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 DENTON, H. Office of Nuclear Reactor Regulation, Director (post 851125)

SUBJECT: Application for amend to License DPR-49 revising Tech Specs to allow extension of 10 wks to surveillance test intervals for functional testing of snubbers & local leak rate testing of primary containment isolation valves. Fee Paid.

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Iowa Electric Light and Power Company

November 14, 1986  
NG-86-3874

Mr. Harold Denton, Director  
Office of Nuclear Reactor Regulation  
U.S. Nuclear Regulatory Commission  
Washington, DC 20555

Subject: Duane Arnold Energy Center  
Docket No: 50-331  
Op. License No: DPR-49  
Technical Specification Change (RTS-213):  
Extension of Snubber Surveillance, Local Leak  
Rate Testing Intervals and Replacement of  
Purge and Vent Valve T-Ring Seals  
File: A-117, T-23i

Dear Mr. Denton:

We hereby request revision of the Technical Specifications (TS) for the Duane Arnold Energy Center (DAEC) in accordance with the Code of Federal Regulations, Title 10, Sections 50.59 and 50.90.

This proposed change (RTS-213) revises the current Technical Specification requirements to allow an extension of approximately 10 weeks to the surveillance test intervals for the functional testing of snubbers, the local leak rate testing of primary containment isolation valves and penetrations and the replacement of the T-ring seals in the primary containment purge and vent valves. These extensions are requested on a one-time-only basis to support our present schedule for the next refuel outage and thereby avoid a premature reactor shutdown. Also, the proposed Technical Specification revisions will allow the subsequent surveillance test interval for the functional testing of snubbers and local leak rate testing of primary containment valves and penetrations to begin with the actual Cycle 8/9 Refuel Outage test date. This change is needed in order to prevent the potential need for a similar extension to reach the Cycle 9/10 Refuel Outage, presently scheduled for September, 1988.

We would greatly appreciate timely review of these Technical Specification changes as the first of these surveillances becomes due on February 6, 1987. We, therefore, request that the effective date of the amendment be made no later than February 5, 1987.

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Mr. Harold Denton  
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The application has been reviewed by the DAEC Operations Committee and DAEC Safety Committee. In accordance with the fee schedule for license amendments (10 CFR 170), a check for \$150 is enclosed. The balance of the fee will be paid upon billing.

A copy of this submittal, which includes a no significant hazards considerations analysis, is being forwarded to our appointed state official pursuant to the requirements of 10 CFR 50.91.

This application, which consists of three signed originals and 37 copies with their enclosures, is true and accurate to the best of my knowledge and belief.

IOWA ELECTRIC LIGHT AND POWER COMPANY

BY

Richard W. McGaughy  
Richard W. McGaughy  
Manager, Nuclear Division

Subscribed and sworn to Before Me on  
this 14th day of November 1986.

Kathleen M. Furman  
Notary Public in and for the State of Iowa

RWM/RAB/dmb\*

Attachments: 1) Evaluation of Change Pursuant to 10 CFR 50.92  
2) Proposed Change RTS-213 including List of Affected Pages

cc: R. Browning  
L. Liu  
L. Root  
R. Gilbert  
NRC Resident Office  
T. Houvenagle (UD)

## EVALUATION OF CHANGE WITH RESPECT TO 10 CFR 50.92

Background:

The attached Technical Specification amendment requests were modelled after those of other licensees, which have been previously submitted. The extension to the snubber surveillance interval was modelled after a Kansas Gas & Electric Company submittal for the Wolf Creek Generating Station, (G. L. Koester to H. R. Denton, "Revision to Technical Specification 4.7.8," March, 27 1986); while the Appendix J Type B and C interval extension is modelled after a combination of a Commonwealth Edison Company 10 CFR 50.12 relief request for Dresden-Unit 3, (J. R. Wojnarowski to H. R. Denton, "Request for Scheduling Exemption from 10 CFR 50, Appendix J, Type B and C Test Interval," August 26, 1985) and a Technical Specification amendment request filed by Philadelphia Electric Company for the Limerick-Unit 1, (S. L. Daltroff to H. R. Denton, "Application for Amendment of Facility Operating Licensing NPF-39 and Exemption to Part 50, Appendix J," December 18, 1985).

