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Department of Energy
Washington, DC 20585

May 16, 2024

MEMORANDUM FOR UNDER SECRETARY FOR SCIENCE AND INNOVATION

FROM: TODD N. LAPOINTE
DIRECTOR
OFFICE OF ENVIRONMENT, HEALTH, SAFETY AND SECURITY

SUBJECT: **ACTION:** Approval of a permanent variance from certain requirements related to pressure safety in Title 10 CFR Part 851, *Worker Safety and Health Program*, conditioned on the fulfillment of the process described in the application from Fermi Research Alliance, LLC

ISSUE: Whether to approve a permanent variance application (Permanent Variance Application) submitted by Fermi Research Alliance, LLC (FRA), the management and operating contractor at the U.S. Department of Energy (DOE) Fermi National Accelerator Laboratory (Fermilab), in which FRA seeks a permanent variance from certain provisions in Title 10, Code of Federal Regulations Part 851 (10 CFR 851), *Worker Safety and Health Program*, related to pressure safety, including certain requirements in Appendix A(4)(b) and portions of § 851.23(a)(3), § 851.27(d)(1), and § 851.27(d)(2), and commits to use a process, outlined in the Permanent Variance Application, that will ensure pressure equipment constructed to international codes is as safe and healthful as equipment constructed to the American Society of Mechanical Engineers (ASME) codes identified in 10 CFR 851.

BACKGROUND: As described in the attached Permanent Variance Application, Fermilab is upgrading its accelerator complex to provide a minimum one-megawatt proton beam to develop and support a world-class neutrino program. The program's flagship project is the Long-Baseline Neutrino Facility and Deep Underground Neutrino Experiment (LBNF/DUNE), which requires completion of the Proton Improvement Plan II (PIP-II). FRA, with DOE, continues to foster the international collaboration and partnerships required to support the design and construction of LBNF/DUNE and PIP-II.

The DOE Office of High Energy Physics (HEP) and the Particle Physics Project Prioritization Panel (P5), a subcommittee of the DOE Office of Science (SC) HEP Advisory Panel (HEPAP), have endorsed a global particle physics program. The DOE Office of International Science & Technology Cooperation and Trusted Research guides the overall SC international cooperation and facilitates collaboration with international partners. Several international partners have already received funding to begin the process of upgrading the Fermilab accelerator complex.

For this type of world-class global science, specialized custom pressure equipment for superconducting accelerators and one-of-a-kind experimental detectors are required. Development of such equipment with international partners necessitates the use of international design and safety codes. FRA is proposing to use pressure equipment, provided as in-kind contributions by international partners, which has been designed and constructed in accordance with international codes, not ASME codes.

Title 10 CFR 851.3 defines a *contractor* as "any entity, including affiliated entities, such as a parent corporation, under contract with DOE, or a subcontractor at any tier, that has responsibilities for performing work at a DOE site in furtherance of a DOE mission," and a *DOE site* as "a DOE-owned or -leased area or location or other area or location controlled by DOE where activities and operations are performed at one or more facilities or places by a contractor in furtherance of a DOE mission." In performing its DOE mission to operate the Fermilab, FRA is a contractor required to comply with 10 CFR 851, including the requirement to establish a DOE-approved worker safety and health program that will reduce or prevent occupational injuries, illnesses, and accidental losses and provide their employees with safe and healthful workplaces at DOE sites.

FRA is seeking a permanent variance from portions of 10 CFR 851, including portions of Appendix A(4)(b) and specific requirements within § 851.23(a)(3), § 851.27(d)(1), and § 851.27(d)(2). Title 10 CFR 851, Appendix A(4)(b), requires contractors to ensure that all pressure vessels, boilers, air receivers, and supporting piping systems conform to the applicable ASME boiler and pressure vessel codes (BPVC) and ASME B31 codes for pressure piping. FRA has developed a process to evaluate and verify that international pressure vessel and piping construction codes are as safe and healthful as the ASME BPVC and ASME B31 codes, as required in 10 CFR 851.31.

