PDR

WOLF CREEK
NUCLEAR OPERATING CORPORATION

Forrest T. Rhodes
Vice President Engineering

November 6, 1992

ET 92-0224

Mr. James E. Richardson, Director
Division of Engineering Technology
Mail Stop OWFN7B-26
Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
Washington, DC 20555

Dear Mr. Richardson:

Your letter of September 9, 1991 has provided a forum for both internal and external discussion among the Operations & Maintenance Committee and its subordinate committee members. It has prompted numerous discussions at the last four Operations & Maintenance committee meeting weeks, during special telephone meetings and at the joint ASME O&M/NRC meeting held in March, 1992. The opinions of the members on what is required to fulfill the request of your letter vary widely. These range from a radical redefinition of current pump and valve testing to continuation of the present evolutionary changes that are being planned and implemented as part of our revision process. The Operations & Maintenance Committee has not come to a consensus on what would be needed to fulfill the suggestions that your letter may imply. Those of us who have met directly with your personnel believe that they, too, have difficulty in appreciating all the implications of the suggested changes.

The standards which are needed for the inservice testing of pumps and valves are very conservative, as is the consensus process which leads to their acceptance. These standards are based upon proven technology that has been demonstrated to be workable (used and useful) either on a generally accepted basis as well as in specific applications. The process ensures that there is a consensus for the acceptance of the technology, and the consensus has a broad representation of industry groups in order to ensure acceptability of the published standard. Furthermore, the standards are prepared by volunteers who participate in the ASME standards process either on their own support or under the support of their companies. The

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preparers rarely have a primary job function related to the actual codes and standards work. Finally, the process is deliberate in order to ensure the proven technology will work and be acceptable. It is nearly impossible to accept new and innovative techniques as providing the basis for a fully acceptable technical methodology.

The scope of responsibility of the ASME Operations & Maintenance Committee includes inservice testing of pumps and valves which are the subject of this discussion. By use of the term "inservice" it is intended that the standards be applied to equipment which is located in an operating nuclear power plant. From a practical principle, the inservice testing should be capable of being performed in place. The main purpose of inservice testing is to ensure the equipment has not degraded, and, thereby, the owner may determine that the equipment can continue to perform its intended mechanical or hydraulic functions. Inservice testing, by its nature, does not include all the testing that may be required to fully qualify a pump or valve to be used in a nuclear power plant. Inservice testing does not include those tests which are performed by a manufacturer or as part of the initial qualification program, either prior to installation, or during what has commonly been called the preoperational and startup test phases of placing a nuclear power plant into service. Most of us are of the firm belief that it would be next to impossible to verify each safety function of each pump or valve as part of an inservice program with the assumption that those safety functions would be performed at their design basis conditions at some periodicity. Ideally, we want to find a set of inservice tests or examinations that can be used to ensure that the component's degradation will not cause it to fail to meet its design basis functions.

Discussion of Issues

We are aware of the need to resolve the testing requirements for skid mounted pumps and valves, as well as, non-ASME Boiler and Pressure Vessel Code Section III, Class 1, 2 & 3 pump and valve testing. The biggest concern noted appears to be diesel generator skids. The working group for OM-16, Diesel Drives, has reviewed this question, and it is their opinion that the diesel engine skid pumps and valves are adequately tested under the current technical specification requirements for each plant, and that it is not necessary to perform the same type of tests for pumps and valves required in ISTB and ISTC. This opinion and others are undergoing review at this time by the Subgroup on Pumps and Valves.

A major effort has been underway for 2 years to add new requirements for pump testing that would be more related to the design basis for the pumps. The comprehensive pump test revisions are undergoing ballot at the Operations & Maintenance Committee. We believe that this effort will be a significant improvement for testing of some pumps, and in line with the suggestions in your letter. Testing is based on degradation with respect to the baseline head curve test and vibration. The enhancement to be provided by the new, comprehensive pump testing methodology will ensure that those standby pumps that can be operated nearer their maximum design flow conditions will be operated nearer those points in the head-flow curve in order to ensure hydraulic performance.

The valve testing based upon stroke time for motor operated valves is not a satisfactory degradation parameter. Significant industry development work is being monitored by the Working Group and others to determine when we may incorporate new requirements that will provide acceptable test methods. A new OM-8, Startup and Periodic Testing of Electric Motor Operated Valve Assemblies Used in Nuclear Power Plants, standard is being balloted which will establish procedures for testing similar to the requirements of the 89-10 letter. While it does not establish an acceptable technical methodology, it does establish more comprehensive test requirements which we believe to be more in line with the suggestions of your letter.

