



ALLIANT ENERGY.

IES Utilities Inc.
Duane Arnold Energy Center
3277 DAEC Road
Palo, IA 52324-9785

February 7, 2000
NG-00-0140

Office: 319.851.7611
Fax: 319.851.7986
www.alliant-energy.com

Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
Attn: Document Control Desk
Mail Station 0-P1-17
Washington, DC 20555-0001

Subject: Duane Arnold Energy Center
Docket No: 50-331
Op. License No: DPR-49
Inservice Testing (IST) Revised Relief Request VR-24,
Excess Flow Check Valve Test Frequency

References: (1) NG-99-0308, Letter from J. Franz (IES Utilities) to
NRC, dated April 12, 1999, Technical Specification Change
Request (TSCR-010): "Relaxation of Excess Flow Check
Valve Surveillance Testing"
(2) Letter from B. Mozafari (NRC) to E. Protsch (IES
Utilities), dated December 29, 1999, "Duane Arnold Energy
Center – Issuance of Amendment Re: Revised Excess Flow
Check Valve Surveillance Requirements (TAC No.
MA5421)"
(3) NG-99-1327, Letter from K. Peveler (IES Utilities) to
NRC, dated October 4, 1999, "Inservice Testing (IST)
Relief Request VR-24, Excess Flow Check Valve Test
Frequency"

File: A-105

By reference (1), IES Utilities Inc. requested a revision to the Technical Specifications (TS) for the Duane Arnold Energy Center (DAEC). Surveillance Requirement (SR) 3.6.1.3.7 had required verification of the actuation capability of each reactor instrumentation line excess flow check valve (EFCV) every 24 months. Reference (2) approved a relaxation to that frequency by allowing a representative sample of EFCVs to be tested every 24 months, such that each EFCV will be tested at least once every 10 years (nominal).

A047

February 7, 2000

NG-00-0140

Page 2

These EFCVs are contained within the scope of the DAEC inservice testing (IST) program. Since the new TS SR frequency is not in accordance with ASME Code requirements, NRC approval of a conforming IST relief request is required. By reference (3), IES Utilities Inc. requested the necessary relief request, VR-24. Subsequent telephone conversations with your Staff indicated the need for revisions to this request. A revised relief request (VR-24) is enclosed with this letter.

10CFR50.55a(a)(3)(i) states that proposed alternatives may be used when authorized by the Director of the Office of Nuclear Reactor Regulation provided that the proposed alternatives provide an acceptable level of quality and safety. The proposed (revised) relief request does so, as discussed in the attachment.

Estimated cost saving from the proposed alternate testing is \$1,266,000. This estimate is based upon the number of critical-path hours saved and replacement power costs (in a regulated environment), and is the total estimated savings for the number of refueling outages (7) remaining under the current operating license. A minimal amount of dose savings would also occur as a result of this change.

There are no new commitments made in this letter. Should you have any questions regarding this matter, please contact this office.

Sincerely,

A handwritten signature in black ink, appearing to read "Kenneth E. Peveler". The signature is stylized and includes a small "for" written below it.

Kenneth E. Peveler
Manager, Regulatory Performance

Attachment

cc: J. W. Karrick
E. Protsch (w/o)
D. Wilson (w/o)
G. Van Middlesworth (w/o)
B. Mozafari (NRC-NRR)
J. Dyer (Region III)
NRC Resident Office
Docu

RELIEF REQUEST NO. VR-24

SYSTEMS:

Nuclear Boiler, Reactor Recirculation, Reactor Core Isolation Cooling, Core Spray, High Pressure Coolant Injection, and Reactor Vessel Instrumentation

COMPONENTS:

XFV-xxxx, Excess Flow Check Valves

CATEGORY:

A/C

FUNCTION:

Excess flow check valves (EFCVs) specifically designed for the DAEC are provided in each instrument process line that penetrates the drywell and is part of the reactor coolant pressure boundary. The excess flow check valve is designed so that it will not close accidentally during normal operation, will close if a rupture of the instrument line is indicated downstream of the valve, can be reopened when appropriate, and has its status indicated in the control room.

An orifice is installed just inside the drywell on each of these instrument lines. The orifice limits leakage to a level where the integrity and functional performance of secondary containment and associated safety systems are maintained, the coolant loss is within the capability of the reactor coolant makeup system, and the potential offsite exposure is substantially below the guidelines of 10 CFR 100. Regulatory Guide 1.11 requested that an additional isolation valve capable of automatic operation be located outside containment on these instrument process lines. At the DAEC, these are the excess flow check valves.

TEST REQUIREMENTS:

Check valves shall be exercised to the positions in which they perform their safety functions or examined at least once every reactor refueling outage. (Part 10, Para. 4.3.2.2 and 4.3.2.4 (c))

Valves with remote position indicators shall be observed locally at least once every 2 years to verify that valve operation is accurately indicated. (Part 10, Para. 4.1)

The EFCVs are classified as containment isolation valves and are considered ASME Code category A. Since these valves are excluded from 10CFR50 Appendix J testing due to the size of the upstream orifice, no seat leakage testing is required.

BASIS FOR RELIEF:

The excess flow check valve is a simple device: the major components are a poppet and spring. The spring holds the poppet open under static conditions. The valve will close upon sufficient differential pressure across the poppet. Functional testing of the valve is accomplished by venting the instrument side of the tube. The resultant increase in flow imposes a differential pressure across the poppet, which compresses the spring and decreases flow through the valve.

Excess flow check valves have been extremely reliable throughout the industry¹. In the first 25 years of operation at the DAEC, no excess flow check valve has failed to close due to actual valve failure (i.e., not related to test methodology). The DAEC Technical Specifications (TS) detail what frequency is required to maintain a high degree of reliability and availability, and provide an acceptable level of quality and safety. In the NRC's Safety Evaluation² which approved the associated TS amendment, the Staff concluded, "Based on the acceptability of the methods applied to estimate the release frequency, a relatively low release frequency estimate in conjunction with unlikely impact on core damage and negligible consequence of a release in the reactor building, we conclude that the increase in risk associated with the licensee's request for relaxation of EFCV surveillance testing to be sufficiently low and acceptable." The DAEC requests relief pursuant to 10 CFR 50.55a (a)(3)(i) to exercise excess flow check valves at the frequency specified in amended DAEC TS Surveillance Requirement (SR) 3.6.1.3.7.

¹NG-99-0308, Letter from J. Franz (IES Utilities) to NRC, dated April 12, 1999, Technical Specification Change Request (TSCR-010): Relaxation of Excess Flow Check Valve Surveillance Testing

²Safety Evaluation enclosed in Letter from B. Mozafari (NRC) to E. Protsch (IES Utilities), dated December 29, 1999, "Duane Arnold Energy Center – Issuance of Amendment Re: Revised Excess Flow Check Valve Surveillance Requirements (TAC No. MA5421)"

ALTERNATE TESTING:

EFCVs will be exercised at the frequency specified in Technical Specification Surveillance Requirement 3.6.1.3.7.

The EFCVs have position indication in the control room. Check valve remote position indication is excluded from Regulatory Guide 1.97 as a required parameter for evaluating containment isolation. The remote position indication will be verified in the closed direction at the same frequency as the exercise test, which will be performed at the frequency prescribed in Technical Specification Surveillance Requirement 3.6.1.3.7. After the close position test, the valves will be reset, and the remote open position indication will be verified. Although inadvertent actuation of an EFCV during operation is highly unlikely due to the spring-poppet design, the DAEC verifies the EFCVs indicate open in the control room at a frequency greater than once every 2 years.