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Mr. Gunter Arndt
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NL 238
Office of Nuclear Regulatory Research
U.S. Nuclear Regulatory Commission
Washington, DC 20555

Dear Gunter:

Thank you for providing me with your comments and those of other NRC personnel who reviewed the Technical Highlights for April 1983 contained in the May 4, 1983 letter to you from Dan Naus. Although I feel that the majority of the comments and questions were resolved during our telecon on June 6, 1983, I feel it is mutually beneficial for me to reiterate my responses and attempt to clarify my positions. Also, I have spoken with Fred Maura (telecon 6/9/83), who was indicated by you as a source of several of the comments, and have discussed his comments with him in detail.

The last sentence of the second paragraph on page 2 is unclear as to which three plants are continuing to use reduced pressure tests. These three plants are three of the five plants that measured higher leakages at the reduced pressure than at the full pressure.

In the next to the last sentence of the third paragraph on page 2, the statement concerning the "relative apathy" of the utilities regarding reduced pressure testing will be deleted. The disadvantages of reduced pressure testing have forced most utilities to conduct full pressure tests and to interpret this fact as a sign of utility apathy is incorrect.

The fourth paragraph on page 2 concerns the frequency of Type A tests. The fourth sentence contains a recommendation that the test frequency be maintained as it is because it coincides nicely with the normal plant shutdown routine. Clearly this is an extremely weak reason for maintaining the frequency of such an important test. However, practically all Type A test leakage problems are caused by Type B and C tested leak paths. It does not seem logical to penalize the frequency of Type A tests due to failures through Type B and C tested leak paths, so future penalties should be in the Type B and C test schedules. But additional revisions are apparently needed in Type B and C testing requirements (to be discussed later) and the good record of leak-tightness reported by many plants may be

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misleading. Thus there is no real evidence that the Type A test frequency is either adequate or inadequate and until the Type B and C testing requirements are made more stringent, no evidence will be obtained. Therefore there is no apparent reason to change the Type A test frequency at this time.

The last full paragraph on page 3 contains a brief discussion of verification tests. The basic thrust of this paragraph is that verification testing serves only to verify the ability of the measurement system to duplicate results, including any errors. After additional study and the discussion with Fred Maura, I would like to amend that statement. Verification tests are typically conducted with an induced leakage approximately equal to the maximum allowable leak rate. Thus the verification test is actually an attempt at measuring a carefully calibrated leak rate approximately equal to the maximum allowable leak rate. If the instrumentation system is sensitive enough to measure this value, then confidence in its ability to approximate the actual leak rate is heightened. Therefore, contrary to what was stated in the April Technical Highlights, the verification test does help verify the result of the Type A test.

The next paragraph, which begins on page 3 and ends on page 4, contains a discussion of local leak testing. Because local leak testing appears to be the most important aspect of leak rate testing and because of the large number of problems found (and corrected, if only temporarily) through Type B and C tests, two suggestions were made to improve local leak testing. The first suggestion was to specify allowable leak rates for all Type B and C testable components. The second suggestion was to require the reporting of "as-found" leakage measurements on these components.

Based on the test reports we reviewed, many Type A tests experience problems and delays caused by excessive leakage through Type B and C testable components. In most instances these components had been tested and repaired when necessary according to the Type B and C test schedules but had obviously deteriorated by the time of the Type A test. Rather than penalize the Type A test frequency due to this type of problem, it seems more logical to require increased testing of the faulty component. And the determination of the acceptability of the leak rate should be made at the time of the test, which would require the specification of allowable leak rates for all components. Our review of the test reports revealed that several utilities specified allowable leak rates for individual components in the past. Although it may not be practical for all utilities to specify individual limits, some means of evaluating the acceptability of the components on a one-by-one basis is necessary to help eliminate the occurrence of Type A test failures or delays due to excessive leaks through already tested (and presumably satisfactory) components. In order to implement this sort of evaluation, the utilities would be forced to report the "as-found" leakage measurements which would most likely reveal that many individual components are leaking excessively and that the repairs made to eliminate the leakage are temporary at best. And it is because of this sort of short-lived repair that the Type A tests continue to be plagued with troubles directly traceable to Type B and C leak paths.

I hope these explanations help to clarify for you my thinking on these subjects. Please contact me if you have any additional questions or comments.

Sincerely,

Jim

J. R. Dougan

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cc: D. J. Naus