

444 South 16th Street Mall
Omaha, NE 68102-2247

LIC-10-0043
June 1, 2010

U.S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, DC 20555-0001

- References:
1. Docket No. 50-285
 2. Letter from OPPD (T. R. Nellenbach) to NRC (Document Control Desk), Emergency License Amendment Request (LAR), Revision to Technical Specification (TS) 2.15, Table 2-5 Footnote (c) for Safety Valve Acoustic Position Indication, dated May 31, 2010 (LIC-10-0042)

**SUBJECT: Supplement to Emergency License Amendment Request (LAR),
Revision to Technical Specification (TS) 2.15, Table 2-5 Note (c) for
Safety Valve Acoustic Position Indication**

In the Reference 2 license amendment request (LAR), the Omaha Public Power District (OPPD) requested an emergency amendment to modify Technical Specification (TS) 2.15, Table 2-5, Note (c) to allow a onetime extension of the 7-day allowed outage time for the inoperability of Item 4 regarding safety valve acoustic position indication to allow repair prior to the next entry into Operating Mode 3 (Hot Shutdown) from Operating Mode 4 (Cold Shutdown). This will permit the Fort Calhoun Station (FCS) to continue power operations with inoperable safety valve acoustic position indication on safety valve RC-142. Based on a conference call held with the NRC staff on June 1, 2010, OPPD is revising the application to provide additional clarifying information and revise the wording of the proposed footnote to Note c.

Accordingly, attached are the revised technical evaluation pages to replace the technical evaluation pages provided in Reference 2. The only proposed TS submitted in Reference 2 affected by this submittal is the proposed footnote for TS 2.15, Table 2-5, Note c. Therefore, TS 2-15, Page 14 is submitted to reflect the proposed change to the footnote as discussed with the NRC staff. Revision bars in the right margin of the attachment denote the location of revised text.

There are no regulatory commitments associated with this proposed change.

This supplement to the amendment is requested on an emergency basis in accordance with 10 CFR 50.91(a)(5) to permit FCS to continue power operations with inoperable safety valve acoustic position indication on safety valve RC-142.

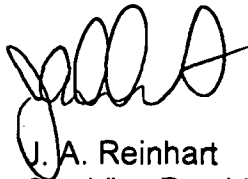
OPPD will implement the approved amendment upon receipt.

No commitments to the NRC are made in this letter.

In accordance with 10 CFR 50.91, a copy of this application, with attachments, is being provided to the designated State of Nebraska official.

If you should have any questions regarding this submittal or require additional information, please contact Mr. Bill R. Hansher at (402) 533-6894.

I declare under penalty of perjury that the foregoing is true and correct. Executed on June 1, 2010.



J. A. Reinhart
Site Vice President

Enclosure: OPPD's Evaluation of the Proposed Change(s)

c: Director of Consumer Health Services, Department of Regulation and Licensure,
Nebraska Health and Human Services, State of Nebraska

OPPD's Evaluation of the Proposed Change

Supplement to Emergency License Amendment Request (LAR), Revision to Technical Specification (TS) 2.15, Table 2-5 Note (c) for Safety Valve Acoustic Position Indication

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ATTACHMENTS:

- 1. Technical Specification Page Markup
- 2. Retyped ("Clean") Technical Specifications Page

1.0 SUMMARY DESCRIPTION

This emergency license amendment request (LAR) proposes a change to Renewed Facility Operating License No. DPR-40 for Fort Calhoun Station (FCS), Unit No. 1. The Omaha Public Power District (OPPD) proposes to increase the allowed outage time (AOT) for inoperability of acoustic position indication for pressurizer safety valve (PSV) RC-142 from 7 days to prior to the next Mode 3 entry from Mode 4 after June 1, 2010 on a onetime basis due to inoperability of flow indicator FI-142.

2.0 DETAILED DESCRIPTION

A footnote is proposed to be added to TS 2.15, Table 2-5, Note c to allow a onetime extension for inoperability of acoustic position indication on RC-142 from 7 days to until prior to the next Mode 3 entry from Mode 4 after June 1, 2010.

