



Commonwealth Edison
1400 Opus Place
Downers Grove, Illinois 60515

April 20, 1992

Dr. Thomas E. Murley, Director
Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Attn: Document Control Desk

Subject: Quad Cities Station Units 1 and 2
Proposed Amendment to Facility Operating Licenses DPR-29
and DPR-30, Appendix A, Technical Specifications
NRC Docket Nos. 50-254 and 50-265

- References:
- (a) Regulatory Guide 1.78, Revision 0, June, 1974, "Assumptions for Evaluating the Habitability of a Nuclear Power Plant Control Room During a Postulated Hazardous Chemical Release."
 - (b) Regulatory Guide 1.70, Revision 3, November, 1978, "Standard Format and Content of Safety Analysis Reports for Nuclear Power Plants."
 - (c) Report SL-7125, Revision 1, April, 1991, "Habitability of Control Room Following Postulated Accidents Involving Chlorine and Sulfur Dioxide Shipments in The Vicinity of Quad Cities Station." (copy attached)

Dear Dr. Murley:

Pursuant to 10 CFR 50.90, Commonwealth Edison Company (CECo) proposes to amend Appendix A, Technical Specifications, of Facility Operating Licenses DPR-29 and DPR-30. The proposed amendment requests the deletion of the isolation functions and surveillance requirements for the Control Room Ventilation System chlorine and sulfur dioxide analyzers. The proposed change would reduce unwarranted challenges to the Control Room Ventilation System due to spurious isolation actuation of the chlorine and sulfur dioxide analyzers, thereby minimizing unnecessary reporting of ESF actuations. This request is based upon an analysis which indicated that these isolation functions are not required to ensure Control Room Habitability following a postulated accident involving chlorine and sulfur dioxide shipments in the vicinity of Quad Cities Station.

This proposed amendment request is presented as follows:

1. Attachment A provides a summary of the proposed changes.
2. Attachment B provides a description and safety analysis of the proposed changes in this amendment.

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3. Attachment C provides the marked-up Technical Specification pages with the requested changes indicated.
4. Attachment D describes CECo's evaluation performed in accordance with 10 CFR 50.92 (c), which confirms that no significant hazards consideration is involved.
5. Attachment E provides the Environmental Assessment of the proposed changes.
6. Attachment F provides a copy of Reference (c).

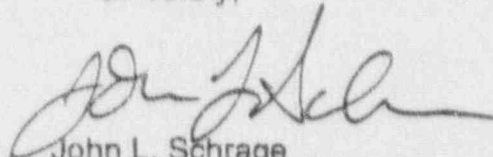
This proposed amendment has been reviewed and approved by CECo On-Site and Off-Site Review in accordance with Commonwealth Edison procedures.

To the best of my knowledge and belief, the statements contained above are true and correct. In some respect these statements are not based on my personal knowledge, but obtained information furnished by other Commonwealth Edison employees, contractor employees, and consultants. Such information has been reviewed in accordance with company practice, and I believe it to be reliable.

Commonwealth Edison is notifying the State of Illinois of this application for amendment by transmitting a copy of this letter and its attachments to the designated state official.

Please direct any questions or comments to me at (708) 515-7283.

Sincerely,



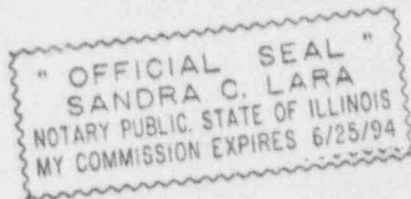
John L. Schrage
Nuclear Licensing Administrator

Attachments:

- A. Summary of Proposed Changes
- B. Description and Safety Analysis of the Proposed Changes
- C. Marked-up Technical Specification Pages
- D. Evaluation of Significant Hazards Consideration
- E. Environmental Assessment
- F. Copy of Reference (c)

cc: A.Bert Davis - Regional Administrator, Region III
L.N. Olshan - NRR Project Manager, Quad Cities
T.E. Taylor - Senior Resident Inspector, Quad Cities
Office of Nuclear Facility Safety - IDNS

Signed before me on this 20th day
of April, 1992,
by: [Signature]
Notary Public



ATTACHMENT A
Summary of Proposed Changes

The following changes are being proposed for Quad Cities Station Units 1 and 2 Technical Specifications:

1. DPR-29 and DPR-30; Page 3.2/4.2-3
 - (a) Limiting Condition for Operation (LCO), Technical Specification 3.2.F.2 - Delete the chlorine and sulfur dioxide analyzers.
 - (b) (DPR-30 only) Limiting Condition for Operation (LCO), Technical Specification 3.2.F.1 - Correct a typographical error. "Streamline" should be "steamline."

