CENTERIOR ENERGY

Donald C. Shelton
Vice President - Nuclear
Davis-Besse

300 Madison Avenue
Toledo, OH 43652-0001
(419) 249-2300

Docket Number 50-346

License Number NPF-3

Serial Number 2052

July 8, 1992

United States Nuclear Regulatory Commission
Document Control Desk
Washington, D. C. 20555

Subject: Second 10-Year Interval Inservice Testing Program for Davis-Besse Nuclear Power Station

Gentlemen:

By letter dated March 22, 1990 (Serial Number 1776) Toledo Edison (TE) submitted the subject Pump and Valve Inservice Testing (IST) Program for the Davis-Besse Nuclear Power Station (DBNPS) to the Nuclear Regulatory Commission (NRC). This submittal was supplemented by Toledo Edison's letter to the NRC dated August 28, 1990 (Serial Number 1838). The NRC staff evaluation of the Second 10-Year Interval Inservice Testing Program was provided by letter dated December 2, 1991 (Log Number 3643). The NRC staff requested that Toledo Edison address anomalies identified during their review of the IST program. The anomalies were summarized in Appendix B of the NRC contractor's, EG&G, Idaho, Inc., Technical Evaluation Report (TER) which was included as Attachment 1 to the staff evaluation. The purpose of this letter is to respond to these anomalies and provide an updated copy of the IST Program. The updated IST program reflects changes made in response to the identified anomalies.

Attachment A to this letter responds to each of the anomalies identified in the TER. In addition to addressing the anomalies, the NRC staff requested that Toledo Edison provide a description of the process used in developing the IST program. The description was to include the documents used, the method of determining if a component requires inservice testing, the basis for the testing required, the basis for categorizing valves, and the process used for maintaining the program current with design modifications or other activities performed under 10 CFR 50.59. Attachment B to this letter provides the requested description. In the process of addressing the anomalies identified by

A047
1/1

the NRC staff review, several changes were made to the IST program. A summary of the changes and a copy of the revised program are included as Attachment C. The changes include one new relief request. In addition, two relief requests which were denied earlier are being resubmitted with additional justification.

If you have any questions regarding this information, please contact Mr. Robert W. Schrauder, Manager - Nuclear Licensing, at (419) 249-2366.

Very truly yours,

for DC Shelton

PWS/dlc

Attachments

cc: A. B. Davis, Regional Administrator, NRC Region III
J. B. Hopkins, NRC/NRR DB-1 Senior Project Manager
W. Levis, NRC Region III, DB-1 Senior Resident Inspector
Utility Radiological Safety Board

TOLEDO EDISON RESPONSE TO ANOMALIES IDENTIFIED
IN THE INSERVICE TESTING PROGRAM
TECHNICAL EVALUATION REPORT

1. In TER Section 2.2.1.1 of this report, the licensee requested expanded flow ranges in the Acceptable Range, Alert High Range and the Required Action High Range for service water pumps, P3-1, -2, and -3. The licensee's proposed expanded flow limits would increase the range of test quantities that would be allowable and could act to permit continued operation of a degraded pump. Therefore the licensee's proposed limits may be less conservative and not provide an adequate level of pump operational readiness. Relief may be granted with the provision that the licensee documents the expanded ranges as required in Section XI, IWP-3210. The documentation should include the reason for the expanded ranges and an explanation of how the expanded ranges will not mask any pump degradation.

   Response:

   Rather than expand the acceptable, alert, and required action ranges of Table IWP-3100-2 of Section XI, 1986 Edition of the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code, as originally requested in Relief Request RP-2, Toledo Edison proposes to define acceptable, alert, and required action ranges in accordance with ASME Operations and Maintenance Code-1990 (OM-1990 Code), Section ISTB 5.2 and Table 5.2-2b, Ranges for Test Parameters. Alert and required action levels will be defined as a function of differential pressure. Table 5.2-2b has no alert level for high flow. The lack of a high flow alert level reflects a general consensus that high measured values result from instrument anomalies rather than improved pump hydraulic performance. Since pump performance would not be expected to improve, high flow alert values are ineffectual in predicting pump degradation. However, the ASME OM-1990 Code retains a high flow required action level to ensure that instrumentation anomalies resulting in high measured flow will be resolved. The low flow alert and action levels of the OM-1990 Code are more conservative than the corresponding acceptance criteria of the 1986 ASME Code, Section XI. Consequently, the proposed acceptance criteria will not mask any pump degradation.

