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November 12, 1980

Mr. James G. Keppler, Director  
Directorate of Inspection and  
Enforcement - Region III  
U.S. Nuclear Regulatory Commission  
799 Roosevelt Road  
Glen Ellyn, IL 60137

Subject: Quad Cities Station Units 1 and 2  
Response to ~~the~~ Inspection Report  
Nos. 50-254/80-20 and 50-265/80-22  
NRC Docket Nos. 50-254/265

Reference (a): J. G. Keppler letter to J. J. O'Connor dated  
October 21, 1980

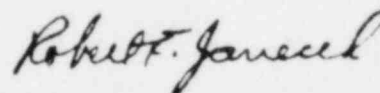
Dear Mr. Keppler:

Reference (a) transmitted the results of the special team appraisal performed on May 5 through 16, 1980 of the Quad Cities Nuclear Power Station Units 1 and 2 health physics program. Reference (a) indicated that six (6) significant weaknesses (Appendix A) and two (2) apparent items of noncompliance (Appendix B) were identified during this appraisal.

Attachment A provides our response to the two items of noncompliance and Attachment B addresses the six significant appraisal findings.

Please address any questions concerning this matter to this office.

Very truly yours,

*for*   
J. S. Abel  
Director of  
Nuclear Licensing

Attachment

cc: RIII Inspector, Quad Cities

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ATTACHMENT A  
COMMONWEALTH EDISON  
ATTACHMENT  
RESPONSE TO NOTICE OF VIOLATION

The apparent items of non-compliance identified in Appendix B of the NRC letter dated October 21, 1980, are responded to in the following paragraphs:

1. 10 CFR 20.203(c)(2) lists three alternative requirements for control of access to high radiation areas.

Contrary to these requirements:

- A. An unposted, unbarricaded, and unobserved high radiation area existed near the sample hood on the 647' level of Unit 2 Reactor Building for several days (May 5-14) during the appraisal.
- B. On May 5, 1980, a ladder temporarily lashed in place gave ready access to a posted high radiation area above the Unit 2 CRD accumulators.

CORRECTIVE ACTION TAKEN AND RESULTS ACHIEVED

The high radiation area on the 647' level of the Unit 2 Reactor Building was caused by deposition of particulate matter, in an overhead horizontal run of drain piping from the Unit 2 dryer/separator storage pool, during the previous Unit 2 refueling outage. Several attempts were made to flush the contaminated material from this piping run, but the attempts were unsuccessful.

Therefore, lead blankets were added to the piping to reduce the area dose rates and a fence was erected and posted as a high radiation area to prevent access to the area below the pipe. Subsequently, decontamination connections were added to that pipe run, and the line was successfully flushed.

The ladder by the Unit 2 CRD accumulators was removed and the responsible department was informed of the situation. The ladder had been removed from the south Unit 2 torus equipment hatch to prevent access to that high radiation area when work was not in progress, but its temporary storage location inadvertently created an unauthorized access to the upper level of the CRD accumulators.

CORRECTIVE ACTION TO BE TAKEN TO AVOID FURTHER NON-COMPLIANCE

The dryer/separator storage pool drain piping location will be added to those locations surveyed during startup following a refueling outage. A revision to procedure QRS 300-S4, "General Reactor Building Surveillance for Startup" has been submitted and should be implemented prior to the Unit 1 startup following the current refueling outage.

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The placement of the ladder by the CRD accumulators is considered a unique occurrence in that the personnel involved were aware of the need to control access to high radiation areas and it was that awareness that precipitated their actions of removing the ladder from its original location. Consequently, no further corrective action is deemed necessary.

DATE WHEN FULL COMPLIANCE WILL BE ACHIEVED:

Full compliance has been achieved at this time.

2. Technical Specification 6.2.B. requires adherence to station Radiation Control Procedures. The following instances of failure to meet this requirement were identified during the appraisal.

A. Station procedures QRS 700-2 and QRS 700-3, respectively, require quarterly calibration of "CP" and Geiger-Mueller (GM) exposure rate instruments.