2. DPR-29; Page 3.2/4.2-11
DPR-30; Page 3.2/4.2-8

Change the Bases for Technical Specification 3.2.F.2 to reflect deletion of the isolation function for the chlorine and sulfur dioxide analyzers and correct a typographical error (DPR-30 only). The word "Streamline" should be "steamline."

3. DPR-29; Page 3.2/4.2-28
DPR-30; Page 3.2/4.2-17

Delete the chlorine and sulfur dioxide toxic gas analyzers from Table 4.2-1.

ATTACHMENT B
Description and Safety Analysis of the Proposed Changes

Summary

Commonwealth Edison Company proposes to amend the Technical Specifications for Quad Cities Station Unit 1 (DPR-29) and Unit 2 (DPR-30). The proposed amendment would delete the isolation functions and surveillance requirements for the Control Room Ventilation System chlorine and sulfur dioxide analyzers; correct a typographical error; and, modify the corresponding Bases sections to reflect the deletion of the isolation function and correction of the typographical error. The proposed change would reduce unwarranted challenges to the Control Room Ventilation System due to spurious isolation actuation of the chlorine and sulfur dioxide analyzers, thereby minimizing unnecessary ESF actuations. The deletion of the isolation functions for the chlorine and sulfur dioxide analyzers is based upon a recent analysis (April, 1991) which indicates that these functions are not required to satisfy control room habitability requirements (Reference (c)). This analysis and the corresponding conclusions are provided as Attachment F. Commonwealth Edison will retain the control room annunciator alarm function for the chlorine and sulfur dioxide analyzers.

Description and Bases of the Current Requirement

Proposed Change 1.a. 2 and 3

Regulatory Guide (RG) 1.78, Revision 0, Table C-1 (Reference (a)) identifies chlorine and sulfur dioxide as toxic substances which should be considered when evaluating the habitability of a nuclear power plant control room during a postulated hazardous chemical release. The hazard to the control room habitability due to a particular toxic chemical depends upon the distance the material is stored from the control room, the quantity of the material stored on or near the site, and the frequency, distance and quantity of the material transported near the site. In addition, the prevailing wind direction affects the likelihood that an accidental release will reach the control room ventilation air intakes.

The Control Room Ventilation System at Quad Cities Station consists of: two air handling systems, an air filtration system; a smoke detection system; and a toxic gas analyzer system. The toxic gas analyzer system provides toxic gas protection to the control room emergency zone in case of either an onsite or offsite toxic chemical accident. Potential accidents, including their effect upon control room habitability have been analyzed in the "Control Room Habitability Study for Quad Cities Unit 1 and 2, Commonwealth Edison Company, Revision 2" dated June 14, 1982.

The Control Room Habitability Study was developed in response to NUREG 0737, Item III.D.3.4 and submitted to the NRC in 1982. This study included a 1981 survey for potentially toxic chemicals stored or transported onsite or within a 5-mile radius offsite of Quad Cities Station. The 1981 survey provided information which was used as input to the Control Room Habitability Study (CRH). The CRH Study indicated that concentrations of chlorine, ammonia, and sulfur dioxide would exceed toxicity levels in the control room in less than two (2) minutes. Based upon this information, analyzers were installed in the control room air intake to detect these chemicals and isolate the control room upon detection.

The toxic gas analyzer system provides protection from the analyzed accidents through either automatic or manual isolation. Monitors and automatic isolation functions are provided for ammonia, chlorine, and sulfur dioxide since the control room concentrations for these chemicals reach the toxicity limits faster than the operator can manually isolate the system after detection of odor. Manual action to isolate the control room is required for other chemicals whose control room concentrations do not exceed the toxicity limits within 2 minutes after detection of odor. The chemicals requiring operator action are hydrochloric acid, hydrofluoric acid, nitric acid and benzene.

