EG&G Idaho, Inc.

FORM EG&G-460

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N O T E G R A M

Date March 28, 1988

To Ken Dempsey

Org. NRC/EMEB

Address Rockville, MD

From H. C. Rockhold/W. C. Hemming

Org. Mechanical Systems Evaluations

Address INEL-Idaho Falls, ID

TRIP REPORT FOR THE PUMP AND VALVE INSERVICE TESTING PROGRAM WORKING MEETING FOR CALVERT CLIFFS NUCLEAR POWER STATION, UNITS 1 AND 2.

On February 18 and 19, 1988, a working meeting was held at the Calvert Cliffs Nuclear Power Station near Solomons, Maryland with Baltimore Gas and Electric company, NRC, and EG&G Idaho, Inc., representatives to discuss the questions resulting from the review of the Calvert Cliffs, Units 1 and 2, pump and valve inservice testing (IST) program.

Attached is a list of meeting attendees, the questions that served as an agenda for the meeting, and the responses to those questions as taken from the meeting minutes. The utility representatives were given a brief introduction outlining the agenda and the methods used for the documentation of questions and responses. This was followed by detailed discussions concerning specific pumps and valves in the Calvert Cliffs, Units 1 and 2, IST program.

These discussions resulted in 9 OPEN ITEMS for the licensee which are identified in this trip report. There are several additional items where the licensee has agreed to make corrections or changes to their IST program as indicated in the responses to the questions.

Attachment:
As Stated

cc: S. McNeil NRC/Calvert Cliffs Project Manager
C. F. Obenchain
H. C. Rockhold
E. J. Sullivan NRC/EMEB

CALVERT CLIFFS NUCLEAR POWER STATION, UNITS 1 & 2,

IST PROGRAM WORKING MEETING

FEBRUARY 18-19, 1988

NAME	REPRESENTING
K. Dempsey	USNRC/NRR/EMEB
P. K. Eapen	USNRC/Region 1
H. C. Rockhold	INEL/EG&G Idaho
W. C. Hemming	INEL/EG&G Idaho (Rockville,MD)
S. Cowne	BG&E
J. Branyan	BG&E
J. Lohr	BG&E
B. Niedzielski	BG&E
B. Holston	BG&E
C. Mahon	BG&E
M. Kostelnik	BG&E

CALVERT CLIFFS NUCLEAR POWER STATION, UNITS 1 & 2,
PUMP AND VALVE INSERVICE TESTING PROGRAM
QUESTIONS AND COMMENTS

1. VALVE TESTING PROGRAM

A. General Questions and Comments

1. Where the requirements of Section XI are more stringent than those identified in the Calvert Cliffs Technical Specifications the Section XI requirements must be adhered to or a request for relief from the applicable Code requirement(s) must be submitted. The statement in Section 1.1, page 1, of the Calvert Cliffs IST program implies that any Technical Specification requirements less conservative than the Section XI will take precedence.

   Response:

   The licensee clarified that where Technical Specifications are more restrictive than Section XI, Technical Specifications will be adhered to. However, where the Section XI requirements are more restrictive, Section XI will be satisfied unless specific relief is granted.

2. The NRC has concluded that the applicable leak test procedures and requirements for containment isolation valves are determined by 10CFR50, Appendix J. Relief from paragraphs IWV-3421 through 3425 for containment isolation valves presents no safety problem since the intent of IWV-3421 through 3425 is met by Appendix J requirements, however, the licensee shall comply with Paragraphs IWV-3426 and 3427. See Section 3.1, page 3, of the Calvert Cliffs IST program discussion of "Category A Valves".

Response:

The licensee expressed their concern that the requirements of 3427(b) provides inconsistent data which does not predict valve degradation. The licensee will submit past valve leakage data to the Staff along with a technical justification seeking relief from the requirements of 3427(b).

Additional Comment:

It was clarified to the licensee that the Staff position requires a relief request be submitted listing all containment isolation valves which are to be Appendix J, Type C, leak rate tested in lieu of the leak rate testing required by Section XI, Paragraphs IWV-3421 through -3425.

3. Provide a listing of all valves that are Appendix J, Type C, leak rate tested which are not included in the IST program and categorized A or A/C?

Response:

There are no valves that are Appendix J, Type C, leak rate tested that are not listed in the IST program as Category A or A/C.

4. What criteria is utilized for assigning limiting values of full-stroke times for power operated valves in the Calvert Cliffs IST program (see Section 3.9, on page 6 of the IST program)?