2. In TER Section 2.2.2.1 of this report, the licensee proposed to measure horizontal vibration (radial vibration) on service water pumps, P3-1, -2, and -3 in 2 planes, but is not measuring axial vibration. Relief may be granted provided the licensee measures axial vibration on the pump drivers and assigns acceptance criteria so that corrective action will be initiated when significant pump degradation occurs but prior to complete failure.

Response:

Relief request RP-3 has been revised to clarify that vibration will be measured at the upper bearing housing of the service water pump drivers in three orthogonal directions, one of which is the axial direction. Additionally, Toledo Edison proposes to measure vibration velocity rather than displacement amplitude as required by the 1986 ASME Code, Section XI. Alert and required action levels will be defined in accordance with ASME OM-1990 Code, Section ISTB 4.6.4(b) and Table ISTB 5.2-2(a), Ranges for Test Parameters. The consensus among manufacturers of vibration monitoring equipment is that vibration velocity, rather than displacement, is a more useful indicator of pump degradation in pumps with speeds greater than 600 rpm. The service water pumps operate at approximately 1200 rpm. Additionally, the ASME OM-1990 Code recognizes that measurements taken at the driver upper bearing housing of vertical pumps like the service water pumps provide the best data. The measurement of vibration velocity with the alert and required action levels of ASME OM-1990 will ensure that corrective action will be initiated when significant pump degradation occurs, but prior to complete failure.

3. In TER Section 2.2.3.1 of this report, the licensee requested to perform testing of service water pumps, P3-1, -2, and -3, in the "as found" operating condition instead of returning to a particular reference condition. Relief may be granted with the provision that the licensee develops the pump curve or validate the manufacturer's pump curve when the pump is known to be operating acceptably. Furthermore, the licensee should develop acceptance criteria for vibration measurements at the various pump operating conditions.

Response:

Relief Request RP-4 has been expanded to describe the development and use of pump performance curves. Pump performance curves, with reference values for vibration and differential pressure as a function of flow have been developed over the range of 6,000 gpm to 10,500 gpm for each of the three service water pumps. These flow ranges cover the ranges of normal and accident flow conditions. Vibration and differential pressure measurements for each pump were taken at six flow rates within the above range. The parameter alert and required action levels using the acceptance criteria for Relief Requests RP-2 and RP-3 were established and plotted along with the reference values. During pump testing, the flow will be established within the range of the curve and vibration and differential pressure measured. Pump performance will be considered acceptable if parameter values fall within the acceptance ranges about the reference value curve bounded by the alert and action level curves. In the unlikely situation that plant conditions prohibit establishing a minimum 6000 gpm flow, the manufacturer's pump curve will be used in conjunction with alert and required action levels required by the ASME OM-1990 Code, Table 5.2-2(b), Ranges for Test Parameters. Flow and differential pressure measurements testing over the range of 6,000-10,500 gpm uses to establish the reference curve validate the manufacturer's curve over that range. Therefore, it is expected that the manufacturer's curves would also be valid at lower flows. For vibration, the measured reference vibration for the minimum flow point used in establishing the 6,000-10,500 gpm reference curve will be used as the acceptance criteria.

4. In TER Section 2.3.1.1 of this report, the licensee requested relief from measuring pump flow rate, inlet and differential pressure and the duration of the test for the diesel generator fuel oil transfer pumps P195-1 and -2. The licensee proposed to verify the operation of these pumps quarterly with the emergency diesel generator test and to calculate flow rate during refueling outages. However, the licensee's tests do not provide adequate information to evaluate the pump's hydraulic condition or monitor for pump degradation. In the interim relief may be granted for a period of one year or until the next refueling outage, whichever is longer, for the licensee to develop a suitable method to monitor for pump hydraulic condition and degradation.

and,

5. In TER Section 2.3.2.1 of this report, the licensee requested relief from measuring pump vibration for diesel fuel oil transfer pumps P195-1 and -2. The licensee did not propose an alternative. Although it is impractical and burdensome for the licensee to obtain the vibration readings for these pumps, since pump inlet, discharge, and differential pressure are not being measured as indicated by Relief Request RP-5, TER Section 2.3.1.1, the licensee should develop some means of monitoring pump mechanical and hydraulic condition and be able to detect pump degradation. Based on the determination that the licensee does not have a means to monitor for pump hydraulic and mechanical degradation, relief is denied.

