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Pilgrim Nuclear Power Station
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U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
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Docket No. 50-293
License No. DPR-35

**Additional Information and Modification of
Relief Request Numbers, RV-44 and RV-45**

By letter dated February 2, 2001, and pursuant to the provisions specified in 10 CFR 50.55a(a)(3)(i), Entergy Nuclear Generation company (ENG C) – Pilgrim requested relief from the Code requirements for examinations of Excess Flow Check Valves (EFCVs). The following information provides additional information in support of that request. The following also changes Pilgrim’s commitment concerning the EFCV Sample Test Program method to be used for trending, and removes 6 valves (relating to 3 high flow instruments) from the relief because further investigation has determined that the associated lines may not have restricting orifices. Amended Relief Requests Numbers RV-44 and RV-45 are attached to reflect the changes.

Operational Impact

The operational impact of an EFCV failing to close following an instrument line rupture would be the environmental effects of a steam release in the vicinity of the instrument racks. The magnitude of the release of steam through a Pilgrim instrument line has been determined to be within the pressure control capacity of reactor building ventilation systems, and the functional integrity of secondary containment would continue to be met (Pilgrim UFSAR 5.2.3.5.3). Instrument line “bundles” are routed so as to minimize the potential for accidental damage. Also, the separation of redundant equipment in the Reactor Building is expected to minimize the impact of such a break due to such factors as jet impingement. However, continuously monitored variables such as area radiation or temperature would alert operators to damage and require reactor shutdown and depressurization to limit the release and allow manual isolation of the line (Pilgrim UFSAR 5.2.3.5.3).

EFCV Sample Test Program

Pilgrim’s February 2, 2001, request committed Pilgrim to an EFCV Sample Test Program acceptance criteria of less than or equal to 1 failure per year on a 3 year rolling average.

Pilgrim herein changes that commitment for Chemiquip manufactured EFCVs to 1 failure per year (2 failures per 2 years) on a 2 year rolling average. This change reflects Pilgrim’s nominal 2 year operating cycle.

Pilgrim is herein changing that commitment for Dragon manufactured EFCVs to 1/2 failure per year (1 failure per 2 years) on a 2 year rolling average. This change reflects Pilgrim’s small (2 valves) Dragon EFCV population and Pilgrim’s nominal 2 year operating cycle.

A047

Change to Chemiquip EFCV Relief Population

The following valves have been removed from RV-44:

RWCU System	CK-12-360 CK-12-361
RCIC System	1301-15A 1301-15B
HPCI System	2301-26 2301-220

These above listed valves will continue to be tested once per refueling outage as discussed within RJO-16, and, therefore, NRC review is unnecessary and is not requested.

Should you require further information concerning this relief request, please contact P.M. Kahler at (508) 830-7939.

Very truly yours,



Jack Alexander

Attachments: 1) Amended Relief Request RV-44
2) Amended Relief Request RV-45

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RELIEF REQUEST RV-44
Supplement to Pilgrim Refuel Outage Justification RJO-16
INSERVICE TESTING PROGRAM FOR PUMPS AND VALVES

SYSTEMS

Core Spray System (1400)
Recirculation Pump Instrumentation (262)
Nuclear Boiler Instrumentation (261)
Nuclear Boiler Instrumentation (263)

VALVES

Excess Flow Check Valves manufactured by Chemiquip:

1-CK-17A/B/C/D	263-53	263-92
1-CK-18A/B/C/D	263-55	263-215A/B
261-19A/B	263-57	263-217A/B
261-20A/B	263-59	263-219A/B
261-21A/B	263-61	263-220A/B
261-22A/B	263-69	263-223A/B
261-67A/B/C/D/E/F/G/H	263-71	263-225
261-110A/B	263-73	263-227
262-25A/B	263-75	263-231A/B
262-26A/B	263-77	263-233
263-38	263-79	263-237
263-44	263-81	263-242A/B
263-45	263-83	1400-31A/B
263-51	263-90	

CATEGORY

AC

CLASS:

1, 2

FUNCTION

Excess Flow Check Valves (EFCV's) are installed within each instrument process line that is part of the reactor coolant pressure boundary and that penetrates primary containment. Each EFCV closes to limit flow within the respective instrument line in the event of an instrument line break downstream of the EFCV.