Response:

The limiting values of full-stroke times are based on actual valve performance not to exceed any Technical Specification or FSAR limits.

5. Amplification is needed for the term "minor maintenance" in Section 3.11, on page 6 of the IST program since this statement appears to conflict with Section IWV-3200 in that the valve may need to be tested to demonstrate operability prior to return to service.

Response:

The licensee clarified that no maintenance will be performed on valves that could affect valve operability without performing post-maintenance testing prior to returning the valves to service. The licensee stated that they may submit a relief request seeking to allow adjustment of packing glands using a torque wrench to no more than the manufacturer's documented maximum values.

6. The Code permits valves to be exercised during cold shutdowns where it is not practical to exercise them during plant operation and these valves are specifically identified by the licensee and are full-stroke exercised during cold shutdowns. The NRC staff requires that the licensee provide a technical justification for each valve that cannot be exercised quarterly during power operations that clearly explains the difficulties or hazards encountered during that testing. The NRC staff will then verify that it is not practical to exercise those valves and that the testing should be performed during cold shutdowns. The cold shutdown justifications in the Calvert Cliffs IST program need to include more detailed information.

Response:

The licensee will provide additional technical justification for testing performed at cold shutdown frequency.

7. Review the safety-related function of any pumps or valves in the control room ventilation system to determine if they should be included in the IST program and tested in accordance with the requirements of Section XI.

Response:

There are no safety related pumps or valves in any circulating water system used for control room habitability.

8. The NRC staff's position is that the emergency diesel generators perform a safety-related function and that the appropriate valves in the emergency diesel generator air start system be included in the IST program and tested in accordance with the Code requirements.

Response:

<u>OPEN ITEM FOR LICENSEE</u> The Staff stated that the components in the Diesel Generator air start system were considered to be safety related and needed to be included in the IST program. The licensee committed to evaluate the Diesel Generator air start system and include all appropriate components into their IST program as well as any necessary relief requests.

9. Identify the valves which are full-stroke exercised on a cold shutdown frequency and not partial-stroke exercised quarterly during power operation as required by Section XI, subsections IWV-3412 and 3522.

Response:

The licensee will include in each cold shutdown justification a discussion concerning part-stroke exercising of the associated valve(s).

10. Review the safety-related function of the spent fuel cooling system to determine if it should be included in the IST program and the applicable system components tested in accordance with the requirements of Section XI.

Response:

The licensee stated that they have a Section XI tested backup supply to the spent fuel pool cooling system. The licensee will investigate the backup system to evaluate if all components which are required to perform the backup function are included in the IST program.

11. Solenoid operated valves are not exempted from the stroke time measurement requirements of Section XI; their stroke times must be measured and corrective action taken if these times exceed the limiting value of full-stroke time. The NRC staff will grant relief from the trending requirements of Section XI (Paragraph IWV-3417 (a)) for these rapid acting valves, however, in order to obtain this relief the licensee must assign a maximum limiting stroke time of 2 seconds to these valves and perform corrective action as required by IWV-3417 (b) if the measured stroke times exceed the 2 second limit. See valve relief request number A-1.

Response:

The licensee committed either to conform with the Staff requirements stated above or comply fully with the requirements of Section XI.

12. What alternate testing has been considered for verification that remote position indication accurately reflects actual valve position for the valves affected by valve relief request number A-2.

Response:

The licensee will reevaluate the valves associated with relief request A-2 to determine if other methods are available to determine valve position and submit any necessary relief requests.

13. When flow through a check valve is used to indicate a full-stroke exercise of the valve disk, the NRC staff's position is that verification of the maximum flow rate identified in any of the plant's safety analyses through the valve would be an adequate demonstration of the full-stroke requirement. Any flow rate less than this will be considered partial-stroke exercising unless it can be shown (by some means such as measurement of the differential pressure across the valve), that the check valve's disk position at the lower flow rate would permit maximum required flow through the valve.

Response:

The licensee stated that they understood the Staff's position on the definition of full-stroke exercising check valves utilizing flow and will submit any necessary relief requests.

Additional Comment:

The licensee stated that they will submit a relief request to cover the relief valve testing statement in Section 3.12 in the front of the IST program.

B. Main Steam System

1. Is credit taken for the operability of the atmospheric steam dumps 1(2)-CV-3938 and 3939 to satisfy the requirements of Reactor Systems Branch Position RSB-5? Should these valves be included in the IST program and tested in accordance with the Code requirements?