The basis for the existing Technical Specification requirement for the periodic replacement of the purge and vent valve T-ring seals is found in our previous submittals on purge and vent valve operability (R. McGaughy to H. Denton, "Containment Purge and Vent Valve Operability," NG-83-2024, June 10, 1983 and L. Root to H. Denton, Request for Technical Specification Change: RTS-133, LDR-82-170, June 10, 1982.). These submittals were reviewed by the NRC and subsequently approved, via SERs on Multi-Plant Action (MPA) B-24 and License Amendment #100 to DPR-49, respectively (D. Vassallo to L. Liu, "Long Term Review of Containment Purge and Vent: Multi-Plant Action Item B-24," March 29, 1984 and M. Thadani to L. Liu, Amendment #100 to DPR-49, May 22, 1984).

This submittal is a companion submittal to our request, under § 50.12, for a limited exemption from the two year test interval requirements of 10 CFR Part 50, Appendix J, Sections III.D.2(a) and III.D.3.

Iowa Electric Light and Power Company, Docket No. 50-331,

Duane Arnold Energy Center, Linn County, Iowa

Date of Amendment Request: November 14, 1986

Description of Amendment Request: The proposed license amendment would revise the Duane Arnold Energy Center (DAEC) Technical Specifications (TS) to allow, on a one-time-only basis, a short extension of the required surveillance interval for the functional testing of snubbers (Specification 4.6.H.3), the local leak rate testing of primary containment penetrations and isolation valves (Specifications 4.7.A.2.d(2)(a) and (3), respectively) and the replacement of the T-ring seals for the primary containment purge and vent valves (Specification 4.7.A.2.e). These changes are needed to support the revised shutdown date for the Cycle 8/9 Refuel Outage. Our TS require that "In cases where the elapsed (surveillance) interval has exceeded 100% of the specified interval, the next surveillance interval shall commence at the end of the original specified interval." The proposed Technical Specification revisions will permit the next interval to begin with the actual test date

during the Cycle 8/9 Refuel Outage (snubber and local leak rate testing only). This will prevent the potential need for a similar extension to reach the Cycle 9/10 Refuel Outage, presently scheduled for September, 1988.

The DAEC was scheduled to shut down for the Cycle 8/9 Refuel Outage on February 1, 1987. This date was chosen to comply with the Technical Specification surveillance requirements for the functional testing of snubbers and 10 CFR 50, Appendix J Type B and C local leak rate testing (LLRT) of primary containment penetrations and isolation valves respectively. However, due to the unanticipated extension of the Cycle 7/8 Refuel Outage and other unscheduled shutdowns during Cycle 8 operation, the target end-of-cycle core exposure for Cycle 8 cannot be achieved by February 1. Termination of Cycle 8 before this minimum core exposure is achieved would result in less-than-optimum fuel cycle management for both Cycle 8 and 9 and necessitate a revision to the Cycle 9 core design and a complete reanalysis of the Cycle 9 Reload License. The above-mentioned surveillances cannot be performed during power operation for several different reasons. Some of the affected systems or components must be declared inoperable during the testing and the appropriate TS Limiting Condition for Operation be entered. Many of the components are located in the drywell or other areas which are high radiation areas during operation and are, therefore, inaccessible. Finally, some of the components require the primary system pressure to be below the test pressure of 43 psig in order to conduct the tests; that is well below the system pressure that must be maintained during power operation. Consequently, a reactor shutdown is required in order to perform these surveillances. All of the recent reactor shutdowns have been of an unscheduled nature to repair inoperable equipment and adequate preparations could not be made to coordinate the performance of these tests without unduly extending the outages solely for this purpose. In addition, had these surveillances been performed during one of these unscheduled outages, it would have caused the subsequent surveillance intervals to become out-of-phase with the regularly scheduled refuel outages, thereby causing additional plant shutdowns in the future in order to conduct these surveillance tests. Therefore, a short extension of the TS-required surveillance intervals is needed to prevent either the redesign and reanalysis of the Cycle 9 core or an unscheduled shutdown for the purpose of conducting these surveillances. Either of these alternatives to extending the surveillance intervals will result in significant additional costs.

Basis for proposed no significant hazards consideration determination: The Commission has provided standards (10 CFR 50.92(c)) for determining whether a significant hazards consideration exists. A proposed amendment to an operating license for a facility involves no significant hazards consideration if operation of the facility in accordance with the proposed amendment would not (1) involve a significant increase in the probability or consequences of an accident previously evaluated; (2) create the possibility of a new or different kind of accident from any accident previously evaluated; or (3) involve a significant reduction in a margin of safety.