Contrary to the above, on May 12, 1980, Victoreen 740F (CP) S/N 109 and Eberline PRM-4 (GM) S/N 2216 located in Emergency Box No. 1 were found to last been calibrated on October 26, 1979, approximately six months earlier.

B. Station procedure QRP 100-1, Section 26, specifies a limit of 3000 counts per minute on laundered protective clothing made available for reuse.

Contrary to the above, several garments taken from reissue bins and monitored with the laundry monitor during the appraisal exceeded this limit.

CORRECTIVE ACTION TAKEN AND RESULTS ACHIEVED:

On May 13, 1980, the uncalibrated instruments were removed from the emergency box. Victoreen 740 F (CP) S/N 109 was calibrated and returned to the emergency box. Eberline PRM-4 (GM) S/N 2216 was removed from service and Eberline PRM-4 (GM) S/N 2333, calibrated on April 10, 1980, was placed in the emergency box.

Subsequent to the identification of the protective clothing exceeding the specified limit, the current inventory of clothing ready for reuse was re-surveyed, and those articles with excessive contamination were removed.

CORRECTIVE ACTION TO BE TAKEN TO AVOID FURTHER NONCOMPLIANCE:

A monthly inventory check and calibration review will be initiated for "CP" and Geiger-Mueller (GM) exposure rate instruments. This review will be conducted by radiation protection management and will be part of the Technical Staff Support Surveillance program.

A weekly spot-check of protective clothing ready for reuse will be implemented to monitor their conformance with the station's Radiation Control Procedures. A change to the Radiation Chemistry Technicians shift routine checklist will be made to document this surveillance. Additionally, the stationmen will be re-instructed in the proper use of the laundry monitor.

DATE WHEN FULL COMPLIANCE WILL BE ACHIEVED:

Revisions to the Technical Staff Support Surveillance program and the RCT shift checklist, will be completed by December 1, 1980. Stationman retraining on the use of the laundry monitor will be completed by January 15, 1981.

Full compliance will be achieved at that time.

ATTACHMENT B

COMMONWEALTH EDISON  
ATTACHMENT  
RESPONSE TO SIGNIFICANT APPRAISAL FINDINGS

Based on the Health Physics Appraisal performed on May 5-16, 1980, the following items appeared to require corrective actions. The steps which have been taken or which will be taken and a schedule of completion of those actions are included below.

1. Training:

- A. By failing to establish the relationship between low-level radiation effects and the various health physics practices for radiation and contamination control, insufficient motivation to follow these procedures is provided in general employee training. A contributing factor appears to be overemphasis of acute radiation effects relative to low-level effects. Related weaknesses appear to exist in protective clothing training for contractors and in contamination control training for maintenance personnel.
- B. Recent (1979) Radiation Chemistry Technician (RCT) training was allowed to slip to three days for some RCT's, indicating insufficient priority given to this program. Retraining also should emphasize better understanding of basic health physics concepts and practices.
- C. RCT's were not trained in interim emergency procedures, because these procedures would be performed by Radiation Chemistry (R/C) management during accident conditions. The assumption that R/C management would always be able to respond promptly may be unrealistic.

Response:

- A. The NGET course will be revised to include emphasis on low-level radiation effects and on proper contamination control practices. Additional material will also be presented on protective clothing training for contractors, such as a video-taped demonstration. A special training session will be held with maintenance personnel involving proper contamination control practices.

These actions should be completed by January 15, 1981. Also, the station's annual employee retraining program will be revised to include material on proper contamination control practices prior to its implementation during 1981.

- B. The 1980 RCT retraining consisted of five consecutive days including one day for first aid training. This does not include the time spent on fire brigade training, fire fighting school, annual retraining, GSEP training and drills, and training on specific laboratory and counting room equipment. The course material used during retraining included the BIER III report and the draft regulatory guide referred to by the appraisal team. Approximately fourteen hours of retraining were dedicated to basic health physics concepts. Additional subject

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material included training on post accident sampling, including a walk-through of the procedures and on estimating releases during an accident.

