September 22, 2000

Mr. James A. Hutton
Director - Licensing
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SUBJECT: CORRECTION TO AMENDMENTS NOS. 144 AND 106 TO FACILITY OPERATING LICENSES NOS. NPF-39 AND NPF-85, LIMERICK GENERATING STATION, UNITS 1 AND 2 (TAC NOS. MA7053 AND MA7054)

Dear Mr. Hutton:

The Commission issued Amendments Nos. 144 and 106 to Facility Operating Licenses Nos. NPF-39 and NPF-85 for the Limerick Generating Station, Units 1 and 2, on September 8, 2000. The Brookhaven National Laboratory Technical Evaluation Report supporting the issuance of Amendments Nos. 144 and 106, which was inadvertently omitted, is enclosed. We regret any inconvenience this may have caused you.

Sincerely,

/RA/

Bartholomew C. Buckley, Sr. Project Manager, Section 2
Project Directorate I
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Docket Nos. 50-352 and 50-353

Enclosure: Technical Evaluation Report

cc w/encl: See next page

Limerick Generating Station, Units 1 & 2

cc:

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TECHNICAL EVALUATION REPORT
BROOKHAVEN NATIONAL LABORATORY
FOR THE OFFICE OF NUCLEAR REACTOR REGULATION
DIVISION OF SYSTEMS SAFETY AND ANALYSIS
PLANT SYSTEMS BRANCH
RELATED TO TECHNICAL SPECIFICATION CHANGE REQUEST NO. 99-07-0
TO FACILITY OPERATING LICENSE NO. NPF-39 AND NPF-85
PECO ENERGY COMPANY
LIMERICK GENERATING STATION, UNITS 1 AND 2
DOCKET NOS. 50-352 AND 50-353

1.0 INTRODUCTION

By letter dated November 17, 1999 (Technical Specification Change Request No. 99-07-0), PECO Energy Company submitted its response to the actions requested in Generic Letter (GL) 99-02, "Laboratory Testing of Nuclear-Grade Activated Charcoal," dated June 3, 1999, for Limerick Generating Station, Units 1 and 2. By letter dated November 5, 1999, PECO Energy requested changes to the Technical Specifications (TS) Sections 4.6.5.3.b.2 and 4.6.5.3.c, “Standby Gas Treatment System (SGTS),” 4.6.5.4.b.2 and 4.6.5.4.c, “Reactor Enclosure Recirculation System (RERS),” and 4.7.2.c.2 and 4.7.2.d, “Control Room Emergency Fresh Air System (CREFAS),” for Limerick Generating Station, Units 1 and 2. By letter dated July 17, 2000, PECO provided supplemental information to TS Change Request No. 99-07-0, which modifies the proposed surveillance requirements 4.6.5.3.b.2 and 4.6.5.3.c on page 3/4 6-53, to specify that the laboratory testing for methyl iodide penetration for the SGTS is to be performed at a face velocity of 66 ft/min. The proposed changes would revise the TS surveillance testing of the safety related ventilation system charcoal to meet the requested actions of GL 99-02.

2.0 BACKGROUND

Safety-related air-cleaning units used in the engineered safety features (ESF) ventilation systems of nuclear power plants reduce the potential onsite and offsite consequences of a radiological accident by filtering radioiodine. Analyses of design basis accidents assume particular safety related charcoal adsorption efficiencies when calculating offsite and control room operator doses. To ensure that the charcoal filters used in these systems will perform in a manner that is consistent with the licensing basis of a facility, licensees have requirements in their TS to periodically perform a laboratory test (in accordance with a test standard) of charcoal samples taken from these ventilation systems.

In GL 99-02, the staff alerted licensees that testing nuclear-grade activated charcoal to standards other than American Society for Testing and Materials (ASTM) D3803-1989, “Standard Test Method for Nuclear-Grade Activated Carbon,” does not provide assurance for complying with their current licensing bases as it relates to the dose limits of General Design Criterion (GDC) 19 of Appendix A to Part 50 of Title 10 of the Code of Federal Regulations (10 CFR) and Subpart A of 10 CFR Part 100.

GL 99-02 requested that all licensees determine whether their TS reference ASTM D3803-1989 for charcoal filter laboratory testing. Licensees whose TS do not reference ASTM D3803-1989 were requested to either amend their TS to reference ASTM D3803-1989 or propose an alternative test protocol.

3.0 EVALUATION

3.1 Laboratory Charcoal Sample Testing Surveillance Requirements

The current and proposed laboratory charcoal sample testing TS surveillance requirements for the standby gas treatment system (SGTS), reactor enclosure recirculation system (RERS), and control room emergency fresh air system (CREFAS) are shown in Table 1 and Table 2, respectively.