Response:

As recommended by NRC Generic Letter 89-04, Guidance for the Preparation of Acceptable IST Programs (Log Number 2889 dated April 3, 1989), Toledo Edison chose to include the diesel generator fuel oil transfer pumps in the IST program even though they were not constructed to ASME Code Class 1, 2, or 3 components. Because the NRC approved design of the diesel generator fuel oil transfer system does not permit performance of Section XI IST, relief was requested from the Section XI requirements. As an alternative to the Section XI requirements, Toledo Edison proposed qualitative periodic flow measurements which could be accommodated within the existing design of the fuel oil transfer system. It is estimated that modification of the fuel oil transfer system to accommodate Section XI flow, differential pressure and vibration measurements would cost approximately $250,000. This modification would involve replacement of the existing pumps and their relocation external to the tanks, installation of flow test loops and installation of flow and pressure instrumentation. This estimate is considered low since the diesel fuel oil transfer system is classified as safety related. Toledo Edison considers that an expenditure of this magnitude is not warranted considering the reduced safety significance of the DBNPS fuel oil transfer system as compared to typical designs contemplated by GL 89-04.

The GL 89-04 recommendation to include the diesel generator fuel oil transfer pumps in IST programs is predicated on their safety significance at most plants. Typically at other plants, the diesel generator fuel oil system for each diesel generator is safety related (ie seismic, Q) and consists of a large storage tank with a capacity sufficient for seven days of diesel generator operation, a fuel oil transfer system, and a day tank local to the diesel generator with a capacity on the order of four hours of diesel generator operation. In contrast, the original DBNPS fuel oil system consisted of a single large non-safety related above ground storage tank serving both diesel generators with seven days capacity, and a large safety related day tank for each diesel generator each with capacity for approximately 20 hours of diesel generator operation. The day tanks were each provided with safety related fill connections to accommodate refilling the day tanks within 20 hours following an event if refill from the normal storage tank was unavailable. This design was modified to its current configuration at the request of the NRC during plant licensing.

The current configuration consists of a safety related seven day capacity underground storage tank for each diesel generator. Each of the seven day underground storage tanks has an internally mounted submerged transfer pump normally supplying the corresponding 20-hour capacity day tank. The transfer pumps can feed either or both day tanks. The large 20-hour capacity day tanks and the safety related fill connections and the non-safety related above ground storage tank have been retained from the original design. Because of the large capacity of the day tanks, and the three diverse methods of replenishing the day tanks during diesel generator operation, the DBNPS diesel fuel oil transfer pumps are of lower safety significance than in typical fuel oil transfer systems with relatively small day tanks.

Because the pumps are submerged no meaningful vibration measurements can be made. Since there is no installed flow or pressure instrumentation, or recirculation line, performance of the Section XI prescribed testing is impractical. Toledo Edison proposes to perform pump flow tests within the limitations of the system design as described in revised relief request RP-5. No vibration monitoring will be carried out (Relief Request RP-6). The flow tests will consist of the following.

1. A pump flow functional test will be performed monthly in conjunction with Technical Specifications 4.8.1.1.2 diesel generator surveillance testing. Pumps will be verified to start and a corresponding increase in day tank level will be confirmed.

2. Each refueling, a pump flow rate test will be performed. A predetermined storage tank oil level above the transfer pump will be established. Flow rate will be determined by timing a day tank level change corresponding to approximately 150 gallons. Technical Specifications minimum day tank level and transfer pump start and stop level setpoints prohibit the range from being significantly greater the 150 gallons. Since there is no pressure instrumentation, differential pressure cannot be determined. Consistent test conditions will be established to the extent practical by setting the storage tank level at the pump suction. Flow resistance is set by the system flow path since there are no throttle valves in the system. Pump flow rates should be repeatable under these conditions, permitting detection of pump degradation. A low required action range of less than 6 gpm will be used. This minimum value is 33% greater than the diesel generator design flow of 4.5 gpm, but is expected to provide sufficient margin to account for uncertainties due to temperature effects on fuel oil physical properties, storage tank level instrumentation, and day tank level measurements. No alert range is specified since this is a refueling test and required action will be performed if pump flow rate is less than the required action level.