Our determination of each of the above items follows:

(1) Functional Testing of Snubbers

The function of snubbers is to provide flexible support of piping systems to absorb the displacement loading on the pipe from such sources as seismic events, thermal expansion, waterhammer, etc. Periodic visual inspection and functional testing of snubbers assures that they are capable of performing their required function. A statistically-meaningful, representative sample of each snubber type and location is chosen for inspection and testing during each surveillance interval to ensure that potential common-mode failure or performance degradation is detected before a large number of snubbers are affected. If a failure is detected, either the sample size is increased or the inspection interval is shortened to ensure, on a statistically-meaningful basis, that the remaining snubbers are functional.

In the Cycle 6/7 Outage (Spring 1983), 100% of all safety-related hydraulic snubbers were either refurbished or replaced. Since that time no snubber, either hydraulic or mechanical, has failed a visual inspection and only one snubber, a mechanical snubber on the reactor head spray line, has failed a functional test. The probable cause of the failure was drying of the lubricant, due to the higher ambient temperature in the top of the drywell. The snubber was repaired by removing the lubricant, per the vendor's recommendation, prior to return to service. Although the other snubber in this area did not fail its functional test, its lubricant was removed as well as a precautionary measure. While the failed snubber is scheduled to be retested during the next functional test series, engineering calculations have shown that snubbers are not needed on this line and they are to be replaced with rigid supports during the upcoming refuel outage. Again, no mechanical snubbers were found to be inoperable during their last visual inspection, conducted in March of this year. The hydraulic snubbers are scheduled to be visually inspected before the end of this year, prior to the expiration of the functional testing surveillance interval.

Based upon the excellent performance of the snubbers to date, it is judged that a short, approximately 10 week, extension of the Technical Specification-required surveillance interval for functional testing a representative sample (10%) of the safety-related snubbers will not increase the probability of a snubber failure. The potential consequences of a snubber failure are not affected by increasing the surveillance interval for functional testing.

The extension of the surveillance interval for functionally testing of snubbers does not involve an actual hardware change to the facility or cause the facility to be operated in a different manner. Therefore, the possibility of a new or different accident is not created by this change.

As stated earlier, a statistically-significant, representative sample of snubbers is periodically tested to ensure that all safety-related snubbers remain functional. Because the snubbers have demonstrated excellent

performance in recent testing, the possibility of a common-mode failure or serious degradation in snubber performance, which would affect more than one component or piping system, is highly unlikely. As the plant is designed for the worst single failure of a system or component, a short extension to the functional test interval of safety-related snubbers will not significantly reduce the existing margin of safety.

Consequently, the short extension of the Technical Specification-required surveillance interval for the functional testing of snubbers involves no significant hazards consideration.

(2) Local Leak Rate Testing of Primary Containment Penetrations and Isolation Valves

Primary containment penetrations and isolation valves are routinely tested for leak tightness in accordance with 10 CFR Part 50, Appendix J. Such local leak rate testing (LLRT) ensures that primary containment integrity will be maintained during a design basis LOCA, such that the resulting off-site radiological consequences remain within the acceptance criteria of 10 CFR 100. These LLRTs are required to be performed at least once every two years and are usually done during regularly-scheduled refuel outages.

Type B and C LLRTs were performed on the primary containment penetrations and isolation valves, respectively, during the early weeks of the last refuel outage (February & March, 1985). A large percentage (~70%) of these components met the ASME acceptance criteria for leaktightness in the as-found condition and did not require maintenance to restore their leaktightness. The remaining components were repaired and later re-tested satisfactorily prior to re-start. Consequently, only those components which passed their as-found LLRTs require the short extension to their test interval. Again, while these components comprise a large percentage of the components under the Appendix J program, their combined leakage rate of 27,688 sccm is approximately one-third of the total current as-left value of 75,835 sccm. These valves are the maximum in-line leakage rates in the as-left condition and are, therefore, conservative. The maximum allowable leakage rate permitted by our Technical Specifications is 185,221 sccm. Therefore, considerable margin exists to the allowable limit. Consequently, these components would have to experience severe degradation in order to exceed the allowable technical specification limit.

After the LLRT was conducted on the last of the affected components during the Cycle 7/8 Refuel Outage, the plant remained in a cold shutdown condition for another 12 weeks. The extension now requested (~10 weeks) is less than that 12 week period. Therefore, the actual period of operation for these components will be less than the two year maximum allowable interval.

Based upon the large margin to the allowable leakage rate limit and the actual operating history of these valves, neither the probability nor the consequences of any accident is significantly increased by this change.