The Pump and Valve Working Group has prepared additional requirements that will enhance the effectiveness of the testing and examination of valves. These requirements will permit an owner-qualified, non intrusive test to be used for verifying check valve stroke. Furthermore, requirements are being added to cover the examination of check valve internals where testing is not possible.

We have already begun to separate the valve testing requirements for each type of valve used. We have currently in place or under development standards for most of the types of safety related valves and actuators. For about two years we have been examining how we will incorporate these standards or portions of these standards into the Code to make it more effective in addressing the individual characteristics of each valve type in a test program. A special task force under the Subgroup of Pumps and Valves is actively working to prepare a proposed method for the incorporation of different valve standards. That task force is expected to provide the first proposed changes by year end 1992. This will be

the first step of a plan which will provide the necessary guidance to be used by technical working groups of each valve type and for future integration into the IST Code.

Requirements for trending the inservice testing data are being added and are undergoing ballot at this time. The requirements will provide additional assurance that trended projections are made by the owner to provide added assurance that degradation will not result in the inability of pumps or valves to meet their acceptance criteria.

As our codes and standards work matures, there is increased recognition that it is difficult to establish relatively simple go-no-go acceptance criteria for pumps and valves. We continue to add requirements for analysis of the measured parameters in the acceptance criteria to ensure that the acceptance criteria is more consistent with the design basis conditions. We recognize that evaluation and analysis of data and the results of tests is a very necessary part of the program. These requirements are being added as necessary to ensure adequate engineering is applied to the determination of the acceptability of the results of individual inservice tests.

Many of us believe engineering analyses will be more important in establishing inservice test conditions that are adequate to meet the design basis conditions. The use of engineering analyses prior to developing a practical test will need to consider design basis conditions. This engineering verification of inservice conditions to design basis requirements will be necessary, and your staff has indicated that it would probably be an acceptable approach. At the present time, it is premature to decide whether this type of analysis can be codified or used in all situations.

Present Plans

1. The plan for integration of the valve testing into the IST Code is due to the Subcommittee on Performance testing by December, 1992. We expect implementation to begin in mid 1994.

2. A review of the technical analyses of the test requirements against the design basis of individual components as applied in the IST code will begin with a review in the Fall of 1992 to be completed by year end 1993.

3. An evaluation of the cost versus benefit of increasing the test program requirements in the area of design basis is underway. Its completion is expected to be December of 1992.

4. Risk based inservice inspection is being actively pursued by ASME Section XI. O&M is planning to participate with an ASME task force to investigate the feasibility of applying risk based methodology to inservice testing. If design basis testing is required, risk based inservice testing may be a method to reduce the population of pumps or valves required to be tested.

Summary

We believe that a literal reading of your proposals would require a global increase in inservice testing requirements by requiring each component's hydraulic and mechanical safety functions to be verified at each design basis condition. We believe that this will prove to be impractical. However, we recognize from our discussions that a literal reading may not be intended and that you are willing to accept analyses that will demonstrate the inservice test methods would provide acceptable design basis testing. While we believe this to be a practical approach, we are not yet convinced that it is codifiable or capable of being applied to all components.

We believe the ASME Operations and Maintenance Inservice Testing Code has been responsive to industry inservice testing issues where it has been possible to achieve a consensus for standards. We believe that it continues to be a process that can be used by the industry for improving the inservice testing at its nuclear power plants. We believe that the personnel who make up the code committees are very dedicated to finding rigorous testing and examination methods which will prove the acceptability of the components tested. We believe, also, that as a whole these people are very interested in ensuring that the testing is practical and necessary. An integral part of the standards process has been the participation of the Nuclear Regulatory Commission personnel on an individual basis. These contributors have brought industry problems to the table, many of which have been resolved. They have also brought workable solutions. They have worked as an integral

part of the standards development process and represent an important part of the consensus for the currently approved codes and standards. We will continue to work with the Nuclear Regulatory Commission to consider your suggestions for implementation to the O&M IST Code.

Sincerely,

Forrest T. Rhodes

Forrest Rhodes
Chairman
Operations & Maintenance Committee

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cc R.L. Dick
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