3. Periodically, the diesel generator fuel oil storage tanks and day tanks are drained, cleaned, and inspected. At these times the fuel oil transfer pumps will be subjected to a duration test, consecutively pumping a minimum of 1000 gallons from the storage tank to the day tank. Flow rate will be measured (by monitoring day tank level change) and evaluated for pump degradation.

Toledo Edison considers that the testing identified above will provide an acceptable level of quality and safety commensurate with the importance of safety of the diesel generator fuel oil transfer pumps. A review of fuel oil transfer pumps maintenance history has confirmed that no maintenance has been required to date. Because of this excellent maintenance history and the reduced safety significance provided by the unique design of the DBNPS fuel oil transfer system compared to typical designs contemplated by GL 89-04, Toledo Edison considers that the burden associated with performance of Section XI required IST of the diesel generator fuel oil transfer pumps is unwarranted.

6. In TER Section 3.1.1.1 of this report, the licensee requested relief from the corrective action requirements of the Code, Paragraph IWV-3417 for various valves. The licensee proposed to use Technical Specification requirements as guidance in order to determine the possibility of plant start-up/mode change. Relief may be granted provided the licensee ensures that the test failure analysis includes a determination on the systems capability to perform its safety-related function(s).

   Response:

   Inservice test failures are documented in Potential Condition Adverse to Quality Reports (PCAQR) which are hand carried to the shift supervisor for immediate operability and reportability determinations. The shift supervisor makes an operability determination considering the capability of the component to perform its specified function in accordance with the Technical Specifications operability definition.

7. In TER Section 3.1.2.1 of this report, the licensee requested relief from the corrective actions requirements of the Code, Paragraph IWV-3427(b) for various Category A and A/C pressure isolation valves (PIV's). The licensee proposed to test these valves in accordance with Davis-Besse Technical Specifications. The licensee's Technical Specifications has equivalent trending criteria as the Code, however, the licensee did not provide adequate information on the corrective actions required if the valve(s) failed to meet their required leakage limits. Relief may be granted provided that corrective actions would be required if these valves fail to meet their leakage limits and that these corrective actions are equivalent or more conservative that the Code requirements.

   Response:

   Relief Request VG-2 has been revised to include a statement that a PIV failing to meet the Technical Specification leakage acceptance criteria will be repaired or replaced to restore the valve to an acceptable condition. Toledo Edison considers this to be equivalent to the Code requirements.

9. In Section 3.2.2.1 of this report, the licensee requested relief from the test frequency requirements of the Code, Paragraph IWV-3410 for the motor driven and auxiliary feedwater pump discharge to the steam generator line check valves, AF-39, -43, -72, -73, -74, and -75. The licensee proposed to full flow test these check valves at refueling outages. Relief may be granted provided the licensee investigates a method to partial-stroke exercise these valves at cold shutdown and document their findings.

Response:

Auxiliary Feedwater System Relief Request RV-1 has been revised to incorporate partial flow testing of these valves at cold shutdown, with the cavitating venturis installed.

10. TER Section 3.4.1.2 of this report, the licensee requested relief from verifying reverse flow closure on a quarterly basis for component cooling water check valves, CC-17, -18, and -19. The licensee has not given adequate technical information or justification for this relief. The licensee did not supply the train separation criteria which could place the system in an unanalyzed condition if the testing took place. Furthermore the licensee's statement that reverse flow closure is only necessary for the non-operating pump is non-conservative. Relief should be denied.

    Response:

    Component Cooling Water System Relief Request RV-2, relating to check valves CC-17, -18, and -19, has been removed from the revised IST program. Component Cooling Water System Cold Shutdown Justification CS-7 for CC-17, -18, and -19 has been added to the program.

11. In TER Section 3.7.1.2 of this report, the licensee requested relief from the test frequency requirements of the Code, Paragraph IWV-3522 for the core flood tank discharge check valves, CF-28, and CF-29. The licensee proposed to [to] verify forward flow capability at refueling outages when the reactor vessel head is removed. Relief may be granted provided the licensee investigates a method to partial-stroke exercise these valves when shutting down to cold shutdown and document their findings.