A similar emergency LAR regarding an inoperable PSV acoustic position indication monitor was approved for Donald C. Cook Nuclear Plant, Unit No. 1 in 1992 (Reference 6.1). The proposed completion time (PSV acoustic position indication must be operable prior to the next Mode 3 entry from Mode 4) is consistent with PSV instrumentation requirements (Action 3.17.6.8a) approved for the Palisades Nuclear Plant (Reference 6.3) in 1994. The Palisades Nuclear Plant has since adopted improved standard technical specifications (STS).

There are no Bases changes proposed by this LAR since PSV position indication is not specifically identified in the Bases.

The amendment is requested on an emergency basis in accordance with 10 CFR 50.91(a)(5) to permit continued operation with inoperable acoustic position indication for PSV RC-142. During the performance of the monthly surveillance test (IC-ST-RC-0001, "Functional Test of Acoustic Flow Monitors"), the flow indicator (FI-142) could not detect the impactor simulating flow through the PSV.

OPPD has been working methodically to restore operability of the component. Troubleshooting activities have determined that components outside of the containment building are not the cause. Troubleshooting activities inside of the containment building have not yet definitively identified the cause, but a cable failure is suspected. Although repair efforts are continuing, OPPD is not confident that FI-142 can be returned to operability prior to expiration of the current allowed outage time at 0935 CDT on June 2, 2010.

3.0 TECHNICAL EVALUATION

System Description

The FCS reactor coolant system (RCS) is protected against overpressurization by control and protective circuits such as the pressurizer pressure high reactor trip and by the 2 power-operated relief valves (PCV-102-1 and PCV-102-2) and the 2 PSVs (RC-141 and RC-142) connected to the top of the pressurizer. Upon opening, these valves discharge steam into the pressurizer quench tank, which condenses and collects the valve effluent. Two independent monitoring systems (acoustic and temperature) exist to alert the operator to the passage of steam or liquid through the PSVs due to valve lift or seat leakage. The purpose of the PSV acoustic monitor is to provide the operator with information regarding PSV position by detecting downstream acoustic vibrations generated from the steam flowing through the valve and actuates an alarm in the control room. A temperature sensor upstream of the acoustic sensor generates a signal that actuates a control room alarm when a temperature increase is experienced in the line, as would be the case if the valve released steam.

The acoustic monitors were added to the FCS TSs by Amendment No. 54 to meet the requirements of NUREG-0578, "TMI-2 Lessons Learned Task Force Status Report and Short Term Recommendations," and NUREG-0737, "Clarification of TMI Action Plan Requirements." With inoperable acoustic position indication, OPPD will utilize the temperature sensor installed upstream of PSV RC-142 to identify flow through RC-142. This sensor provides indication and alarm in the control room and indication on the plant computer.

The PSVs discharge into the pressurizer quench tank. The temperature, pressure, and liquid level of this tank are indicated and alarmed in the control room. A change in these parameters would alarm and alert the operator of a PSV discharge condition. Abnormal Operating Procedures (AOP-22) and Emergency Operating Procedures (EOP-03) contain instructions noting that RCS leakage to the pressurizer quench tank is indicated by a rise in tank pressure, temperature, or level and rising or elevated pressure relief line temperatures or flow indication from the relief line acoustic monitors. Operators undergo continuous training on utilization of the AOPs and EOPs.

During monthly surveillance testing, the single fixed impactor is detected by all four acoustic monitor channels as observed on test instrumentation. This is caused by the sensitivity of the accelerometers and the fact that the safety valves and their associated acoustic monitor sensors are in close proximity to each other. Functional checks of the PORVs are detected by all four acoustic monitors. Therefore, if the safety valve associated with the inoperable valve position acoustic monitor channel was to discharge, the remaining three valve acoustic monitor channels would alert operations.