TEST REQUIREMENT

Pilgrim Nuclear Power Station (PNPS) will conduct testing to the plant EFCV's using the 1989 Edition of ASME Section XI. The 1989 Edition provides that the rules for IST for valves shall meet the requirements set forth in ASME Operations and Maintenance Standard OMa-1988, Part 10 (OM-10), *"Inservice Testing of Valves in Light Water Reactor Power Plants."* Use of portions of OM-10 is allowed pursuant to the provisions in 10 CFR 50.55a(f)(4)(iv) provided all the related requirements are met. The related OM-10 requirements for check valve exercising during a refueling outage are Sub-Paragraphs 4.3.2.2(e) and 4.3.2.2(h). The related OM-10 requirements for leak rate testing of valves are identified within subsection 4.2.2. This provision to use OM-10 for testing EFCVs is preapproved within the PNPS Inservice Testing Program Safety Evaluation Report, dated June, 23 1993.

OM-10, Subsection 4.3.2, requires these valves to be tested nominally every 3 months, except as specified by paragraph 4.3.2.2. The Pilgrim IST program takes exception to the testing requirements per sub-paragraph 4.3.2.2(e), which states that if exercising the valve is not practicable during plant operation or cold shutdowns, it may be limited to full-stroke exercising during refueling outages. Therefore, "each" EFCV is exercise tested once every refuel outage. The Pilgrim refueling schedule is a nominally once every two years.

OM-10, sub-paragraph 4.2.2.3(a); Test Frequency – Conduct leakage tests to "each" EFCV at least once every two years.

RELIEF REQUESTED

Relaxation of the number of EFCVs tested every refuel outage from "each" to a "representative sample" every refuel outage (nominally once every 24 months). The representative sample is based on approximately 20 percent of the valves each two year cycle such that each valve is tested every 10 years (nominal).

BASIS FOR RELIEF

NEDO-32977-A, and the associated NRC safety evaluation, dated March 14, 2000, provides the basis for this relief. NEDO-32977-A justifies relaxing the EFCV testing frequency from the current testing of each valve once/cycle to a ~20% sample once/cycle such that each valve is tested within a 10 year interval.

NEDO-32977-A demonstrates, through operating experience, a high degree of reliability with EFCVs and the low consequences of an EFCV failure. Reliability data in the report (Tables 4-1 and 4.2) documents two EFCV failures (failure to close) at 4 participating plants (Monticello, Dresden, Vermont Yankee and Oyster Creek), for Chemiquip valves similar to those used at Pilgrim. These two failures were observed over a service time of 5426 operating years (4.75E +07 operating hours). This results in a "Best Estimate Failure Rate" of 4.21 E-08 per hour of operating time and an "Upper Limit Failure Rate" of 1.33 E-07 per hour of operating time. A review of historical test surveillance data, and a test failure component history search at Pilgrim shows zero EFCV failures (failure to close) have been observed (data from 1983 through 1999 RFO #12). In addition, there are no known EFCV failures that occurred earlier than 1983.

The instrument lines at Pilgrim have a flow restricting orifice upstream of the EFCVs to limit reactor water leakage in the event of rupture. Previous evaluations contained in Pilgrim's Updated Final Safety Analysis Report (UFSAR) of such an instrument line rupture do not credit the EFCVs for isolating the rupture. Thus a failure of an EFCV, though not expected as a result of this request, is bounded by the analysis. Based on the NEDO-32977-A and the analysis contained in Pilgrim's UFSAR, the proposed alternative to the required exercise testing frequency for EFCVs prescribed by OM-10 provides a satisfactory level of quality and safety.

ALTERNATIVE TESTING

This relief request proposes to exercise test (FC), by full-stroke to the position required to fulfill its function, a representative sample of EFCVs every refueling outage. During the exercise test, gross valve seat leakage (LX_{EFC}) will be measured. The representative sample is based on approximately 20 percent of the valves each cycle such that each valve is tested every 10 years (nominal). An Administrative Open Normal Position Verification (AP) will be performed on each valve following exercise and leak testing.