    Response:

    Core Flood System Relief Request RV-2 has been revised to incorporate performance of partial forward flow test at reduced reactor coolant system and core flood tank pressure at cold shutdown, usin[illegible] [illegible]e flood tank inventory.

    Core Flood Syst[illegible] Relief Request RV-2 has also been revised to apply to core flooding system check valves CF-30 and -31, in addition to CF-28 and -29. CF-30 and -31 are downstream of CF-28 and -29, respectively, in the common core flood/decay heat discharge lines to the reactor vessel. Consequently, the design flow rate for CF-30 and -31 is the same as for the upstream valves, CF-28 and 29, approximately 3750 lbm/sec. Developing this flow rate during cold shutdown is impractical for the same reasons as for CF-28 and -29. CF-30 and CF-31 will be partial forward flow tested at cold shutdown.

12. In TER Section 3.8.1.1 of this report, the licensee requested relief from exercising and timing decay heat valves DH-9A and DH-9B. The licensee proposed to perform testing at refueling outages. The licensee did not provide adequate technical justification for performing the Code required testing during cold shutdowns. Relief should be denied.

Response:

Decay Heat Removal System Relief Request RV-1 has been revised to provide additional justification to perform the Code required testing on DH-9A and DH-9B at refueling outages.

DH-9A and DH-9B are the emergency sump isolation valves providing suction to the low pressure injection (LPI)/decay heat (DH) pumps and containment spray (CS) pumps during the recirculation phase following a postulated a loss of coolant accident. The LPI/DH pump suctions are also connected to the borated water storage tank (BWST) via the normally open BWST isolation valves DH-7A and DH-7B.

During normal operation, DH-9A and DH-9B are deenergized in the closed position to address 10 CFR 50 Appendix R fire protection concerns. DH-9A and DH-9B are also interlocked with DH-7A and DH-7B and BWST level. On low-low BWST level, the interlock permits the operator to open DH-9A and DH-9B. Once these valves begin to open the interlock signals DH-7A and DH-7B to close.

Cycling of DH-9A and DH-9B to accomplish the required Code testing during normal plant operation would require isolation of the BWST, the source of emergency cooling system water, defeating the interlocks to permit opening of DH-9A and DH-9B, and reenergization of power to DH-9A and DH-9B contrary to fire protection commitments. Closure of DH-7A and DH-7B to isolate the BWST would also place additional reliance on these valves to open on a safety actuation signal should a LOCA occur during this evolution. This is not the normal plant configuration assumed as an initial condition in the safety analysis.

Cycling of DH-9A or DH-9B would introduce water into the containment emergency sump since the downstream decay heat system piping is full of water even if the BWST is isolated. Consequently, DH-9A and DH-9B can only be tested when blank flanges can be installed in the containment sump upstream of DH-9A and DH-9B to prevent water from the decay heat piping from flowing into the sump when the valves are opened. Even at that, the water trapped between the valves and the flanges will drain into the sump when the flanges are removed. Blank flanges cannot be installed during normal plant operation because the containment emergency sump is inaccessible and installation of a flange would render the affected emergency core cooling train inoperable.

Even during cold shutdown, installation of the flanges, and restoring the sump to operational readiness and filling and venting drained sections of piping, presents a significant burden to accomplish during a non-refueling outage cold shutdown. The emergency sump debris screens must be removed. The sump is a contaminated area. Removal of the flanges and draining of the water trapped between the flanges and the valves provides additional opportunity for personnel contamination. These factors in combination with the need to defeat interlocks, the pressures of time associated with non-refueling outage cold shutdowns, and risk associated with potential errors as identified in NRC Information Notice 91-22 (Log Number 1-2453 dated March 19, 1991) are significant liabilities when compared with the minimal benefits of performing testing during cold shutdown.

The ASME Code Section XI requirements for testing of DH-9A and DH-9B have not changed from the 1977 Edition with addenda through summer of 1978, the basis for the first ten year interval IST program. Nor has the burden associated with testing DH-9A and DH-9B at cold shutdown. In the evaluation of the first ten year interval IST program, the NRC concluded that the benefit to be gained by testing DH-9A and DH-9B at cold shutdown does not warrant the burden and this same relief request for testing during refueling was approved was approved for the first 10-year interval by NRC letter to Toledo Edison dated May 18, 1984 (Log Number 1521).