Title 10 CFR 851.30 authorizes Under Secretaries[1] to approve variances after considering the recommendation of the Director of the Office of Environment, Health, Safety and Security (EHSS Director). Title 10 CFR 851.31(a) requires the contractor desiring the variance to submit a written application to the appropriate Cognizant Secretarial Officer (CSO)[2] who may forward the application to the EHSS Director. FRA submitted the Permanent Variance Application to SC. After concurring on the request, the SC Deputy Director for Operations forwarded the Permanent Variance Application to the EHSS Director.

Upon receipt of the application from a CSO, 10 CFR 851.31(a)(3) requires the EHSS Director to review the application and make a written recommendation to approve the application, approve the application with conditions, or deny the variance application.

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[1] *Under Secretary* is defined in § 851.3 as "with respect to a particular situation, the DOE official who serves as the Under Secretary for Science and Innovation, or Under Secretary for Infrastructure, or the Under Secretary for Nuclear Security/Administrator for National Nuclear Security Administration who has primary line management responsibility for a contractor."

[2] *Cognizant Secretarial Officer* or CSO is defined in § 851.3 as "with respect to a particular situation, the Assistant Secretary, Deputy Administrator, Program Office Director, or equivalent DOE official who has primary line management responsibility for a contractor, or any other official to whom the CSO delegates in writing a particular function under this part."

Pursuant to 10 CFR 851.32(b), *Approval criteria*, "[a] variance may be granted if the variance: (1) Is consistent with section 3173 of the [Bob Stump National Defense Authorization Act (NDAA) for Fiscal Year 2003]; (2) Does not present an undue risk to worker safety and health; (3) Is warranted under the circumstances; and (4) Satisfies the requirements of § 851.31 [of part 851] for the type of variance requested."

As part of the EHSS Director's review, the Office of Worker Safety and Health Policy (EHSS-11) retained a pressure safety subject matter expert (SME) to review the FRA process. The SME provided recommendations on the FRA process, including the identification of key attributes to address all aspects of pressure safety for pressure vessels and piping systems. EHSS-11 worked with FRA on the application to ensure the process described in the variance request was comprehensive, clear, detailed, and adequately addressed each possible scenario including the need for additional measures if there was a gap in the international code. In addition to the variance technical content, EHSS-11 reviewed and concluded that the elements required by 10 CFR 851 were met.

Based on the information provided in the variance application, the EHSS Director agrees with the SC Deputy Director for Operations that the Permanent Variance Application submitted by FRA should be approved; this approval is conditioned on FRA adhering to the process set forth in the Permanent Variance Application to ensure that the use of equipment constructed to international pressure vessel and piping codes would provide workers a place of employment which is as safe and healthful as would result from compliance with the ASME codes identified in 10 CFR 851. Copies of the February 15, 2024, Memorandum from the SC Deputy Director for Operations regarding the Permanent Variance Application and the Permanent Variance Application are attached.

JUSTIFICATION: FRA is requesting a permanent variance from certain requirements related to pressure safety in 10 CFR 851, to include certain requirements in Appendix A(4)(b) and portions of § 851.23(a)(3), § 851.27(d)(1), and § 851.27(d)(2). Based on the information provided in the variance application, the EHSS Director recommends approval of the Permanent Variance Application, conditioned on FRA implementing the process outlined in the Permanent Variance Application and providing workers a place of employment that is as safe and healthful as would result from compliance with 10 CFR 851, Appendix A(4)(b), § 851.23(a)(3), § 851.27(d)(1), and § 851.27(d)(2), as required by Subsection (d)(2)(ii) of § 851.31, *Variance Process.*

RECOMMENDATION: That you approve the Permanent Variance Application, conditioned on FRA implementing the process described in its application to evaluate and verify that international pressure vessel and piping construction codes are as safe and healthful as the ASME BPVC and ASME B31 codes identified in 10 CFR 851, specific to the practices, means, methods, operations, or processes described in the Permanent Variance Application.

APPROVE: GLR DISAPPROVE:_____ NEEDS DISCUSSION:_____ DATE: 05/22/2024