Duquesne Light

Nuclear Construction Division
Robinson Plaza, Building 2, Suite 210
Pittsburgh, PA 15205

2NRC-5-117

(412) 787-5141
(412) 923-1960
Telecopy (412) 787-2629

August 14, 1985

United States Nuclear Regulatory Commission
Washington, DC 20555

ATTENTION: Mr. George W. Knighton, Chief
Licensing Branch 3
Office of Nuclear Reactor Regulation

SUBJECT: Beaver Valley Power Station - Unit No. 2
Docket No. 50-412
Response to Draft SER Confirmatory Item on
Control Room Habitability

REFERENCES: (a) DLC Letter 2NRC-4-124, dated August 13, 1984
(b) DLC letter 2NRC-4-158, dated October 3, 1984

Gentlemen:

Attached is the updated response to the NRC Accident Evaluation Branch's (AEB) Draft SER confirmatory item on Control Room Habitability. This item was originally Draft SER Open Item No. 53, and is currently listed as Confirmatory Item No. 27 in Table 1.4 of the Final Draft SER.

In Reference (a), DLC provided the response to Parts 2 and 3 of this item. The response to Part 2 was accepted by the AEB reviewer, Mr. K. Dempsey, in a telephone conference on October 19, 1984, and is repeated in this submittal for information only. The attached response to Part 3 is revised, as requested by Mr. Dempsey in a telephone conference on October 22, 1984, to indicate that the radioactive release points shown on FSAR Figure 6.4-5 are normal effluent release points and not post-accident release points. It is Duquesne Light Company's (DLC) understanding that, with this added clarification, the response to Part 3 is also acceptable.

In Reference (b), DLC provided the response to Part 1. In this part the AEB requested that DLC demonstrate that the control room habitability systems provide adequate operator protection, in accordance with GDC 19, in the event of high airborne radiation levels resulting from design basis accidents occurring outside the containment. The response to Part 1, as provided in Reference (b), stated that DLC was in the process of performing the appropriate analyses to determine the adequacy of the control room habitability systems. The response further stated that any necessary plant design changes would be made to ensure compliance with GDC 19, if the analyses indicated that such design changes are required. Based on this response, the status of this item was changed from open to confirmatory.

B001
1/1

As stated in the attached revised response to Part 1, DLC is modifying the design of the Digital Radiation Monitoring System (DRMS). The implementation of this design modification, as described in the attached response, will ensure that the BVPS control room habitability systems will provide adequate operator protection, in accordance with GDC 19, in the event of any design basis accident. Therefore, DLC considers this issue to be closed unless further notification indicating otherwise is received from the NRC.

The appropriate FSAR revisions to reflect the modified design of the DRMS will be incorporated into a future FSAR amendment.

DUQUESNE LIGHT COMPANY

By _____
J. J. Carey
Vice President

JDO/wjs
Attachment

cc: Mr. K. Dempsey, NRC AEB (w/a)
Mr. B. K. Singh, Project Manager (w/a)
Mr. G. Walton, NRC Resident Inspector (w/a)

COMMONWEALTH OF PENNSYLVANIA)
) SS:
COUNTY OF BEAVER)

On this 14th day of August, 1985, before me, a Notary Public in and for said Commonwealth and County, personally appeared J. J. Carey, who being duly sworn, deposed and said that (1) he is Vice President of Duquesne Light, (2) he is duly authorized to execute and file the foregoing Submittal on behalf of said Company, and (3) the statements set forth in the Submittal are true and correct to the best of his knowledge.

Sheila M. Fattore
Notary Public

SHEILA M. FATTORE, NOTARY PUBLIC
SHIPPINGPORT BORO, BEAVER COUNTY
MY COMMISSION EXPIRES SEPT. 16, 1985
Member, Pennsylvania Association of Notaries

Draft SER Confirmatory Item on Control Room Habitability
(Formerly Draft SER Open Item No. 53):

The staff review of the Beaver Valley control room emergency HVAC system indicates there are several additional open items, not previously identified, that relate to control room operator thyroid doses. The following three areas will have to be addressed by the applicant:

1. Automatic control room pressurization on detection of radiation in the outside air intake is not addressed in the applicable FSAR sections. Radiation detectors in the outside air intakes may be necessary to initiate the control room emergency systems (and maintain control room dose to within GDC 19 guidelines) in the event of design basis accidents occurring outside the containment, such as steamline break, fuel handling accident and small line break outside containment.

2. Flow rates of the bottled air pressurization system, which pressurizes the control room to 1/8 inch w.g. or greater for 1 hour following a design basis accident, are needed. If they are greater or much less than the post-accident air makeup rate of 1,400 CFM (Table 6.4-1 of FSAR), an explanation would have to be submitted by the applicant.

3. Radioactive gases release point E, shown on Figure 6.4-5 of the FSAR appears to be less than 100 feet from the nearest control room air intake. Because of the close proximity of this release point, an evaluation of control room operator doses is needed from the applicant for those design basis accidents that result in radiation to be released from point E.

Until these matters are resolved, control room habitability remains an open item.

Based upon the foregoing, the applicant has not demonstrated that the control room habitability systems will adequately protect the control room operators in accordance with the requirements of NUREG-0737, Item III.D.3.4, and 10CFR Part 50, Appendix A, GDC 19.

Response:

1. A containment Phase B isolation (CIB) signal from either BVPS-1 or BVPS-2 will automatically isolate both the BVPS-1 and BVPS-2 sides of the common control room and automatically initiate the control room emergency pressurization systems.

   In order to ensure that the control room habitability systems provide adequate operator protection, in accordance with GDC 19, in the event of high airborne radiation levels resulting from design basis accidents occurring outside containment, DLC is modifying the design of the Digital Radiation Monitoring System (DRMS). The upgraded design provides Category I, redundant, area radiation monitors on both the BVPS-1 and BVPS-2 sides of the control room (four monitors total). On detection of a high radiation level in the control room, any one of these four monitors will alarm locally, automatically initiate isolation of both the BVPS-1 and BVPS-2 sides of the common control

room, and simultaneously initiate the control room emergency pressurization systems. The implementation of this design modification will ensure that the BVPS control room habitability systems will provide adequate operator protection, in accordance with GDC 19, in the event of any design basis accident.

In addition to the above, the airborne radiation level in the BVPS-2 portion of the control room is monitored by a non-1E, Category II airborne radiation monitor which samples air from the control room ventilation system as described in FSAR Section 12.3.4.2.

The DRMS modifications described above will be installed and tested prior to BVPS-2 fuel loading.

2. In order to maintain a minimum pressure of 1/8 inch water gauge in the control room following a design basis accident, an air makeup rate of 800 cfm is required. The BVPS control room emergency bottled air pressurization system can provide a total of 1000 cfm through the five supply lines which carry 200 cfm each. Current design changes being considered for the BVPS-1 emergency pressurization fans may increase the post-accident air makeup rate of these fans from the current 400 cfm to as high as 1000 cfm. This combined BVPS-1 and BVPS-2 air makeup rate of 2000 cfm would present no problems as far as overpressurization of the control room is concerned.

3. The radioactive gaseous release points shown on FSAR Figure 6.4-5 are normal effluent release points and are not post-accident release points. Point E is monitored by a BVPS-1 radiation monitor. If a high radiation signal is received, the outflow from Point E is transferred to the BVPS-1 Supplementary Leak Collection and Release System. The flow then passes through a train of HEPA filters before being released to the atmosphere through BVPS-1 elevated release Point D which is located at the top of the BVPS-1 reactor containment building. Therefore, the control room operators are adequately protected against any potential radioactive releases from Point E.