- C. The RCT's have been trained on the interim emergency procedures during their 1980 retraining sessions.

## 2. Exposure Control and ALARA

- A. Inadequate control over respirator issuance on the backshifts permits unauthorized respirator use. Failure to require their return and the entering of duration-of-wear information undermines exposure control based on MPC-hours.
- B. Approximately 5000 man-rem are projected for the year 1980. Significant dose savings should be achievable by a strong, comprehensive ALARA program.

### Response:

- A. The control over respirator use has been significantly improved since the Health Physics Appraisal was conducted. A new system of mask issue and return has been instituted which requires the use of NGET cards. The NGET cards are coded with the medical approval date, the mask fit results, and the level of respiratory equipment training. Hence, when a mask is issued, the RCT can ensure that all requirements are met at a glance. The individual is required to leave his NGET card when he receives his respirator, and it is given back when he returns the respirator and completes the respirator log. Access to the mask issue room has been restricted by installation of a radiation chemistry department lock on the door.
- B. Scientific Applications, Inc. is currently developing a formal ALARA program for use at all of the Commonwealth Edison nuclear stations. The implementation of the formal program is expected during early 1981. In the interim, an ALARA coordinator has been designated to enhance the station's informal ALARA efforts.

## 3. Access Controls

High radiation area (HRA) access controls do not ensure that entries are made with adequate knowledge of dose rate or that overlong entries will be promptly recognized. Controls on contractor work in the torus may be insufficient to prevent unexpected exposures, because of field variations between different areas of this extensive high radiation area.

### Response:

We believe that access controls for high radiation areas (HRA's) do in fact provide sufficient assurance that HRA entries are made with adequate knowledge of dose rates for the following reasons:

- A. Quad-Cities Administrative procedures QAP 1120-5, "Entering a Locked High Radiation Area With A Timekeeper" and QAP 1120-6, "Entering a

Locked High Radiation Area Without A Timekeeper", require that radiation protection be notified prior to entry in order to obtain all available information pertaining to dose rates, dosimetry required, and other related requirements.

- B. Entries into HRA's for purposes of performing a work function, such as pump repair or modification work, routinely require prior radiation protection survey information, and the work will be performed either with a timekeeper present or under the specifications of a special work permit which explicitly defines the radiological conditions under which work will be performed.
- C. Entries into HRA's by personnel such as operators and operating shift foremen are extremely brief in nature and prior surveys before each entry to any area are not deemed necessary. These individuals are instructed in their respective training and re-training programs of the importance of reviewing the latest survey information available in the Radiation Protection office prior to initiating rounds. Licensed senior reactor operators are also trained in the use of survey equipment and may use that equipment when entering HRA's. Additionally, electronic dosimeters have been made available to operators to use on their high radiation area inspections along with their self-reading dosimeters.

We recognize the need to take further steps in ensuring that overlong entries into HRA's will be promptly recognized. Consequently, a revision to station procedures will be made so that the NSO must verify, at the completion of each shift, that all workers who have been allowed access to any HRA during that shift, without the use of a timekeeper or safety man, have either checked out or will be continuing work in that area. The revision to station procedures should be implemented by December 15, 1980. On an interim basis, a management representative will periodically review the R-Key log for completeness of information until improvement is noted.

Controls over contractor work in the torus area have been improved by locking the access to the Reactor Building Equipment Drain Tank area. Additionally, radiation area signs with pockets for adding supplemental information have been obtained and are being used in the torus area to better define the different working conditions.

#### 4. Contamination Controls

Several weaknesses were noted with respect to contamination control.

- A. Movement of contaminated tools and equipment from the controlled area for maintenance work or surveys.
- B. Reduced surveillance in the maintenance shop and laundry.
- C. Questionable protective clothing requirements in portions of radwaste.
- D. Proliferation and prolonged duration of temporary decontamination sites.

- E. Widespread occurrence of contaminated trash.
- F. Inappropriate contamination control practices in the laundry and elsewhere.