13. In TER Section 3.12.1.1 of this report, the licensee requested relief from the method of performing reverse flow closure verification for main steam check valves, MS-726 and -727. The licensee proposed to sample inspection and disassembly according to Generic Letter 89-04, Attachment, Item 2. Relief may be granted with the provision that the licensee performs a partial-stroke test upon completion of the inspection and prior to placing the valve back in service where possible.

    Response:

    Main Steam System Relief Request GL-1 has been revised to require full forward flow testing after completion of inspection and reassembly of MS-726 and -727.

14. In TER Section 3.13.2.3 of this report, the licensee requested relief from the exercising frequency requirements on Section XI, Paragraph IWV-3521, for makeup pump minimum flow line check valves, MU-204 and MU-207. The licensee proposed to exercise these valves during refueling outages. The licensee has not provided adequate technical justification showing impracticality or hardship without a compensating increase in the level of safety when performing the Code required testing during cold shutdown. Relief should be denied.

Response:

The IST program has been revised to require exercising of Makeup System check valves MU-204 and -207 during cold shutdown. The Makeup System Relief Request for valves MU-204 and -207 has been removed from the IST program. Makeup System Cold Shutdown Justification CS-10 for MU-204 and -207 has been added to the program.

15. In TER Section 3.15.2.1 of this report, the licensee requested relief from the exercising frequency and stroke time measurement for PORV RC-2A. The licensee proposed to perform test DB-SP-03366 during refueling outages and did not propose an alternative for stroke timing this valve. Relief may be granted provided the licensee develops acceptance criteria sufficiently restrictive to permit monitoring for valve degradation.

Response:

Reactor Coolant System Relief Request RV-1 has been revised. The alternate testing will measure flow through the PORV by timing the RCS pressure decrease from defined, repeatable initial conditions. An increase in measured time for a given RCS pressure decrease would indicate that the PORV has failed to completely open. A reference value based on pressure change over time will be established. Acceptance criteria will be defined and test results will be trended to identify valve degradation.

16. In TER Section 3.15.2.2 of this report, the licensee requested relief from exercising, timing, and fail testing quarterly post accident RCS loop vent valves, RC-4608A, -4608B, -4610A, and -4610B. The licensee proposed to exercise, time, and fail these valves during refueling outages or once every 18 months as required by Technical Specifications. The licensee did not justify why it is impractical or burdensome to test these valves when in cold shutdown at a reduced RCS pressure. Relief should be denied.

Response:

The IST program has been revised to require exercising of RCS loop vent valves, RC-4608A, -4608B, -4610A, and -4610B, during cold shutdown. The Reactor Coolant System Relief Request for valves RC-4608A, -4608B, -4610A, and -4610B has been removed from the IST program. Reactor Coolant System Cold Shutdown Justification CS-4 for RC-4608A, -4608B, -4610A, and -4610B has been added to the program.

17. In TER Section 3.16.1.1 of this report, the licensee requested relief from quarterly verification of reverse flow closure of service water check valves, SW-17, -18, and -19. The licensee has not made it clear as to the frequency with which these check valves will be tested. Relief cannot be granted to an indeterminate time interval. Relief should be denied.

Response:

Service Water System Relief Request RV-1 which requested relief for quarterly verification of reverse flow closure of SW-17, -18, and -19 has been removed from the program. Reverse flow closure will be verified quarterly only for the non-operating pump check valve, however. Verification of reverse flow closure for an operating pump's check valve requires that the pump be secured and the service water train realigned to the third pump. Because of the potential for interruption of service water flow, and temperature and pressure transients in the service water system which could result in equipment damage or a forced plant shutdown, Service System Cold Shutdown Justification, CS-4 has been added to the program. Service Water System Cold Shutdown Justification, CS-4 requires reverse flow verification of the operating service water pumps' check valves at each cold shutdown if not performed within the previous 92 days.