The toxic gas analyzers continuously monitor the outdoor air intake of the operating air handling system. Upon detection of either ammonia, chlorine, or sulfur dioxide, the analyzers provide a signal which isolates the control room HVAC system outside air intakes, and annunciates in the control room. Trip setpoints and surveillances for the toxic gas analyzers are described in Sections 3.2.F and 4.2.F of the Quad Cities Station Technical Specifications (Appendix A of Facility Operating Licenses DPR-29 and DPR-30). Technical Specification (TS) 3.2.F.1 defines the type of signal which will cause an isolation of the Control Room HVAC system. This includes high toxic gas concentration. TS 3.2.F.2 defines the toxic gas detection instrumentation, including trip setpoints. Surveillance requirements for the toxic gas analyzers are defined in TS 4.2.F.1, and described in Table 4.2-1.

Proposed Change 1.b and 2 (DPR-30 only)

The change of "streamline" to "steamline" is the correction of a typographical error, and as such is an administrative change.

Description of the Need for the Proposed Change

This amendment to the Technical Specifications is being requested to reduce unwarranted challenges to the Control Room Ventilation System due to spurious isolation actuation of the toxic gas analyzers, thereby minimizing unnecessary ESF actuations.

The Immediate Notification and Licensee Event Report (LER) rules defined in 10 CFR 50.72 and 10 CFR 50.73 require reporting of "any event or condition that results in a manual or automatic actuation of the Engineered Safety Feature (ESF)" (10 CFR 50.72 (B)(2) (ii) and 10 CFR 50.73 (A) (2) (iv)). Therefore, either automatic or manual isolation of the Control Room Ventilation System is reportable within four (4) hours by telephone (ENS Notification) and within 30 days as an LER.

From October 1986 through February 1992, Quad Cities Station experienced nine (9) ENS notifications and corresponding LERs directly related to an automatic ESF actuation caused by the chlorine and sulfur dioxide detection monitors. Eight (8) of these LERs can be attributed to equipment malfunctions. The other LER was attributed to personnel error. Considering the low realistic probability of accident occurrence shown by the analysis, the spurious isolation actuation of the chlorine and sulfur dioxide detection monitors (thus causing an ESF actuation) presents an unnecessary challenge to a plant safety system. Therefore, removal of the isolation functions provides a net improvement in plant safety.

Bases for the Proposed Change

Proposed Change 1.a. 2 and 3

The original 1981 survey for potentially toxic chemicals stored or transported onsite or within a 5-mile radius of Quad Cities Station (as discussed above) and Control Room Habitability Study indicated that chlorine and sulfur dioxide monitors and isolation functions were necessary in order to ensure control room habitability.

A second survey was conducted between February and April 1988 in order to supplement the 1981 survey. The purpose of the second survey was to gather additional data needed to perform quantitative analyses of the Quad Cities Station Control Room habitability and exposure risk due to accidental releases of chlorine and sulfur dioxide. Two distinct types of analyses were performed. The first analysis looked at the dispersion of the vapor released from a postulated accident to the station and subsequent infiltration into the control room. The results of this analysis indicated that the toxicity limits of chlorine and sulfur dioxide would be exceeded in the control room within two minutes of detection.

Since the dispersion analysis showed that the calculated chlorine and sulfur dioxide concentrations exceeded the toxicity limits, a probability analysis was performed in accordance with the Standard Review Plan (SRP) (NUREG-0800) Section 2.2.3 and Regulatory Guide 1.70 (Referenced (b)). The SRP references Reg. Guide 1.70 for identification of design basis events resulting from the presence of hazardous materials or activities in the vicinity of the plant. Acceptable identification of the design basis events includes each postulated type of accident for which the expected rate of occurrence of potential exposures in excess of the 10 CFR Part 100 guidelines is estimated to exceed the NRC staff objective of approximately 1×10^{-7} /year. The SRP recognizes the difficulty of assigning accurate numerical values to the expected rate of unprecedented potential hazards generally considered in SRP Section 2.2.3; therefore, judgment must be used as to the acceptability of the overall risk presented. The SRP also states that because of the low probabilities of the events under consideration, data are often not available to permit accurate calculation of probabilities. Accordingly, the expected rate of occurrence of potential exposures in excess of the 10 CFR Part 100 guidelines of approximately 1×10^{-6} /year is acceptable if, when combined with reasonable qualitative arguments, the probability can be shown to be lower.

