prior to testing. Given the improved RTB reliability, the industry has not taken further steps to implement Action Items 4.2.3 and 4.2.4. We suggest that the background information of the supplement acknowledge the test and rationale for the industry's conclusion.

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At our meetings, the NRC staff presented the results of its review of operating experience for the period 1986 through early 1992, based on information in the Nuclear Plant Reliability Data System and in Licensee Event Reports. The review revealed that the vast majority of reported failures have been failures to close, rather than failures to open, or degraded conditions detected during planned maintenance, testing, and inspection. Three cases of slow opening were identified, as well as several cases where either the shunt trip or the undervoltage trip attachment, but not both, failed to perform satisfactorily. However, the review identified only two failures of a RTB to open, in which both the undervoltage and the shunt trip attachments failed to cause the breaker to open.

Based on this review of RTB operating experience, the staff concluded that the actions already completed pursuant to GL 83-28 have been effective in improving RTB reliability to open and that further actions to address the end-of-life degradation in breaker reliability are not justified. Furthermore, since issuing GL 83-28, the NRC has promulgated the requirements in 10 CFR 50.62 for reducing the risk from ATWS events. The hardware and software modifications associated with this regulation further reduce the risk resulting from the failure of RTBs. Therefore, the staff concludes that actions in response to Items 4.2.3 and 4.2.4 of GL 83-28 are not necessary.

We agree with the NRC staff's evaluation and conclusion that the proposed actions for licensees to perform life testing of the RTBs, and periodically replace the breakers or components in accordance with their demonstrated life, are no longer needed. We commend the staff for its thorough investigations and analyses in this regard.

We were not persuaded by Mr. Morris's views, as discussed in his Differing Professional Opinion, regarding the need for life testing of RTBs and replacement of breakers and components based on the results of such testing.

We recommend that the NRC staff proceed with the issuance of Supplement 1 to GL 83-28 as proposed.

Additional comments by ACRS Member Harold W. Lewis are presented below.

Sincerely,



David A. Ward
Chairman

Additional Comments by ACRS Member Harold W. Lewis

The letter suggests that the Committee found fault with Mr. Morris's views—I did not. While I was also not convinced that accelerated life testing is necessary, I was equally unconvinced by the staff analysis of the current reliability of these vital breakers. The actual condition of the breakers in the field is really unknown—they may be getting too much maintenance—though the small number of reported failures is impressive. What it means is less clear. In addition, the Committee agrees with the staff conclusion that the breakers have "adequate" reliability—I saw no standard for adequacy.

While I do not support accelerated life testing (it misses too many real-world failure modes), I think a modest program of random audits (as with the IRS) of breakers in the field would be useful. This would involve selecting a number of breakers at random, removing them, tearing them down, and carefully inspecting them for potential failure. Such a procedure would pick up maintenance and lubrication errors, calibration errors, and aging. Hard data never hurt a reliability program—in that Mr. Morris was right.

References:

1. Memorandum dated June 22, 1992, from B. Boger, Office of Nuclear Reactor Regulation, NRC, for D. Meyer, Office of Administration, NRC, Subject: Notice of Opportunity for Public Comment on Proposed Generic Communication, transmitting Supplement 1 to Generic Letter 83-28, "Required Actions Based on Generic Implications of Salem ATWS Events"
2. Memorandum dated January 29, 1992, from T. Murley, Office of Nuclear Reactor Regulation, NRC, for E. Jordan, Committee to Review Generic Requirements, NRC, Subject: Draft Supplement 1 to Generic Letter 83-28, "Required Actions Based on Generic Implications of Salem ATWS Events," including January 16, 1992 memorandum from W. Russell, NRR, for T. Murley, NRR, Subject: Charles Morris Differing Professional Opinion - Re: Life Testing of Reactor Trip Breakers
3. Memorandum dated June 18, 1990, from C. Morris, Office of Nuclear Reactor Regulation, NRC, for C. Michelson, ACRS, Subject: A Request for ACRS to Review the Generic Matter of Reactor Trip Breaker Life Testing
4. Memorandum dated August 4, 1992, from C. Morris, Office of Nuclear Reactor Regulation, NRC, for ACRS Subcommittee, Subject: Reactor Life Test
5. "Comments to ACRS on RTB DPO," Handout provided to ACRS on August 6, 1992 by Charles Morris, Office of Nuclear Reactor Regulation