Additionally, both code safety valves are monitored by independent tail pipe temperature sensors that are recorded every two hours by operations. The highest of Pressurizer Safety Valve (RC-141 and RC-142) discharge temperatures TIA-135 & TIA-136 and the PORV discharge temperature TIA-134 are logged every two hours on FC-75 Control Room log. These readings are trended by the operators taking them and reviewed once per shift by the Control Room Supervisor or Shift Manager.

These independent temperature loops are function tested on a monthly surveillance. Furthermore, the safety valves discharge into the pressurizer quench tank. Temperature, pressure, and liquid level of the quench tank are calibrated on an 18 month frequency. The quench tank level, pressure, and temperatures have indication and alarms in the control room. These parameters are recorded once every 12 hours.

A change in any of these parameters would alarm and alert the operator of a safety valve discharge condition. If the affected safety valve were to lift, the sensitivity of the remaining operable acoustic monitors is sufficient to detect any substantial flow through the affected safety valve discharge line.

OPPD has confirmed that the electronics of the acoustic monitors are sufficiently independent so as to allow the affected acoustic monitor (i.e., FI-142) to be isolated without affecting the acoustic monitors that remain OPERABLE.

In January 1992, an event similar to the situation at FCS occurred at the Donald C. Cook Nuclear Plant, Unit 1 (a Westinghouse Pressurized Water Reactor) when operation of PSV position indicator acoustic monitor QR-107A became erratic. At the time, troubleshooting efforts indicated that the likely source of the erratic readings was the charge converter located in the pressurizer doghouse, which could not be repaired while the plant was at power. The NRC approved an emergency amendment in February 1992 (Reference 6.1) allowing the plant to exempt QR-107A from the 1 per valve minimum operable channel requirement in their TS until the end of Cycle 12 in June 1992. (A similar event for a similar acoustic monitor occurred at Donald C. Cook Nuclear Plant, Unit 2 causing the NRC to issue an amendment to the Unit 2 TS in December 1991.)

The footnote proposed for TS 2.15, Table 2-5, Note c is similar to that approved for the Donald C. Cook Nuclear Plant, Unit 1. However, FCS is proposing to restore PSV acoustic position indication for RC-142 prior to the next Mode 3 entry from Mode 4 after June 1, 2010. This could occur prior to the end of the current fuel cycle on April 9, 2011 if the plant should have to enter Mode 4 (Cold Shutdown) for any reason.

Precedent for operating with PSV acoustic position indication inoperable for extended periods was found in Amendment No. 162 for the Palisades Nuclear Plant (Reference 6.3). Amendment No. 162 issued in October 1994 documents

that the AOT for 1 PSV position indication channel inoperable for 1 or more valves allows restoration of the channels to OPERABLE status prior to the next startup from Cold Shutdown. The Palisades Nuclear Plant has since adopted improved standard technical specifications (STS). The proposed AOT for PSV acoustic position indication on PSV RC-142 is similar to that allowed by the Palisades TS as found in Amendment No. 162 to the Palisades Operating License.

4.0 REGULATORY EVALUATION

4.1 Applicable Regulatory Requirements/Criteria

4.1.1 Regulations

Fort Calhoun Station (FCS), Unit No. 1 was licensed for construction prior to May 21, 1971, and is committed to the draft General Design Criteria (GDC) published for comment in the Federal Register on July 11, 1967 (32 FR 10213) in lieu of 10 CFR 50, Appendix A. Appendix G of the FCS Updated Safety Analysis Report (USAR) shows that draft GDC 12 and 16 are most applicable to the proposed amendment. It should be noted that draft GDC 12 and draft GDC 16 precede the requirements of NUREG-0578 and NUREG-0737.

CRITERION 12 - INSTRUMENTATION AND CONTROL SYSTEMS

Instrumentation and controls shall be provided as required to monitor and maintain variables within prescribed operating ranges.