As the extension of the surveillance interval for Type B and C LLRTs does not involve an actual hardware change to the facility or cause the facility to be operated in a different manner, the possibility of a new or different accident is not created by this change.

During the extended surveillance period the reactor will be operated in a coastdown mode, i.e., at less than rated power at a linearly decreasing rate. Because the reactor will be operating at less-than-rated power, the peak containment pressure after a postulated loss-of-coolant accident would be less than the 43 psig used to determine the allowable technical specification leak rate limit. Consequently, the driving pressure causing potential leakage from the primary containment would be lower than if the reactor had been operating at rated power. Therefore, the margin of safety is not reduced by this change.

Consequently, the short extension of the Technical Specification-required surveillance interval for the performance of Type B and C LLRTs involves no significant hazards consideration.

(3) Replacement of Purge and Vent Valve T-Ring Seals

The primary containment purge and vent valves have an inflatable T-ring seal which ensure leaktightness by pressing the valve disk against the valve seat when the valve is closed. This T-ring seal is made of an ethylene-propylene elastomer, which has an in-service life of four years. This in-service life is due to aging of the material with continued exposure to high temperature and radiation and is based upon worst case environmental conditions (four continuous years at nominal drywell conditions plus 30 days at post-accident conditions). As these valves are actually located outside the drywell, their operating environment is less stringent than that used to determine their maximum in-service life. This in-service life is based upon continuous exposure to their operating environment. When the plant is in a cold shutdown condition the high temperature and radiation environment are not present and the T-ring seal material does not age. The plant has been in a cold shutdown condition on several occasions, for both planned and unplanned outages, since the installation of the existing T-ring seals in March and April of 1983. In particular, the plant was in a cold shutdown condition for 23 weeks during the Cycle 7/8 Refuel Outage in the Spring/Summer of 1985. The extension now requested (~10 weeks) is less than that 23 week period. Therefore, the actual period of operation for the T-ring seals will be much less than the four-year maximum allowable interval.

Also, the purge and vent valves are tested for leaktightness once per quarter, as a check of T-ring seal integrity. The test history of these valves has been very good, with no degradation in leaktightness and consequently T-ring seal integrity, being observed.

Based upon the actual in-service time of the T-ring seals being less than the maximum-allowable interval, even with the extension, and the purge and vent valves continued demonstration of leaktightness, neither the

probability nor the consequences of any accident previously analyzed will be significantly increased by this change.

The extension of the replacement interval for the purge and vent valve T-ring seals does not involve an actual hardware change to the facility or cause the facility to be operated in a different manner. Therefore, the possibility of a new or different accident is not created by this change.

Because the actual in-service time is less than the maximum-allowable interval and the continued demonstration of seal integrity, via the leak rate tests, the possibility of a sudden, catastrophic failure of a T-ring seal is highly unlikely. Also, each purge and vent line penetrating primary containment has redundant purge and vent valves, both of which would have to experience T-ring seal failure in order to degrade primary containment integrity. Therefore, the margin of safety is not reduced by this change.

Lastly, the baseline date currently stated in the TS for the replacement of T-ring seals is being corrected to reflect the actual refuel outage when the T-ring seals were replaced. The current TS states that this replacement took place during the 1982 refuel outage. The Cycle 6/7 Refuel Outage was delayed by several months and actually began in February of 1983; consequently, there was no refuel outage in 1982. This change is considered to be administrative in nature and, therefore, will not significantly increase the possibility or consequences of any previously-analyzed accident, introduce the possibility of a new or different accident, or reduce the margin of safety in any way.

Consequently, the short extension of the Technical Specification-required replacement interval for the purge and vent valve T-ring seals and the correction of the baseline date for such replacement involves no significant hazards consideration.

#### (4) Starting Date for the Next Surveillance Interval

Because the next surveillance interval will begin with the actual Cycle 8/9 outage test date, the operating interval between surveillances will not be increased. Therefore, the probability or consequences of any accident, previously analyzed, will not be increased.

No actual hardware change to the facility or cause the facility is involved; the facility will not be operated in a different manner. Therefore, the possibility of a new or different accident or malfunction is not created by this change.

Again, as the actual operating interval between surveillances is not being increased by this change, the margin of safety will not be reduced.

Therefore, this feature of the Technical Specification revision involves no significant hazards consideration.

Based upon the above information, this proposed license amendment involves no significant hazards consideration.