The proposed use of ASTM D3803-1989 is acceptable because it provides accurate and reproducible test results. The proposed test temperature of 30 °C for all three systems is acceptable because it is consistent with ASTM D3803-1989. The proposed test relative humidity (RH) of 70 percent is also acceptable, because both SGTS and CREFAS are provided with safety related heaters to maintain the room conditions at 70% RH. In accordance with Section 6.5.1.3 of the UFSAR, the RH for the RERS will not exceed 77% during normal operation and the RH will decrease to below 70% post-LOCA due to the increase in heat to the reactor enclosure structure. Therefore, the proposed RH of 70 % for the RERS is acceptable because the RH will be less than or equal to 70% during accident conditions. This is consistent with the actions requested in GL 99-02.

The credited removal efficiency for radioactive organic iodine for the SGTS is 99 %. The proposed test penetration for radioactive methyl iodide for the SGTS is less than 0.5 %. The credited removal efficiency for radioactive organic iodine for the RERS and CREFAS is 95%. The proposed test penetration for radioactive methyl iodide for the RERS and CREFAS is less than 2.5%. The proposed test penetrations are obtained by applying a safety factor of 2 to the credited efficiencies. The proposed safety factor of 2 for all three systems is acceptable because it ensures that the efficiency credited in the accident analysis is still valid at the end of the surveillance interval. This is consistent with the minimum safety factor of 2 specified in GL 99-02.

The licensee stated in the November 5, 1999 letter that SGTS has a maximum actual accident condition face velocity of 66 fpm and RERS and CREFAS each have a maximum actual accident condition face velocity of 40 fpm. The charcoal from SGTS is proposed to be tested at 66 fpm consistent with its actual face velocity. The charcoal from RERS and CREFAS is tested at a face velocity of 40 fpm. The system face velocity at the charcoal adsorber sections for the RERS and CREFAS will not exceed 44 fpm (110% of 40 fpm) at the maximum system flow rates specified in the TS. This is acceptable because it ensures that the testing will be consistent with the operation of the ventilation system during accident conditions. Therefore, it is not necessary to specify the face velocities in the proposed TS change for the RERS and CREFAS. Since the face velocity of 66 fpm for the SGTS is greater than 110 percent of 40 fpm, as stated in the July 17, 2000 letter, this face velocity will be specified in the TS surveillance requirements. This is consistent with the August 23, 1999 errata to GL 99-02.

4.0 CONCLUSION

On the basis of its evaluation, BNL recommends that the NRC staff conclude that the proposed TS changes are acceptable.

Principal Contributor: Mano Subudhi and Anthony Fresco, BNL

Project Monitor: John P. Segala

Date: July 31, 2000

LIMERICK GENERATING STATION UNITS 1 AND 2

TABLE 1 - CURRENT TS REQUIREMENTS											
System Description						Current TS Requirements					
TS Section	System	Bed Thick-ness (inches)	Actual Charcoal		Credited Efficiency (Methyl Iodide)	Test Penetration (Methyl Iodide)	Safety Factor	Test Standard	Test Temp (° C)	Test RH	Test Face Velocity (fpm)
			Res. Time (sec)	Face Velocity (fpm)							
4.6.5.3.b.2 4.6.5.3.c	SGTS	8	0.68	66	99%	<0.175%	5.7	Reg. Guide 1.52, Rev. 2, March 1978 Regulatory Position C.6.a*	Not stated (80)*	Not stated (70%)	Not stated (66)
4.6.5.4.b.2 4.6.5.4.c	RERS	2	0.25	40	95%	<1.0%	5.0	Reg. Guide 1.52, Rev. 2, March 1978 Regulatory Position C.6.a*	Not stated (80)*	Not stated (70%)	Not stated (40)
4.7.2.c.2 4.7.2.d	CREFAS	2	0.25	40	95%	<1.0%	5.0	Reg. Guide 1.52, Rev. 2, March 1978 Regulatory Position C.6.a*	Not stated (80)*	Not stated (70%)	Not stated (40)

* Refers to ANSI N509-1976 and RDT Std M16-1T, October 1973, which specify a test temperature of 80°C.

TABLE 2 - PROPOSED TS REQUIREMENTS											
System Description						Proposed TS Requirements					
TS Section	System	Bed Thick-ness (inches)	Actual Charcoal		Credited Efficiency (Methyl Iodide)	Test Penetration (Methyl Iodide)	Safety Factor	Test Standard	Test Temp (° C)	Test RH	Test Face Velocity (fpm)
			Res. Time (sec)	Face Velocity (fpm)							
4.6.5.3.b.2 4.6.5.3.c	SGTS	8	0.68	66	99%	<0.50%	2	ASTM D3803-1989	30	70%	66
4.6.5.4.b.2 4.6.5.4.c	RERS	2	0.25	40	95%	<2.50%	2	ASTM D3803-1989	30	70%*	40
4.7.2.c.2 4.7.2.d	CREFAS	2	0.25	40	95%	<2.50%	2	ASTM D3803-1989	30	70%	40

* In accordance with Section 6.5.1.3 of the UFSAR, the RH will not exceed 77% during normal operation and the RH will decrease to below 70% post-LOCA due to the increase in heat to the structure. No safety related heaters exist at the inlet of the RERS.