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DEFENSE NUCLEAR FACILITIES SAFETY BOARD

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March 17, 2008

Mr. Glenn S. Podonsky
Chief Health, Safety and Security Officer
Office of Health, Safety and Security
U.S. Department of Energy
1000 Independence Avenue, SW
Washington, DC 20585-1290

Dear Mr. Podonsky:

The Defense Nuclear Facilities Safety Board (Board) is concerned about the recent degradation in quality of nuclear grade high efficiency particulate air (HEPA) filters observed by the Filter Test Facility (FTF). Two semiannual FTF reports covering fiscal year 2007 noted overall rejection rates of 18.9 percent and 21.5 percent, significantly higher than the 10-year historical average of 7 percent. The increasing contribution of manufacturing defects to the rejection rates is particularly troublesome, and indicates problems in quality control programs and manufacturing processes at the vendor level.

The June 2007 FTF report stressed the importance of vendor reviews by Department of Energy (DOE) contractors to determine the cause of the defects and ensure that filters meet specified requirements. The January 2008 FTF report again placed the responsibility for filter quality on site contractors, and encouraged further vendor review to uncover the source of the problems. The Board is not satisfied with the effectiveness of this direction given the persistence of the problem. The Board believes a more proactive response is required by DOE to ensure the manufacturing problems are identified and corrected.

The Board disagrees with DOE's assertion in the January 2008 FTF report that a safety problem does not exist because rejected filters are effectively screened and returned to their respective manufacturers for repair or disposition. While the FTF identifies obvious manufacturing defects and ensures a minimum level of performance through penetration and resistance testing, it does not replicate many production-based tests performed by manufacturers for quality control, or the independent qualification tests (e.g., resistance to pressure and heated air, water repellency, tensile strength) required by American Society of Mechanical Engineers Standard AG-1, *Code on Nuclear Air and Gas Treatment*. Several of the criteria verified by these qualification tests are credited in the safety bases of defense nuclear facilities. The Board questions the continuing validity of this posture in light of the high rejection rates at the FTF.

Furthermore, DOE Standard 3020, *Specification for HEPA Filters Used by DOE Contractors*, allows a tailored quality assurance testing program for HEPA filters used in confinement ventilation systems for radioactive materials that (1) do not perform a safety

function in accidents, (2) are not functionally classified as safety-significant or safety-class, or (3) are not necessary for habitability systems (e.g., protecting workers under emergency conditions). Although these filters often contribute to worker protection through confinement of radioactive materials, they do not receive 100 percent testing at the FTF because they do not carry a safety classification. With FTF rejection rates around 20 percent, DOE may wish to reconsider the effectiveness of this tailored testing protocol.

The high rejection rates of HEPA filters continue to justify the Board's position that 100 percent testing at the FTF is a necessary component of an overall program to ensure the quality of safety-related HEPA filters procured by DOE. The Board is concerned with the significant FTF rejection rates seen recently and its implied degradation of other critical quality program components at the vendor. Therefore, pursuant to 42 U.S.C. § 2286b(d), the Board requests a report within 60 days of receipt of this letter outlining (1) actions planned by DOE to investigate and correct the root cause of increased rejection rates of HEPA filters at the FTF, (2) actions planned by DOE to assess the potential degradation of critical quality program components supporting HEPA filter manufacturing attributes that are not explicitly tested at the FTF (e.g., resistance to pressure and heated air, water repellency, tensile strength), and (3) actions planned by DOE to re-assess the adequacy of those non-safety-related HEPA filters providing radioactive material confinement in DOE nuclear facilities that are not subjected to 100 percent testing at the FTF, given the relatively high rejection rates observed during 2007.

Sincerely,

A handwritten signature in black ink, appearing to read "A. J. Eggenberger". The signature is fluid and cursive, with a large initial "A" and "E".

A. J. Eggenberger
Chairman

c: Mr. Mark B. Whitaker, Jr.