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Attorney for Licensee: Jack Newman, Kathleen H. Shea, Newman and Holtzinger, 1615 L Street NW, Washington, DC 20036

Proposed Change RTS-213  
to the  
Duane Arnold Energy Center  
Technical Specifications

The holders of license DPR-49 for the Duane Arnold Energy Center propose to amend Appendix A (Technical Specifications) to said license by deleting current pages and replacing them with the attached, new pages. A List of the Affected Pages is given below.

The DAEC was scheduled to shut down for the Cycle 8/9 Refuel Outage on February 1, 1987. This date was chosen to comply with the Technical Specification (TS) surveillance requirements for the functional testing of snubbers and 10 CFR Part 50, Appendix J Type B and C local leak rate testing (LLRT) of primary containment penetrations and isolation valves, respectively. In addition, the TS-required date for the replacement of the T-ring seals in the primary containment purge and vent valves will be reached shortly after February 1. However, due to the unanticipated extension of the Cycle 7/8 Refuel Outage and other unscheduled shutdowns during Cycle 8 operation, the target end-of-cycle core exposure for Cycle 8 cannot be achieved by February 1. Termination of Cycle 8 before this minimum core exposure is achieved will result in less-than-optimum fuel cycle management for both Cycle 8 and 9 and necessitate a revision to the Cycle 9 core design and a complete reanalysis of the Cycle 9 Reload License.

The above-mentioned surveillances can not be performed during power operation for several different reasons. Some of the affected systems or components must be declared inoperable during the testing and the appropriate TS Limiting Condition for Operation be entered. Many of the components are located in the drywell or other areas which are high radiation areas during operation and are, therefore, inaccessible. Finally, some of the components require the primary system pressure to be below the test pressure of 43 psig in order to conduct the tests; that is well below the system pressure that must be maintained during power operation. Consequently, a reactor shutdown is required in order to perform these surveillances. All of the recent reactor shutdowns have been of an unscheduled nature to repair inoperable equipment and adequate preparations could not be made to coordinate the performance of these tests without unduly extending these outages solely for this purpose. In addition, had these surveillances been performed during one of these unscheduled outages, it would have caused the subsequent surveillance intervals to become out-of-phase with the regularly scheduled refuel outages, thereby causing additional plant shutdowns in the future in order to conduct these surveillance tests. Therefore, a short extension of the TS-required surveillance intervals is needed to prevent either the redesign and reanalysis of the Cycle 9 core or an unscheduled shutdown for the purpose of conducting these surveillances. Either of these alternatives to extending the surveillance intervals will result in significant additional costs.

The attached revisions to the DAEC Technical Specification would allow, on a one-time-only basis, the short extension of the surveillance intervals for

the functional testing of snubbers, replacement of purge and vent valve T-ring seals and Type B and C LLRTs. Also, as our Technical Specifications require that "In cases where the elapsed (surveillance) interval has exceeded 100% of the specified interval, the next surveillance interval shall commence at the end of the original specified interval.", the proposed TS revisions will allow the Cycle 9 surveillance interval for the functional testing of snubbers and Type B and C LLRTs to begin with the actual test date during the Cycle 8/9 Refuel Outage. This will prevent the potential need for a similar extension to reach the Cycle 9/10 Refuel Outage, presently scheduled for September, 1988. This allowance is not required for the replacement of the T-ring seals, as their surveillance interval is automatically re-initialized to begin with the actual in-service date following seal replacement.

The changes being made are as follows:

- 1) Revise Specification 4.6.H.3, regarding the functional testing of snubbers, to include a footnote stating that the specified surveillance interval may be extended on a one-time-only basis and that the subsequent test interval begins with the actual Cycle 8/9 Outage test date.
- 2) Revise Specifications 4.7.A.2.d(2)(a) and (3), regarding Type B and C LLRTs, respectively, to include a footnote stating that the specified surveillance interval may be extended on a one-time-only basis and that the subsequent test interval begins with the actual Cycle 8/9 Outage test date.
- 3) Revise Specification 4.7.A.2.e, regarding the interval for replacement of the T-ring seals in the purge and vent valves, to include a footnote stating that the specified surveillance interval may be extending on a one-time-only basis. Also, correct an error in the baseline date for the T-ring seal replacement. The specification should read the "Cycle 6/7 refuel outage," instead of the "1982 refuel outage" presently stated. The actual date of the Cycle 6/7 refuel outage was February 1983; there was no refuel outage in 1982.

List of Pages Affected

3.6-12  
3.7-6  
3.7-7