   Response:

   The licensee stated that Calvert Cliffs is licensed as a "Hot Standby" plant. The atmospheric dump valves are not required to be in the IST program.

C. Service Water Cooling System

1. How are valves 1(2)-SRW-314, 315, and 316 verified to be full-stroke exercised quarterly?

   Response:

   Ultrasonic flow measurement instrumentation is used to verify full-stroke exercising.

2. How are valves 1-SRW-321, and 322 and 2-SRW-321 verified to be full-stroke exercised quarterly?

   Response:

   These check valves are verified to full-stroke quarterly during the monthly run of the Diesel Generator at the 100% continuous load rating.

D. Circulating Saltwater Cooling System

1. How are valves 1(2)-SW-103, 107, and 111 verified to be full-stroke exercised open quarterly?

   Response:

   Ultrasonic flow measurement instrumentation is used to verify full-stroke exercising.

2. Review the safety-related function of valves 1(2)-CV-5174 and 5175 (P&ID No. OM-49/450 Coords. H-1) to determine if they should be included in the IST program and tested to the Code requirements.

   Response:

   These valves are passively open and are not required to change position to perform a safety function. These valves need not be included in the IST program.

3. Review the safety-related function of valves 1(2)-CV-5150, 5152, and 5153 (P&ID No. OM-49/450 Coords. E-7, G-7, and F-12) to determine if they should be included in the IST program and tested to the Code requirements.

   Response:

   These valves are passively open and are not required to change position to perform a safety function. These valves need not be included in the IST program.

E. Component Cooling System

1. How are valves 1(2)-CC-115, 120, and 125 verified to be full-stroke exercised open quarterly?

   Response:

   Ultrasonic flow measurement instrumentation is used to verify full-stroke exercising.

2. Review the safety-related function of valves 1(2)-CV-3823 and 3825 (P&ID No. OM-51/452 Sh. 2, Coords. A-7 and C-7) to determine if they should be included in the IST program and tested to the Code requirements. What are the consequences of failure of these valves in the non-conservative position?

   Response:

   This bypass line is small and the impact of valve failure is negligible. This valve will not be included in the IST program.

F. Containment Ventilation System

1. Provide a more detailed technical justification for not full-stroke exercising valves 1(2)-CV-1410, 1411, 1412, and 1413 on a cold shutdown frequency.

   Response:

   These valves are passively shut during power operation and are needed only when in mode 6. The licensee will rewrite relief request VS-1 to state that the valves perform an active safety function only when in mode 6 and that they will be full-stroke exercised prior to core alterations in mode 6.

G. Reactor Coolant and Water Process Sample System

1. Provide a more detailed technical justification for not full-stroke exercising valve 1(2)-SV-6529 quarterly.

Response:

OPEN ITEM FOR LICENSEE The Staff concluded that these valves are not passive and need to be tested quarterly per the requirements of Section XI. The position of the licensee is that these valves are not opened when at power and it is not prudent to stroke these valves quarterly. The licensee committed to reevaluate these valves and the cold shutdown justification.

2. Provide P&ID No. OM-77 for our review.

Response:

The P&ID was provided to the Staff.

H. Nitrogen Generating-Blanketing System

1. Provide P&ID No. OM-68 for our review.

Response:

The P&ID was provided to the Staff.

I. Plant Heating System

1. Valve 1-MOV-6579 is indicated to be normally open on P&ID No. OM-71 yet its identified safety related position is closed. If this valve must change position to perform its safety function then it is not passive and must be included in the IST program and tested in accordance with the Code requirements.

   Response:

   This valve is normally closed and opened only to test the auto-close feature operability. The valve is considered passive and need not be full-stroke exercised.

J. Reactor Coolant System

1. Provide a more detailed technical justification for not full-stroke exercising valves 1(2)-ERV-402 and 404 quarterly (see relief request No. RC-7).

   Response:

   These valves do perform a safety function when in service for low temperature overpressure protection. In addition to testing the block valves quarterly, the licensee will functionally test the ERV's (PORV's) and their associated block valves prior to placing them in service for low temperature overpressure protection during cold shutdowns.

K. Chemical and Volume Control System

1. How are valves 1(2)-CVC-217 and 222 verified to full-stroke open quarterly?

Response:

These valves are full-stroke exercised with flow. The flow rate is calculated from observing the rate of tank level change.

2. How are valves 1(2)-CVC-228 and 235 verified to full-stroke open during cold shutdowns? Provide a more detailed technical justification for not full-stroke exercising these valves quarterly (see cold shutdown justification).

