November 5, 2003

NOTE TO: Ashok Thadani, Director
Office of Nuclear Regulatory Research

THROUGH: Farouk Eltawila, Director ***/RA/***
Division of Systems Analysis and Regulatory Effectiveness
Office of Nuclear Regulatory Research

FROM: Ralph Meyer ***/RA/***
Safety Margins and Systems Analysis Branch
Division of Systems Analysis and Regulatory Effectiveness
Office of Nuclear Regulatory Research

SUBJECT: SUMMARY OF NRC-INDUSTRY MEETING ON LOCA TESTING

On September 9, 2003, a letter was sent to you from EPRI asking for further discussions on testing methods in the high-burnup LOCA test program at Argonne National Laboratory. Your reply of September 25, 2003, stated that we would organize a meeting to discuss that subject with internal and external stakeholders. The meeting was held on October 24, 2003, and a summary of that public meeting is attached.

Attachment: As stated

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Attachment

SUMMARY OF NRC-INDUSTRY MEETING ON LOCA TESTING
October 24, 2003

A public meeting between the NRC staff and representatives of the nuclear industry was held at NRC on October 24 to discuss testing methods used in a research program at Argonne National Laboratory. The Argonne program is producing test data to confirm existing regulatory requirements for the loss-of-coolant accident and to support proposed rulemaking activities. The meeting was initiated in response to a September 9 letter from the Electric Power Research Institute (EPRI) in which the use of impact testing in the Argonne program was proposed.

Odelli Ozer described the EPRI development of an industry-wide set of guidelines for licensing burnup extensions. Robert Montgomery of Anatech discussed the technical basis for the EPRI request for use of impact testing in the Argonne program. Ralph Meyer of NRC described the technical basis for the current experimental program at Argonne, in which ring compression and bend tests are utilized rather than impact tests. Other presentations were made by Jerry Holm of Framatome, Mitchell Nissley of Westinghouse, and Harold Scott of NRC. Technical merits of the various testing methods were discussed; however, the emphasis in the meeting was on interpretation of the Commission's implicit requirements in 10 CFR 50.46 (1973) and its 1988 revision.

Both NRC and the industry have worked closely in developing and conducting this cooperative research program at Argonne. However, prior discussions have been limited to the experimental program itself rather than application of the results. Differences in interpretation of the technical basis for the current regulatory requirements have resulted in issues that reflect on the experimental methods used. Significant progress was made in resolving these issues. By the end of the meeting, the industry representatives expressed a willingness to reconsider the request for impact testing, and the NRC staff agreed to consider use of impact tests rather than bend tests during the integral testing phase of the program.

Other matters discussed during the meeting included: (1) NRC staff's strategy for confirming the existing embrittlement criteria in 10CFR50.46 for high burnup cladding, (2) plans to develop generic testing methods to be used for performance-based criteria; and (3) the need for high-burnup ZIRLO and M5 fuel rods for testing under both reactor accident conditions and dry storage conditions. Confirming existing criteria and developing generic testing methods would be accomplished with cladding specimens now available at Argonne. This would be followed by additional confirmatory work with irradiated ZIRLO, M5, and unirradiated prehydrided cladding.

As an aside, the subject of the recent increase in the number of fuel rod leakers was discussed. EPRI acknowledged that the number had increased during the past year, but stated that it was still very low compared with levels that were common a decade ago. EPRI also pointed out that leakers are of considerable commercial concern and are getting a lot of attention by the industry, but that these extremely small numbers of leakers do not raise any safety issues. Because this subject was discussed by Commissioner Merrifield at the recent Nuclear Safety Research Conference, EPRI agreed to provide additional information on this subject.