This criterion is met. Instrumentation is provided for continuous measurement of all significant process variables. Controls are provided for the purpose of maintaining these variables within the limits prescribed for safe operation. The instrumentation conforms to applicable Institute of Electrical and Electronics Engineers (IEEE) standards. The principal process variables monitored include neutron level (reactor power); reactor coolant temperature, flow, and pressure; pressurizer liquid level; and steam generator level. In addition, instrumentation is provided for continuous automatic monitoring of radiation level. The instrumentation and control systems are described in detail in USAR Section 7.

PORV/PSV acoustic position indication and PORV/PSV tail pipe temperatures are both indicative of RCS leakage. The proposed amendment allows acoustic position indication for PSV RC-142 to be inoperable until the next Mode 3 entry from Mode 4 after June 1, 2010 but does not permanently eliminate this requirement nor does it eliminate the requirement for acoustic position indication for PSV RC-141 or PORV/PSV tail pipe temperature indication.

CRITERION 16 - MONITORING REACTOR COOLANT PRESSURE BOUNDARY

Means shall be provided for monitoring the reactor coolant pressure boundary to detect leakage.

This criterion is met. The reactor coolant pressure boundary is monitored by the following means for detecting leakage of reactor coolant:

- a) Containment Building Radiation Level - A gas monitor and a filter paper airborne particle monitor are arranged with a vacuum pump for continuous sampling of the containment building atmosphere. The particulate and gas monitor is sufficiently sensitive to detect small quantities of leaking coolant at a fraction of the design value for fuel assembly clad failures.*
- b) Condenser Offgas - A gas monitor is provided to detect any radioactive noble gases in the air ejector discharge. Presence of such gases at that point indicates the possibility of steam generator reactor coolant to secondary system leakage.*
- c) Steam Generator (SG) Blowdown Water - The blowdown sampling stream is monitored continuously in each SG blowdown sample line. A sudden increase in blowdown gamma activity indicates the possibility of a steam generator reactor coolant to secondary system leak.*
- d) Containment Humidity and Temperature - The humidity and temperature of the air in the containment are continuously monitored. An increase in the readings of these monitors could be an indication of leakage from the reactor coolant pressure boundary.*
- e) Containment Sump Level - Reactor coolant leakage reaching the containment building sump would be annunciated in the control room by activation of the sump high level alarm.*
- f) Volume Control Tank (VCT) Level - Loss of inventory from the reactor coolant system would be detected by level changes in the VCT.*

The control room operator would be alarmed to the existence of larger leaks by low pressurizer level, closing of letdown control valves, and continued operation of standby charging pumps.

The proposed amendment concerning inoperability of PSV acoustic position indication for RC-142 does not affect the means of detecting RCS leakage described above for compliance with GDC 16. These methods of detecting RCS leakage are still available.

4.1.2 Design Basis

The design basis requirement is taken from NUREG-0737, Section II.D.3, which states:

Reactor coolant system relief and safety valves shall be provided with a positive indication in the control room derived from a reliable valve position detection device or a reliable indication of flow in the discharge pipe.

4.1.3 Approved Methodologies

- Regulatory Guide 1.97, *Instrumentation for Light-Water-Cooled Nuclear Power Plants to Assess Plant and Environs Conditions During and Following an Accident*, Revision 2, December 1980
- NUREG-0578, *TMI-2 Lessons Learned Task Force Status Report and Short Term Recommendations*
- NUREG-0737, *Clarification of TMI Action Plan Requirements*

4.1.4 Analysis

No analyses were conducted in support of the proposed amendment. This instrument is not credited in Probabilistic Risk Assessment (PRA) for operator actions to mitigate the consequences of an event.

The PRA was reviewed to determine the risk impact of the failed acoustic monitor. As shown above, it is one of several indications used by the operators to identify a stuck open PORV or PSV. Given the effectiveness of the other indications, inoperability of the acoustic monitor is judged to have a negligible impact upon core damage frequency. Therefore, there is a high level of confidence that the inoperable acoustic monitor has a negligible impact upon safe power operation.