A third survey (Reference (c) and Attachment F) was conducted between October and November 1990 in order to supplement the 1988 data. The purpose of the third survey was to gather more recent data needed to perform quantitative analyses of the Quad Cities Station Control Room Habitability and exposure risk due to accidental releases of chlorine and sulfur dioxide.

Of the three modes of transportation surveyed, chlorine and sulfur dioxide shipment by rail was found to be the controlling mode for the habitability analysis. The survey revealed that between the years of 1986 and 1989, the Soo Line's maximum shipment was 276 tank cars of chlorine and 144 tank cars of sulfur dioxide. Also, during those years, a maximum of 29 tank cars of chlorine and 45 tank cars of sulfur dioxide were shipped by the Chicago & Northwestern Railroad.

The survey found that the Soo Line and Chicago Northwestern Railroads are the only shippers of sufficient quantities of chlorine and sulfur dioxide to affect control room habitability. The equation used to evaluate the hazard to the control room considered the probability of occurrence of an accident resulting in control room uninhabitability (accident/year), the probability of the accident with chemical release (accidents/car/mile), the frequency of shipment (cars/year), length of track in each sector (miles) and the probability under certain stability classes that wind is blowing in a direction such that released chemical is carried to the control room air intake. The analysis followed applicable Regulatory Guides, the Standard Review Plan and used other references as documented in Section 8.0 of Attachment F. The results of the probability analysis are discussed in Section 6.0 of Attachment F and indicate that the conservative risk exposure of causing uninhabitable control room conditions by accidents involving railroad shipments of chlorine and of sulfur dioxide have been calculated to be 6.29×10^{-7} occurrences/year and 1.282×10^{-6} occurrences/year, respectively. The qualitative arguments presented in Section 6.0 of Attachment F demonstrate the conservatism that was used in determining the above probabilities.

The combination of the quantitative evaluation and the realistic qualitative arguments concerning exposure risk, brings the probability of occurrences of uninhabitable conditions within the limits as defined by Regulatory Guide 1.70 and NUREG-0800. Considering the analyses performed, the probabilities of occurrence of these events are such that they should not be considered as design basis events for the purpose of evaluating control room habitability.

Commonwealth Edison will take the following additional steps to ensure that the deletion of the chlorine and sulfur dioxide isolation functions from the Technical Specifications will not be a significant risk to the operation of the station:

1. Upon approval of the proposed amendment, Commonwealth Edison will commit to maintaining the alarm function(s) of the chlorine and sulfur dioxide detectors and remove only the isolation actuation function.
2. Agreement(s) with the local emergency preparedness agencies will be made to notify Commonwealth Edison in the event of a threatening chemical spill.
3. A triennial survey of chlorine and sulfur dioxide shipping and storage patterns will be conducted to verify that significant changes have not affected the analysis for control room habitability.

The Commonwealth Edison control room operators have available self-contained breathing apparatuses and an air tank source of breathing air supplied by a manifold system. The Commonwealth Edison chlorine and sulfur dioxide high concentration alarm setpoints of 1 ppm for the chlorine and sulfur dioxide monitor are well below the toxicity limits of 15 ppm for chlorine and 5 ppm for sulfur dioxide. Should the need arise, protection against possible high concentrations associated with some of the low probability events are provided by the retained alarm functions, manual isolation function and alternate breathing air sources.

Proposed Change 1.b and 2 (DPR-30 only)

The change of "streamline" to "steamline" is the correction of a typographical error, and as such is an administrative change.

Detailed Description of the Proposed Changes

The proposed amendment to remove the isolation functions and surveillance requirements for the chlorine and sulfur dioxide analyzers would change Technical Specification 3.2.F.2 to read as follows:

"The toxic gas detection instrumentation shall consist of an ammonia analyzer with a trip setpoint set at ≤ 50 ppm. The provisions of Specification 3.0.A are not applicable."

The proposed amendment to correct a typographical error would change Technical Specification 3.2.F.1 to read as follows:

"The control room ventilation systems are isolated from outside air on a signal of high drywell pressure, low water level, high main steamline flow, high toxic gas concentration, high radiation in either of the reactor building ventilation exhaust ducts, or manually. Limiting conditions for operation shall be as indicated in Table 3.2-1 and Specification 3.2.H and 3.2.F.2."

The proposed amendment to remove the chlorine and sulfur dioxide analyzers from Table 4.2-1, Control Room Ventilation System, to read as follows:

"4. Toxic gas analyzer (ammonia)