Description of the Process Used in Developing the IST Program

The Inservice Testing Program (IST) is maintained in accordance with Toledo Edison procedures, DB-PF-00104, Inservice Inspection Program, and DB-PF-00204, ASME Section XI Inservice Testing of Pumps and Valves. The procedures govern the development, maintenance and implementation of the IST program for the Davis-Besse Nuclear Power Station (DBNPS). In accordance with these procedures, the Performance Engineering Section, which has overall responsibility for the IST program, maintains an internal basis document for the pump and valve IST program. This basis document discusses the reasons why individual components are included IST program and documents testing reference values for the components. The basis document also explains reasons why some components were initially excluded from the IST program, in cases where discussion was deemed necessary. The basis document is maintained current in accordance with the above procedures. Justifications for components which subsequently are added or deleted from the IST program and other changes, such as new reference values are reflected in updates to the basis document.

The scope of the IST includes pumps and valves, required by either position or movement to: 1) shut down the reactor to the safe shutdown condition; 2) maintain the reactor in the safe shutdown condition; and, 3) mitigate the consequences of accidents. The safe shutdown condition for the Davis-Besse Nuclear Power Station is the station condition in which the reactor is 1.0% subcritical and the reactor coolant system temperature and pressure are in the normal operating range. This condition corresponds to entry into the hot standby (MODE 3) condition defined by Technical Specifications.

Components were selected for inclusion in the IST program if they are required to perform one or more of the functions identified above. This determination was made on the basis of document review. The following documents were reviewed:

1. The Updated Safety Analysis Report (USAR) was reviewed to identify systems and components required to achieve and maintain safe shutdown and mitigate the consequences of accidents.

2. Components covered by the IST program for the first ten-year interval.

3. Plant Piping and Instrumentation Drawings (P&ID's).

4. System Descriptions.

5. Applicable Plant Operating (normal, abnormal, and emergency) Procedures.

6. Applicable NRC Information Notices, Bulletins, and Generic Letters. The recommendations of NRC Generic Letter 89-04, were considered in the selection of components for inclusion in the IST program.

7. Internal Evaluations related to the IST program for the first ten-year interval.

8. NRC safety evaluations for relief requests granted for the first ten-year interval IST program.

9. Applicable Toledo Edison/NRC correspondence and related commitments.

10. System Reliability and Test Program (SRTP) results.

For each component included in the IST program based on the above criteria, the full scope of testing required by Section XI applicable based on classification or function (e.g. valve categories) was considered. Where the required Section XI testing is impractical or cannot be performed at the frequency required by Section XI due to constraints during plant operation, relief requests or cold shutdown justifications were prepared and included in the program.

Valves were categorized in accordance with Section XI, Article IWV-2000, based on review of its intended function. Valves were categorized as Category A if seat leakage must be limited to a specific maximum amount for fulfillment of their intended function, e.g., Appendix J containment isolation valves or reactor coolant system pressure boundary isolation valves. Valves were categorized as Category B if seat leakage is inconsequential to fulfillment of their intended function. Self actuating valves, e.g. relief or check valves were categorized as Category C. Valves which satisfy more than one of these definitions such as some stop check valves, are categorized as Category A and C, or B and C, as applicable.

The program is maintained current in accordance with Toledo Edison procedures, DB-PF-00104, Inservice Inspection Program, and DB-PF-00201, ASME Section XI Inservice Testing of Pumps and Valves. Changes to the program can originate from a number of sources, such as plant modifications and experience with implementing the program. Plant modifications are reviewed by the Performance Engineering Section for potential impact on the IST program as part of the procedurally required review of plant modifications. Program changes are formally documented as a Program Change Notice, (PCN). Internal review and approval of PCNs are governed by procedures DB-PF-00104 and DB-PF-00201. If the PCN involves a relief request, the relief request are processed by the Nuclear Licensing Section for submittal to the Nuclear Regulatory Commission. Approved PCNs are incorporated into controlled copies of the IST program which are located at various locations throughout the station.

REVISED INSERVICE TESTING PROGRAM

Summary of Changes to the Inservice Testing Program

Pump IST Program

1. Service Water Pumps Relief Request RP-2 is revised to define acceptable, alert, and required action ranges in accordance with ASME Operations and Maintenance Code-1990 (OM-1990 Code).