The risk associated with plant transition and shutdown has a higher level of uncertainty. The subject of transition risk was evaluated by CE NPSD-1021, Rev. 03, "Development of a Methodology for the Evaluation of Transition Risk." It was prepared for the Combustion Engineering Owners Group in January 1997. This report concluded that the total core damage frequency for shutdown to repair a failed safety injection tank (SIT) is $7.49E-08$. This risk is dominated by the overall risk of shutting down and starting up the plant.

Considering the risk associated with plant shutdown and restart, and considering the negligible impact of the failed acoustic monitor upon core damage frequency, it is judged that nuclear safety is preserved by continuing power operation.

4.2 Precedent

As noted in Sections 2.0 and 3.0 above, precedent for allowing an extended allowed outage time (AOT) for inoperable PSV acoustic position indication was found in Amendment No. 161 for the Donald C. Cook Nuclear Plant (Reference 6.1) and in Amendment No. 162 for the Palisades Nuclear Plant (Reference 6.3). In addition, precedence for allowing continued operation with an inoperable acoustic monitor on the safety/relief valve tailpipe under an emergency license amendment request is found in Amendment No. 100 (Reference 6.2) for Susquehanna Steam Electric Station. Susquehanna Steam Electric Station is a boiling water reactor.

4.3 Significant Hazards Consideration

The proposed change would modify Technical Specification (TS) 2.15, Table 2-5, Note (c) to allow a onetime extension of the 7-day allowed outage time for the inoperability of safety valve RC-142 acoustic position indication to allow repair prior to the next entry into Operating Mode 3 (Hot Shutdown) from Operating Mode 4 (Cold Shutdown) after June 1, 2010.

OPPD has evaluated whether or not a significant hazards consideration is involved with the proposed amendment(s) by focusing on the three standards set forth in 10 CFR 50.92, "Issuance of amendment," as discussed below:

- 1. Does the proposed amendment involve a significant increase in the probability or consequences of an accident previously evaluated?**

Response: No.

The safety valve acoustic position indication does not affect the operation of its associated spring-loaded safety valve. As such, the proposed change does not increase the probability of an accident. The acoustic monitor is only one of the indications used to identify that a safety valve is open. Other indications are available to the operators and alarm in the control room. The acoustic monitor is only one of the indications that the abnormal and emergency procedures direct operators to use to diagnose the opening of a safety valve. Therefore, the proposed change does not involve a significant increase in the probability or consequences of an accident previously evaluated.

2. **Does the proposed amendment create the possibility of a new or different kind of accident from any accident previously evaluated?**

Response: No.

The safety valve acoustic position indication does not perform a control or active protection function. It only provides indication. Additional indications are available and alarm in the control room to provide the operator with equivalent information. Because of the diverse indication system, failure or mis-operation of this indicator will not cause an operator to mis-diagnose an event.

Therefore, the proposed change does not create the possibility of a new or different kind of accident from any previously evaluated.

3. **Does the proposed amendment involve a significant reduction in a margin of safety?**

Response: No.

The proposed change results in operators having one less indicator of the position of safety valve RC-142. The operators are provided with other diverse indications which include safety valve discharge temperature, and pressurizer quench tank level, pressure, and temperature. Abnormal and emergency procedures direct the operators to use these indications to determine the status of the safety valves.

Therefore, the proposed change does not involve a significant reduction in a margin of safety.

Based on the above, OPPD concludes that the proposed amendment presents no significant hazards consideration under the standards set forth in 10 CFR 50.92(c), and, accordingly, a finding of "no significant hazards consideration" is justified.

4.4 Conclusions

In conclusion, based on the considerations discussed above, (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, (2) such activities will be conducted in compliance with the Commission's regulations, and (3) the issuance of the amendment will not be inimical to the common defense and security or to the health and safety of the public.