Response:

These valves are full-stroke exercised by using flow through the charging pumps or by calculating the rate of change in tank level. A more detailed cold shutdown technical justification will be submitted.

3. Provide a more detailed technical justification for not full-stroke exercising valve 1(2)-MOV-501 quarterly (see cold shutdown justification).

Response:

A more detailed technical cold shutdown justification will be submitted. (The concern is thermal shock to the regenerative heat exchanger.)

4. Review the safety-related function of valve 1(2)-CVC-251 (P&ID No. OM-73, Sh. 1, Coords. C-5) to determine if it should be included in the IST program and tested to the Code requirements.

Response:

Failure of this valve in the open position would not prevent the charging pumps from receiving the required boric acid flow. This valve need not be included in the IST program.

5. How is valve 1(2)-CVC-186 verified to full-stroke open quarterly during power operations?

Response:

The spring loaded check valve in the parallel flow path would not be opened by the flow rate needed to full-stroke exercise valve CVC-186.

6. If valves 1(2)-CV-110P and 110Q (P&ID No. OM-73, Sh. 3, Coords. B-3) are Appendix J, type C, leakrate tested they should be included in the IST program and tested to the Code requirements.

Response:

These valves are not CIV's, have no safety function, and need not be in the IST program.

7. If either valve 1(2)-CVC-103 or 105 is normally in the open position and its safety-related function (as a CIV) is in the closed position then it is an active valve and it should be full-stroke exercised quarterly in accordance with the Code requirements.

Response:

These are manual passive valves which are not required to be exercised to the Code requirements. These valves are Appendix J, Type C, leak rate tested.

8. Review the safety-related function of valve 1(2)-MOV-504 (P&ID No. M-73, Sh. 1, coords. F-3) to determine if it should be included in the IST program and tested in accordance with the Code requirements.

Response:

See response to question 9.

9. Review the safety-related function of valve 1(2)-CVC-257 (P&ID No. M-73, Sh. 1, coords. F-3) to determine if it should be included in the IST program and tested in accordance with the Code requirements.

Response:(8 & 9)

OPEN ITEM FOR LICENSEE The licensee committed to evaluating the safety function of these valves to determine if they need to included in the IST program.

L. Safety Injection & Containment Spray System

1. Could full-stroke exercising valves 1(2)-SI-113, 123, 133, and 143 during cold shutdowns result in a low temperature overpressurization of the reactor coolant system?

Response:

OPEN ITEM FOR LICENSEE The licensee has committed to reevaluate the testing frequency of these valves.

2. Valves 1(2)-CVC-401 and 410 appear to perform a safety-related function in the closed position, if so, they should be exercised to the closed position quarterly as required by the Code.

Response:

These valves do not perform a safety function in the closed position.

3. How are valves 1(2)-SI-422, 424, and 426 verified to full-stroke open quarterly?

See response to question 4.

4. How are valves 1(2)-SI-448 and 451 verified to full-stroke open quarterly?

Response: (3 and 4)

The full-stroke verification of these valves is accomplished by measuring flow using portable ultrasonic flow instrumentation.

5. What are the consequences of failure of either valve 1(2)-MOV-659 or 660 in the closed position during quarterly testing? Would this render an entire safety system unavailable to perform its safety function?

Response:

Failure of either of these valves in the closed position would render an entire safety system inoperable. The licensee committed to reevaluate the testing frequency of these valves and submit relief requests if appropriate.

6. How are valves 1(2)-SI-4146 and 4147 verified to full-stroke open during cold shutdowns?

Response:

Full-stroke exercising of these valves is not possible using flow. The licensee committed to submit program changes and relief requests to exercise these valves by sample disassembly (one each refueling) with a part-stroke exercise quarterly.

7. What are the consequences of failure of either valve 1(2)-MOV-4142 or 4143 in the closed position during quarterly testing?

Response:

Failure of one of these valves in the closed position would still allow one full train of ECCS to be functional. No program changes will occur.

8. Review the safety-related function of valves 1(2)-MOV-654 and 656 (P&ID No. OM-74, Sh. 1, Coords. F-5 and D-5) to determine if they should be included in the IST program and tested to the Code requirements.

Response:

These valves are passive and need not be included in the IST program.

9. What is the proposed test frequency for disassembly and inspection of valves 1(2)-SI-215, 225, 235, and 245? (see valve relief request no. SI-3).