Response:

- A. A permanent area will be designated in the maintenance shop for the purpose of performing radiation surveys on contaminated tools and equipment. This area should be completed by January 1, 1981. The additional training given to the maintenance personnel as described in the response to item I.a. of Attachment B should resolve the problems currently identified pertaining to movement of contaminated tools and equipment.
- B. The station has re-established routine surveys in the laundry and maintenance shop areas at the specified frequencies.
- C. We believe that the RCT on a job is the best individual for determining the proper protective clothing requirements. Our experience to date has not demonstrated the need to require full SWP clothing for the type of work referred to by the appraisal team. It should be noted that the time saved by the individuals working in the radwaste area not having to don full protective clothing results in an exposure savings that in our judgement offsets any small risk of contamination. This ALARA effort is magnified when considering the number of different areas the operators must access during barrel handling operations and the crews rotation between different task assignments.
- D. In order to better control the use of temporary decontamination sites, the following actions have been or will be taken:
  - (1) The onsite cognizant CECO personnel responsible for contractor work have been informed of the need to obtain prior approval from radiation protection supervision before establishing a temporary decon area.
  - (2) A health physics review of the area being set up will be conducted.
  - (3) A periodic inspection of the decon sites in use will be instituted by December 15, 1980.
  - (4) A major decontamination area will be designated following refueling outages to facilitate the large amount of contaminated tools and equipment generated during such outages, if needed.
- E. The observation of widespread contaminated trash during the appraisal was a result of two major factors. The first was the conclusion of a major refueling outage which had taken over four months to complete and which had included many major plant modifications. The second factor was the closing of radwaste disposal sites for several months in 1979 prior to the refueling outage. The backlog of radwaste drums made the processing of an even heavier load of contaminated trash during the refueling outage an almost impossible task. Efforts by the operating department helped improve the situation prior to the current



refueling outage. Additional contractor labor is being used during this outage to augment the stationman work force to allow better processing of DAW and laundry. Consequently, the amount of contaminated trash is not as extensive as it had been previously.

- F. Improved training on contamination control practices for maintenance personnel was discussed in our response to item 1.A. of Attachment B. Additional training will be given to stationmen pertaining to the proper use of the laundry monitor and proper contamination control practices. This training should be completed by January 15, 1981.

## 5. Instruments

- A. There is an insufficient supply of portable survey instruments with adequate range (1000 R/hr or greater) for use during a serious accident. There is also inadequate assurance of ready availability of portable survey instruments, owing to lack of secure storage space and weak instrument accountability.
- B. Area monitor charts are not legible enough to permit after-the-fact unraveling of an event with any confidence. Date and time annotations made by operator and reviewers are also frequently deficient.
- C. Excessive chimney sample line fittings makes representative sampling questionable. It also indicates piping changes made without knowledgeable review and approval.

### Response:

- A. Additional high range portable survey instruments will be purchased. The RCT's have been instructed to store the instruments in the designated storage area when not using them and not to keep them in their lockers. Improved instrument accountability will be achieved as described in our response to item 2 in Attachment A. A secure storage space for instruments will be provided when the health physics facilities are moved to the new service building addition in the fall of 1981.
- B. Stone and Webster, Inc., is currently reviewing the process radiation instrumentation at Quad-Cities Station, including the area radiation monitoring system. Their recommendations will be reviewed by the station and a course of corrective action will be developed. Corrective actions should be initiated by January 1, 1981. Operating personnel were informed at the time of the appraisal to make a mark on the charts corresponding to midnight, in addition to stamping the date on the charts. The need to mark and date charts was re-emphasized.
- C. The addition of several fittings to the chimney sample line was apparently done to facilitate removal of the charcoal and particulate filter holder which is in close proximity to the sample house west wall. The RCT's have been informed that this change was improper and that it could have affected isokinetic sampling. The fittings were removed shortly after their discovery. Additionally, a consultant, Quadrex, has been contracted to review the isokinetic sampling capabilities of the existing samplers.