5.0 ENVIRONMENTAL CONSIDERATION

A review has determined that the proposed amendment would change a requirement with respect to installation or use of a facility component located within the restricted area, as defined in 10 CFR 20, or would change an inspection or surveillance requirement. However, the proposed amendment does not involve (i) a significant hazards consideration, (ii) a significant change in the types or significant increase in the amounts of any effluent that may be released offsite, or (iii) a significant increase in individual or cumulative occupational radiation exposure. Accordingly, the proposed amendment meets the eligibility criterion for categorical exclusion set forth in 10 CFR 51.22(c)(9). Therefore, pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment need be prepared in connection with the proposed amendment.

6.0 REFERENCES

- 6.1 Letter from NRC (J. Stang) to Indiana Michigan Power Company (E. E. Fitzpatrick), "Donald C. Cook Nuclear Power Plant, Unit 1 – Amendment No. 161 to Facility Operating License No. DPR-58 (TAC No. M82659)," dated February 3, 1992
- 6.2 Letter from NRC (J. A. Calvo) to Pennsylvania Power & Light Company (R. G. Byram), "Inoperable Acoustic Monitor, Susquehanna Steam Electric Station, Unit 2 (PLA-4085) TAC No. M88554)," dated January 31, 1994
- 6.3 Letter from NRC (M. K. Gamberoni) to Consumers Power Company (R. A. French), "Palisades Plant – Issuance of Amendment Re: Instrumentation Operability Requirements (TAC No. M82124)," dated October 26, 1994 (ML020840096)

**Technical Specifications
Page Markup**

TECHNICAL SPECIFICATIONS

TABLE 2-5

Instrumentation Operating Requirements for Other Safety Feature Functions

<u>No.</u>	<u>Functional Unit</u>	<u>Minimum Operable Channels</u>	<u>Minimum Degree of Redundancy</u>	<u>Permissible Bypass Condition</u>
1	CEA Position Indication Systems	1	None	None
2	Pressurizer Level	1	None	Not Applicable
3	PORV Acoustic Position Indication-Direct	1 ^{(a)(c)}	None	Not Applicable
4	Safety Valve Acoustic Position Indication	1 ^{(a)(c)}	None	Not Applicable
5	PORV/Safety Valve Tail Pipe Temperature	1 ^{(d)(b)}	None	Not Applicable

NOTES:

- a One channel per valve.
- b One RTD for both PORV's; two RTD's, one for each code safety.
- c If item 5 is operable, requirements of specification 2.15 are modified for items 3 and 4ⁱ to "Restore inoperable channels to operability within 7 days or be in hot shutdown within 12 hours."
- d If items 3 and 4 are operable, requirements of specification 2.15 are modified for item 5 to "Restore inoperable channels to operability within 7 days or be in hot shutdown within 12 hours."

ⁱ The requirement of Table 2-5, Note c to restore Safety Valve Acoustic Position Indication in 7 days is extended on a one-time basis. This allows the instrumentation for Functional Unit 4 for pressurizer safety valve RC-142 to be inoperable from June 1, 2010 until the next entry into Mode 3 from Mode 4.

Retyped ("Clean") Technical Specifications Page

TECHNICAL SPECIFICATIONS

TABLE 2-5

Instrumentation Operating Requirements for Other Safety Feature Functions

<u>No.</u>	<u>Functional Unit</u>	<u>Minimum Operable Channels</u>	<u>Minimum Degree of Redundancy</u>	<u>Permissible Bypass Condition</u>
1	CEA Position Indication Systems	1	None	None
2	Pressurizer Level	1	None	Not Applicable
3	PORV Acoustic Position Indication-Direct	1 ^{(a)(c)}	None	Not Applicable
4	Safety Valve Acoustic Position Indication	1 ^{(a)(c)}	None	Not Applicable
5	PORV/Safety Valve Tail Pipe Temperature	1 ^{(d)(b)}	None	Not Applicable

NOTES:

- a One channel per valve.
- b One RTD for both PORV's; two RTD's, one for each code safety.
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