Response:

The Staff clarified their position on check valve sample disassembly during refueling outages. The licensee committed to alter their IST program to conform to the Staff position on sample disassembly, resubmit associated relief requests and indicate any part-stroke exercising performed.

10. What is the proposed test frequency for disassembly and inspection of valves 1(2)-SI-217, 227, 237, and 247? There is an apparent typographical error in the basis for relief (see valve relief request no. SI-5).

Response:

OPEN ITEM FOR LICENSEE The licensee will reevaluate the testing frequency and method of verifying full-stroke exercising of these valves. The licensee will make program changes and re-submit associated relief requests as necessary.

11. Provide a more detailed technical justification for not leak rate testing valves 1(2)-SI-217, 227, 237, and 247 in accordance with the Code requirements.

Response:

The licensee stated that these valves are monitored continuously by upstream pressure instrumentation and alarms. The instrumentation, alarms, and administratively controlled procedures will detect leakage past these valves. No program changes will be made. The licensee committed to submitting to the IST Staff, the documentation submitted to the NRC in response to the Event "V" letter as well as the NRC's reply back to the Licensee. (This documentation will be submitted only if available.)

12. Provide a more detailed technical justification for not full-stroke exercising valve 1(2)-CV-306 quarterly in accordance with the Code requirements.

Response:

See response to question 13.

13. Provide the stroke time limit for valve 1(2)-CV-306.

Response: (12 and 13)

This valve is de-energized open and is a passive valve. The valve will be removed from the IST program.

14. Provide a more detailed technical justification for not full-stroke exercising valves 1(2)-MOV-651 and 652 quarterly in accordance with the Code requirements. Do these valves perform a pressure boundary isolation function? Provide the stroke time limits for these valves.

Response:

These valves cannot be full-stroke exercised quarterly due to reactor coolant system pressure interlocks. The licensee committed to clarifying the cold shutdown justification. The valves are pressure isolation valves but are leak tested as containment isolation valves (see Calvert Cliffs response to Generic Letter 87-06, July 1987). The licensee stated that stroke time limits have been established for these valves and entered in the IST program.

15. Provide a more detailed technical justification for not full-stroke exercising valves 1(2)-SI-313 and 323 quarterly in accordance with the Code requirements. How are these valves verified to full-stroke during cold shutdown testing?

Response:

<u>OPEN ITEM FOR LICENSEE</u> The licensee committed to reevaluating the testing method and frequency of these valves. The licensee will make program changes accordingly and submit relief request as appropriate.

16. What is the proposed test frequency for disassembly and inspection of valves 1(2)-SI-316, 326, 330, and 340? (see valve relief request no. SI-1).

Response:

The licensee committed to re-submitting relief request SI-1 to conform with the Staff position on check valve sample disassembly.

17. How are valves 1(2)-SI-334 and 344 verified to full-stroke during quarterly testing?

Response:

These check valves are full-stroke exercised by measuring flow with portable ultrasonic flow instrumentation.

18. Provide the stroke time limits for valves 1(2)-CV-657 and 1(2)-MOV-658.

Response:

Limiting stroke times have been established and entered in the IST program.

19. Is valve position indication verified once every two years for valves 1(2)-MOV-4144 and 4145 in accordance with the Code requirements?

Response:

The licensee stated that the valve position is verified according to the requirements of the Code.

20. Provide a more detailed technical justification for not full-stroke exercising valves 1(2)-SI-4148 and 4149 quarterly in accordance with the Code requirements. What is the proposed test frequency for disassembly and inspection of these valves?

Response:

The licensee committed to clarify the basis in the relief request and will change the alternate testing to conform with the Staff's position on the frequency of check valve sample disassembly.

M. Reactor Coolant Waste Processing System

1. Provide the P&ID that shows valves 1(2)-ES-142 and 143.

Response:

P&ID M-77 was provided to the Staff.

N. Gas Analyzing System

1. Are the following valves ever opened during power operation? Provide a more detailed technical justification for not exercising these valves quarterly during power operations.

1(2)-SV-6507A-F	1(2)-SV-6507G	1(2)-SV-6531
1(2)-SV-6540A-F	1(2)-SV-6540G	

Response:

OPEN ITEM FOR LICENSEE These valves are post-accident sampling valves and are not opened during power operations, but no technical justification exists not to stroke them quarterly. The licensee will reevaluate the safety function of these valves and make program changes accordingly.