2. Service Water Pumps Relief Request RP-3 is revised to use vibration velocity rather than displacement amplitude as required by the 1986 ASME Code, Section XI and define alert and required action levels in accordance with ASME OM-1990 Code.

3. Service Water Pumps Relief Request RP-4 is expanded to describe the development and use of pump performance curves for monitoring pump degradation.

4. Diesel Generator Fuel Oil Transfer Pumps Relief Request RP-5 is expanded.

5. Diesel Generator Fuel Oil Transfer Pumps Relief Request RP-6 is resubmitted based on the additional justification provided for Diesel Generator Fuel Oil Transfer Pumps Relief Request RP-5.

6. New Relief Request RP-7, applicable to all pumps is submitted in the revised program. Relief Request RP-7 would allow the use of vibration velocity rather than displacement amplitude as required by the 1986 ASME Code, Section XI and define alert and required action levels in accordance with ASME OM-1990 Code. These action levels are more conservative.

Valve IST Program

1. General Valve Relief Request VG-1 is revised to include a statement to ensure that the test failure analysis includes a determination on the systems capability to perform its safety-related function.

2. General Valve Relief Request VG-2 is revised to include a statement that a pressure boundary isolation valve failing to meet the Technical Specification leakage acceptance criteria will be repaired or replaced to restore the valve to an acceptable condition.

3. Auxiliary Feedwater System Relief Request RV-1 is revised to incorporate partial flow testing of these valves at cold shutdown, with the cavitating venturis installed. Auxiliary Feedwater System Cold Shutdown Justification CS-2 is added to the program.

4. Auxiliary Feedwater System Relief Request RV-1 for valves AF-6452 and -6453 is expanded to clarify acceptance criteria.

5. Auxiliary Feedwater System Cold Shutdown Justification CS-3 for valves AF-63 and -68 is added to the program.

6. Added full forward flow testing for valves AF-1 and -2.

7. Component Cooling Water System Relief Request RV-2, relating to check valves CC-17, -18, and -19, is removed from the revised IST program. Component Cooling Water System Cold Shutdown Justification CS-7 is added to the program.

8. Component Cooling Water System valves CC-91, -530, -531, and -549 are removed from the program.

9. Component Cooling Water System Cold Shutdown Justification CS-13 for valves CC-127, -128, -256, and -263 is added to the program.

10. Core Flood System Relief Request RV-2 is revised to incorporate performance of partial forward flow test at cold shutdown, and to apply to core flooding system check valves CF-30 and -31, in addition to CF-28 and -29.

11. Decay Heat Removal System Relief Request RV-1 is expanded with additional justification and resubmitted.

12. Decay Heat Removal System Cold Shutdown Justification CS-7 is added for valves DH-81 and -82.

13. Main Steam System Relief Request GL-1 has been revised to require full forward flow testing after completion of inspection and reassembly of MS-726 and -727.

14. Makeup System Relief Request (formerly RV-4) for valves MU-204 and -207 is removed from the IST program. Makeup System Cold Shutdown Justification CS-10 for MU-204 and -207 is added to the program.

15. Makeup System Cold Shutdown Justification CS-11 for MU-423 and -424 is added to the program.

16. Nitrogen system supply check valves to containment electrical penetrations are added to the scope of the program.

17. Reactor Coolant System Relief Request RV-1 is expanded to describe the development of acceptance criteria.

18. Reactor Coolant System Relief Request RV-3 for valves RC-4608A, -4608B, -4610A, and -4610B is removed from the IST program. Reactor Coolant System Cold Shutdown Justification CS-4 for RC-4608A, -4608B, -4610A, and -4610B is added to the program.

19. Service Water System Cold Shutdown Justification CS-3 is added for valves SW-1424, -1429, and -1434.

20. Service Water System Relief Request RV-1 for valves SW-17, -18, and -19 is removed from the program. Service Water System Cold Shutdown Justification CS-4 is added to the program.

21. Service Water System Cold Shutdown Justification CS-5 is added for valves SW-1399 and -1395.

22. Added bearing cooling (oil and water) check valves AF-63 and -68; CC-129, -130, -148, -149, -151, -153, -256, and -263; DA-2, -3, -10, and -11; HP-102, -105, -202 and -205; and, MU-383, -384, -423 and -424.