



ENTERGY

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U. S. Nuclear Regulatory Commission

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Subject: Arkansas Nuclear One - Unit 1
Docket No. 50-313
License No. DPR-51
Revised Inservice Testing Relief Requests

Gentlemen:

Entergy Operations has revised the attached relief requests (Relief Requests 22 and 23) for the Arkansas Nuclear One, Unit 1 (ANO-1), inservice testing (IST) program to provide justifications for non-intrusively testing the affected valves on a once per refueling cycle frequency in lieu of the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code, Section XI requirement to exercise these valves once every three months. The history of these relief requests and a clarification of a staff conclusion from the previous safety evaluation (SE) for Relief Request 22 are described below.

By letter dated October 20, 1988 (1CAN108809), Entergy Operations submitted the ANO-1 second 10-year pump and valve IST program. Included in this submittal were Relief Requests 22 and 23. In the SE issued by the NRC on September 21, 1992 (1CNA099203), the staff approved Relief Request 23 per Generic Letter 89-04, Position 2 and provisionally approved Relief Request 22. In response to the SE, both relief requests were revised to address non-intrusive testing (NIT) and resubmitted by letter dated September 21, 1993 (1CAN099304). By a supplemental SE issued on September 15, 1994 (1CAN099401), the staff approved the revised relief requests.

Subsequent evaluation since the issuance of the SE has shown that the valves included in Relief Requests 22 and 23 can be non-intrusively tested during power operation. These relief requests have been revised to address testing once per refueling cycle as an alternative to the Code required quarterly testing. The bases for the extended testing intervals are included in the attached relief requests which are submitted for your review.

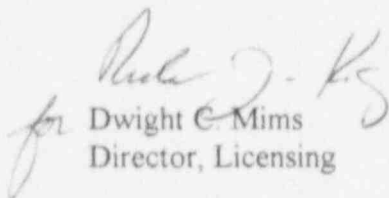
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As a condition of approval of Relief Request 22 in the September 15, 1994 the staff required that all the related requirements of OM-10, including paragraphs 6.2(e) and 6.2(d), be met. Paragraph 4.3.2.2(e) states: "If exercising is not practicable during plant operation or cold shutdowns, it may be limited to full-stroke during refueling outages." However, Relief Request 22 applies to reverse flow closure, not full-stroking. The affected valves are full-stroked open each quarter. Therefore, paragraph 4.3.2.2(e) is not applicable to Relief Request 22. Paragraph 6.2(d) provides requirements for maintenance of records related to deferral of stroke testing in accordance with paragraph 4.3.2.2. Since paragraph 4.3.2.2(e) is not applicable to Relief Request 22, neither is paragraph 6.2(d).

Should you have any questions concerning this submittal, please contact me.

Very truly yours,


Dwight C. Mims
Director, Licensing

DCM/jjd

attachment

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RELIEF REQUEST - 22

System: Emergency Feedwater

Component: MS-271, MS-272

Function: These check valves are located in the steam lines supplying the steam driven emergency feedwater (EFW) pump turbine where they serve to prevent reverse flow in these lines. These valves must open to allow steam flow to the steam driven EFW pump, which is used to supply EFW flow to the steam generators.

**Code
Class:** Class 3

**Code
Category:** Category C

**Code
Requirement:** IWV-3521 Test Frequency

"Check valves shall be exercised at least once every three months, except as provided by IWV-3522."

**Relief
Requested:** The reverse flow closure function of these check valves cannot practically be verified operationally during power operation or at cold shutdown, **unless non-intrusive techniques are utilized. Non-intrusive testing (NIT) of check valves should be conducted on a refueling cycle frequency.**

**Basis for
Relief:** These valves are normally closed during power operation except for testing of the steam turbine driven EFW pump. The only means available to operationally verify the valves as being closed while at power or under steaming conditions would be to establish a differential pressure between the steam generators. If a pressure differential were established, an imbalance in reactor cold leg temperatures as well as other undesirable plant conditions would be created. During cold shutdown conditions no steam pressure is present to provide an opening force in order to verify valve closure when the steam flow is secured in that line.

Although it is possible to perform non-intrusive testing on these check valves each quarter, the following reasons provide justification for continuing testing once per refueling cycle as previously approved:

1. NIT not only satisfies the requirements of the Code to demonstrate that a valve can be either full opened or full closed (depending on the application), the health of the valve internals is also evaluated. This information can be used to provide trending information and to aid in prediction of future valve degradation.
2. NIT can produce indeterminate results, caused by differing flow conditions, which are not related to valve condition and could cause unnecessary additional testing and disassembly.
3. The time involved in NIT and analysis of collected data imposes an additional burden not present with testing by monitoring flow.
4. Each of the affected valves has been disassembled several times. No unexpected service related deterioration affecting the reverse flow closure function of the valves has been discovered during these inspections.

**Alternative
Testing:**

Non-intrusive techniques will be utilized at least once each refueling cycle to confirm the reverse flow closure capability of each of these check valves when the upstream isolation valves are closed.

Approval:

Conditional relief granted September 15, 1994 by 1CNA099401 provided the requirements of OM-10 paragraphs 4.3.2.2(e) and 6.2(d) are met. However, these requirements are not applicable for the testing performed by this relief request.

Note:

These valves are full stroked open with flow each quarter.

RELIEF REQUEST - 23

System: Emergency Feedwater

Component: CS-293, CS-294

Function: These check valves prevent reverse flow from the emergency feedwater (EFW) pump suction header to the condensate storage tank. These valve must open to allow EFW flow to the EFW pump suction.

Code Class: Class 3

Code Category: Category C

Code Requirement: IWV-3521 Test Frequency

"Check valves shall be exercised at least once every three months, except as provided by IWV-3522."

Relief Requested: Non-intrusive testing (NIT) will be used to verify operational readiness of these valves with flow. NIT of check valves should be conducted on a refueling cycle frequency.

Basis for Relief: Full stroke exercising of these check valves is not possible due to the configuration and the size of the valves in relation to the maximum system flows attainable. The valves are arranged in a parallel configuration without individual isolation valves. It is therefore not possible to determine the flow through a single valve or to isolate flow through a single valve.

Although it is possible to perform non-intrusive testing on these check valves each quarter, the following reasons provide justification for testing once per refueling cycle:

1. NIT not only satisfies the requirements of the Code to demonstrate that a valve can be either full opened or full closed (depending on the application), the health of the valve internals is also evaluated. This information can be used to provide trending information and to aid in prediction of future valve degradation.
2. NIT can produce indeterminate results, caused by differing flow conditions, which are not related to valve condition and could cause unnecessary additional testing and disassembly.
3. The time involved in NIT and analysis of collected data imposes an additional burden not present with testing by monitoring flow.
4. Each of the affected valves has been disassembled several times. No unexpected service related deterioration has been discovered during these inspections.

Alternative
Testing:

Non-intrusive techniques will be utilized at least once each refueling cycle to confirm that these check valves will full stroke open.

Approval:

Pending.