O. Auxiliary Feedwater System

1. Do valves 1(2)-MS-103 and 106 perform a safety-related function in the closed position as well as the open position?

   Response:

   OPEN ITEM FOR LICENSEE The licensee stated that failure of these valves in the open position would only affect containment peak pressure with one faulted steam generator. The Staff's position was that the valve performs an isolating function between steam generators. The licensee will reevaluate the safety function of these valves in the closed position and either submit program changes or supporting documentation for not making program changes.

2. How are valves 1(2)-MS-108 and 110 verified to full-stroke during quarterly testing?

   Response:

   The licensee committed to partial stroke exercise the valves quarterly during the pump test and full-stroke exercise the valves at cold shutdown. The licensee will submit program changes and cold shutdown justification.

3. How are valves 1(2)-MS-114 and 128 verified to full-stroke during quarterly testing?

   Response:

   The valves are full-stroke exercised by measuring flow using portable ultrasonic flow instrumentation.

4. Do valves 1(2)-MS-129 and 13 perform a safety related function in the closed position?

Response:

These valves do not perform a safety function in the closed position.

5. How are valves 1(2)-MS-201 and 202 verified to full-stroke during quarterly testing?

Response:

The licensee will measure flow through these check valves to verify full-stroke exercising.

6. Review the safety-related function of valve 1(2)-CA-337 (P&ID No. M-800, Sh. 1, coords. B-12) to determine if it should be included in the IST program and tested in accordance with the Code requirements.

Response:

This valve does not perform a safety function and need not be included in the IST program.

2. PUMP TESTING PROGRAM

1. The NRC staff's position is that the emergency diesel generators perform a safety-related function and that the emergency diesel generator fuel oil transfer pumps be included in the IST program and tested in accordance with the Code requirements.

   Response:

   <u>OPEN ITEM FOR LICENSEE</u> The licensee will reevaluate the addition of these pumps in the IST program. They will either submit program additions as well as any necessary relief requests or justification for not including the pumps in the program.

2. Pump relief request number 2 is not required since there is no lubricant level or pressure to observe.

   Response:

   The licensee will withdraw the relief request and place a note in the pump tables identifying the pumps that do not require lubricant level or pressure to be observed.

3. Provide a more detailed technical justification for not measuring inlet pressure for the salt water pumps 11, 12, 13, 21, 22, and 23 during quarterly pump testing in accordance with the Code requirements. How is differential pressure measured for these pumps?

   Response:

   The licensee will withdraw relief request #1 and note in the pump tables that pump inlet pressure is calculated using bay level.

4. How is flowrate measured during during quarterly testing of the salt water pumps 11, 12, 13, 21, 22, and 23?

Response:

Flow is measured using an Annubar flow instrument.

5. Are vibration measurements being taken at all required locations on salt water pumps 11, 12, 13, 21, 22, and 23?

Response:

The licensee stated that vibration measurements are taken on all accessible pump bearings.

6. How is flowrate measured during during quarterly testing of the auxiliary feedwater pumps 11, 12, 13, 21, 22, and 23?

Response:

See response to question 11.

7. How is flowrate measured during quarterly testing of the high pressure safety injection pumps 11, 12, 13, 21, 22, and 23?

Response:

See response to question 11.

8. How is flowrate measured during quarterly testing of the low pressure safety injection pumps 11, 12, 21, and 22?

Response:

See response to question 11.

9. How is flowrate measured during quarterly testing of the containment spray pumps 11, 12, 21, and 22?

Response:

See response to question 11.

10. How is flowrate measured during quarterly testing of the service water pumps 11, 12, 13, 21, 22, and 23?

Response:

See response to question 11.

11. How is flowrate measured during during quarterly testing of the component cooling water pumps 11, 12, 13, 21, 22, and 23?

Response: (6,7,8,9,10,and 11)

Flow rate is measured using portable ultrasonic flow instrumentation.

The Staff questioned the licensee as to the accuracy of the portable flow instrumentation. The licensee stated that the current flow instrumentation's accuracy is 1-3%. The licensee is currently investigating the purchase of instrumentation that has an accuracy of 1%. The licensee will either meet the accuracy specified in the Code or submit relief requests as necessary.

Additional Comment:

The licensee expressed concern over the meaningfulness of quarterly mini-flow recirculation line testing of pumps. The licensee will evaluate the current quarterly mini-flow recirculation line testing of each pump in the IST program and submit relief requests if necessary to reduce the scope of the quarterly mini-flow testing in lieu of a more comprehensive larger flow test at the earliest possible frequency.