EFCV failures will be documented in Pilgrim's Corrective Action Program as a surveillance test failure. The failure will be evaluated and corrected. The Administrative EFCV Sample Test Program procedure will trend EFCV test failures and determine if additional testing is warranted.

The Administrative EFCV Sample Test Program procedure will also establish a minimum acceptance criteria for Chemiquip EFCVs of less than or equal to 1 failure per year (2 failures per 2 years) on a 2 year rolling average. This requirement will ensure EFCV performance remains consistent with the extended test interval. Upon exceeding the criteria an evaluation will be required which will:

- require a root-cause evaluation to determine cause,
- determine the extent of conditions,
- require an evaluation of the testing interval to ensure reliability of the EFCVs, and
- produce a risk analysis of the effects of the failures on cumulative and instantaneous plant safety.

Corrective actions and performance goals will be established based on the results of the root-cause analysis.

REFERENCES

NEDO-32977-A, "*Excess Flow Check Valve Testing Relaxation*," dated June 2000.

Safety Evaluation Report (with attached TER) by the office of Nuclear Reactor Regulation related to the Inservice Test Program and Requests for Relief, Pilgrim Nuclear Power Station Docket No. 50-293, dated June 23, 1993 (TAC No. M85069).

RELIEF REQUEST RV-45
Supplement to Pilgrim Refuel Outage Justification RJO-16
INSERVICE TESTING PROGRAM FOR PUMPS AND VALVES

SYSTEM

Nuclear Boiler Instrumentation (263)

VALVES

Excess Flow Check Valves manufactured by Dragon

2-CK-125A

2-CK-125B

CATEGORY

AC

CLASS:

2

FUNCTION

Excess flow check valves (EFCV's) are installed within each instrument process line that is part of the reactor coolant pressure boundary and that penetrates primary containment. Each EFCV closes to limit flow within the respective instrument line in the event of an instrument line break downstream of the EFCV.

TEST REQUIREMENT

Pilgrim Nuclear Power Station (PNPS) will conduct testing to the plant EFCV's using the 1989 Edition of ASME Section XI. The 1989 Edition provides that the rules for IST for valves shall meet the requirements set forth in ASME Operations and Maintenance Standard OMa-1988, Part 10 (OM-10), "*Inservice Testing of Valves in Light Water Reactor Power Plants.*" Use of portions of OM-10 is allowed pursuant to the provisions in 10 CFR 50.55a(f)(4)(iv) provided all the related requirements are met. The related OM-10 requirements for check valve exercising during a refueling outage are Sub-Paragraphs 4.3.2.2(e) and 4.3.2.2(h). The related OM-10 requirements for leak rate testing of valves are identified within Subsection 4.2.2. This provision to use OM-10 for testing EFCVs is preapproved within the PNPS Inservice Testing Program Safety Evaluation Report, dated June, 23 1993.

OM-10, Subsection 4.3.2, requires these valves to be tested nominally every 3 months, except as specified by Paragraph 4.3.2.2. The Pilgrim IST program takes exception to the testing requirements in accordance with Sub- Paragraph 4.3.2.2(e), which states that if exercising the valve is not practicable during plant operation or cold shutdowns, it may be limited to full-stroke exercising during refueling outages. Therefore, "each" EFCV is exercise tested once every refuel outage. The Pilgrim refueling schedule is a nominally once every two years.

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RELIEF REQUESTED

Relaxation of the number of EFCVs tested every refuel outage from "each" to a "representative sample" every refuel outage (nominally once every 24 months). The representative sample is based on approximately 20 percent of the valves (for the case of Dragon EFCVs – one valve) each two year cycle such that each valve is tested at least every 10 years.

BASIS FOR RELIEF

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The instrument lines at Pilgrim have a flow restricting orifice upstream of the EFCVs to limit reactor water leakage in the event of rupture. Previous evaluations contained in Pilgrim's Updated Final Safety Analysis Report (UFSAR) of such an instrument line rupture do not credit the EFCVs for isolating the rupture. Thus a failure of an EFCV, though not expected as a result of this request, is bounded by the analysis. Based on the NEDO-32977-A and the analysis contained in Pilgrim's UFSAR, the proposed alternative to the required exercise testing frequency for EFCVs prescribed by OM-10 provides a satisfactory level of quality and safety.

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