

**TECHNICAL EVALUATION REPORT
BROOKHAVEN NATIONAL LABORATORY
FOR THE OFFICE OF NUCLEAR REACTOR REGULATION
DIVISION OF SYSTEMS SAFETY AND ANALYSIS
PLANT SYSTEMS BRANCH
RELATED TO AMENDMENT TO FACILITY OPERATING LICENSE NO. DPR-16
GPU NUCLEAR, INC.
OYSTER CREEK NUCLEAR GENERATING STATION
DOCKET NO. 50 - 219**

1.0 INTRODUCTION

By letter dated December 1, 1999 (1940-99-0558), GPU Nuclear (the licensee) 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 the Oyster Creek Nuclear Generating Station (OCGNS). By the same letter dated December 1, 1999 (1940-99-0558), GPU Nuclear requested a change to the Technical Specifications (TS) Section 4.5.H.1.a.(2), for the Standby Gas Treatment System (SGTS) for OCGNS. By letter dated September 15, 2000 (2130-00-20230), AmerGen Energy Company, who currently holds the operating license of the Oyster Creek Nuclear Generating Station from GPU Nuclear, submitted additional information clarifying the charcoal bed depth and the actual face velocity for the ventilation system. 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 with respect 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) 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 and relative humidity (RH) of 95% are acceptable because it is consistent with ASTM D3803-1989. This is consistent with the actions requested in GL 99-02.

The credited efficiency for radioactive organic iodine for the SGTS is 90%. The proposed test penetration for radioactive methyl iodide for the SGTS is $\leq 5\%$. The proposed test penetration was obtained by applying a safety factor of 2 to the credited efficiency. The proposed safety factor 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 August 23, 1999 errata to GL 99-02 clarified that if the maximum actual face velocity is greater than 110% of 40 fpm, then the test face velocity should be specified in the TS. By letter dated September 15, 2000, the licensee stated that the system face velocity at the charcoal adsorber sections for the SGTS is 45.72 fpm at the maximum system flow rates specified in the TS. Since this face velocity is greater than 110% of 40 fpm, the licensee has included the proposed test face velocity of 45.72 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. 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 consider the proposed TS changes to be acceptable.

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Date: January 8, 2000

OYSTER CREEK NUCLEAR GENERATING STATION

TABLE 1 - CURRENT TS REQUIREMENTS											
System Description						Current TS Requirements					
TS Section	System	Bed Thickness (inches)	Actual Charcoal		Credited Efficiency (% organic iodine)	Test Penetration (% methyl iodide)	Safety Factor	Test Standard **	Test Temp (° C) **	Test RH (%) **	Test Face Velocity (fpm)
			Res. Time (sec)	Face Velocity (fpm)							
4.5.H.1. a.(2)	Standby Gas Treatment System (SGTS)	2	0.219	45.72	90	≤10	Not stated (1)*	ASTM D3803-1979	30	95	Not stated

* The safety factor is calculated based on the current test penetration and the credited efficiency.

** Based on the current TS.

*** Based on the requirements in accordance with ASTM D3803-1989.

TABLE 2 - PROPOSED TS REQUIREMENTS											
System Description						Proposed TS Requirements					
TS Section	System	Bed Thickness (inches)	Actual Charcoal		Credited Efficiency (% organic iodine)	Test Penetration (%methyl iodide)	Safety Factor	Test Standard	Test Temp (° C)	Test RH (%)	Test Face Velocity (fpm)
			Res. Time (sec)	Face Velocity (fpm)							
4.5.H.1. a.(2)	Standby Gas Treatment System (SGTS)	2	0.219	45.72	90	≤5	2	ASTM D3803-1989	30	95	Not stated (40)***