FINDING OF NO SIGNIFICANT IMPACT

IMPROVEMENTS AT THE THOMAS JEFFERSON NATIONAL ACCELERATOR FACILITY NEWPORT NEWS, VIRGINIA

AGENCY: U.S. DEPARTMENT OF ENERGY

ACTION: FINDING OF NO SIGNIFICANT IMPACT

SUMMARY: The U.S. Department of Energy (DOE) has completed an Environmental Assessment (DOE/EA-1384) for proposed Improvements at the Thomas Jefferson National Accelerator Facility (Jefferson Lab). Newport News, Virginia. Based on the results of the impacts analysis reported in the EA, DOE has determined that the proposed action is not a major Federal action that would significantly affect the quality of the human environment within the context of the National Environmental Policy Act of 1969 (NEPA). Therefore, preparation of an environmental impact statement (EIS) is not necessary, and DOE is issuing this Finding of No Significant Impact (FONSI).

PUBLIC AVAILABILITY OF EA AND FONSI: The EA and FONSI may be reviewed at and copies of the documents obtained from

U.S. Department of Energy
Public Reading Room
Thomas Jefferson National Accelerator Facility
12000 Jefferson Avenue
Newport News, VA 23606
Phone:(757) 269-5676

FURTHER INFORMATION ON THE NEPA PROCESS: For further information on the NEPA process, contact

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BACKGROUND: DOE evaluated the potential environmental impacts from proposed construction of various site improvements and the proposed installation and operation of the Helios light source at Jefferson Lab. The Southeastern Universities Research Association, Inc. operates Jefferson Lab (SURA) under contract to the DOE.

With this proposal, DOE intends to construct no more than four major two or three story additions to CEBAF Center, the main facility administration building, and the addition of three new single story and one two story operations support structures on the accelerator site. The proposed action also involves the installation and operation of the Helios (High Energy Lithography Source) accelerator in the Free Electron Laser (FEL) addition.

ALTERNATIVES: In this EA, DOE evaluates the impacts of the no-action alternative where Jefferson Lab would continue to operate as it does today and the proposed action alternative. Alternatives considered and dismissed from further evaluation were the use of other locations on site, the leasing of additional offsite space, and the use of additional portable storage

containers. These alternatives were found not to be viable alternatives because of poor

proximity to existing structures and utilities, more undisturbed land would be affected, and costs would be higher due to working at a new site instead of expanding an existing footprint.

ENVIRONMENTAL IMPACTS:

No Action Alternative

If no action is taken on this proposal Jefferson Lab would continue to operate as it does today; however, because of the interest in the science performed at Jefferson Lab the current site buildings will not have sufficient space to accommodate the growing staff and user community. As well, if no action is taken to support existing Continuous Electron Beam Accelerator Facility (CEBAF) and FEL operations support staff and their storage needs could become a significant factor in maintaining both CEBAF and the FEL functionality. With no action, the physics community would miss out on the opportunity to use the new synchrotron light source to expand research capabilities and also would not be able to explore the future opportunities for joint Helios and FEL operations. The environmental impacts from taking no action would be the same as those under current operations and identified in previous EAs (EA 1987 and EA 1997).

Proposed Action

Land Use. The local Oyster Point area was developed to serve industrial and business needs, and both City and industrial development continue throughout the area. The proposed activities will take place on land already occupied by Jefferson Lab. Therefore, no land use impacts will occur.

Socioeconomics. Labor for proposed modifications and operational changes would be drawn from the pool of SURA and other subcontractor staff at Jefferson Lab. Therefore, impacts to the local population, services, and economy would not be expected.

Cultural Resources. The Virginia State Historic Preservation Officer has advised DOE that no adverse impacts to archaeological and historic resources would be expected from the proposed action. DOE concurs with this determination.

Noise. Construction activities would be short-term and localized at the Jefferson Lab site and would be spread over a number of years. Given the urban nature of the site and its vicinity, noise from construction would not be unique. While sporadic noise from construction equipment and traffic would occasionally be perceptible in nearby areas, no adverse effects on human or ecological receptors hearing would occur.

Non-radiological Air Quality. Operation of equipment and vehicles onsite would produce non-radiological emissions common to construction sites (hydrocarbons, sulfur dioxide, carbon monoxide, etc.). Emissions would occur throughout the course of each construction activity and would be temporary and localized near the site of operation. Because the project site is within an ozone maintenance area, precautionary measures will be employed during construction to reduce ground level ozone concentrations, especially during ozone alert days. Contribution from the proposed action to offsite concentrations of regulated non-radiological air pollutants would be minimal.

Water Resources.

Non-Radiological Impacts- Erosion and sedimentation to onsite ditches and storm drainage systems could result from land disturbances onsite during construction. Standard erosion control measures would be implemented during disturbance of soils to minimize runoff and

potential deposit of sediments in surface waters. Impacts to water resources are, therefore, expected to be minimal.

Radiological Impacts. The only additional source of radiation would be from the operation of the Helios. As the Helios can produce beams of intense synchrotron light, which are a low energy x-ray hazard, the same controls will be implemented at the Helios accelerator as with the operations of the CEBAF and FEL. Operations for all accelerators are restricted by engineering and administrative controls such as shielding, the Personnel Safety System, interlocks, and beam absorbers. Very minimal to minor impacts are expected to water resources.

Coastal Zone Management Act (CZMA) **Consistency Certification.**

Although the Jefferson Lab property does not fall under the purview of the applicable Virginia law, the Chesapeake Bay Protection Act and the requirements of the CZMA have been reviewed. To be consistent with the CZMA programs, the DOE intends to obtain all applicable permits and approvals listed in the Virginia program prior to commencing this action. Upon granting of a permit or other approval, the DOE affirms that it will comply with any identified terms and conditions, as well as with the goals and objectives of the Chesapeake Bay Preservation Area Designation and Management Regulations and other relevant regulations, to the maximum extent practicable.

Geology. Site geology was thoroughly reviewed in 1995 to support a proposal to change the status of CEBAF in its Commonwealth of Virginia permit from a construction project to an operating facility. The soil types across the site seemed fairly similar, with most meeting the criteria for hydric soils. As only minimal activity below the surface will occur under this proposed action, there should be only minor construction related impacts and no impacts from operations. Best Management Practices will be implemented and no geology or soil related mitigations are necessary.

Threatened and Endangered Species. In accordance with Section 7, Endangered Species Act requirements, DOE formally requested written comments regarding the proposed action from the U.S. Fish and Wildlife Service. Contact was also made with several agencies within the Commonwealth of Virginia for comment on the proposed actions. Some of the agencies within the Commonwealth provided comments that were resolved with each agency. No adverse impacts to protected species and/or habitat would be expected from the proposed action

Ecology. The Jefferson Lab site is within an area that was cleared of trees in the 1950s, resulting in significant disturbance to the local wildlife. After a brief respite, the local area was designated an office/industrial park and has now been almost totally developed, thus decorative landscaping has replaced native vegetation. This local arrangement does provide scattered sites that serve as harbor for a small variety of living organisms. The land and vegetation disturbance that will occur with this proposed action will result in only a minor disruption to the ecology of the site and the local area, as Jefferson Lab has committed to minimize disturbance and to provide native vegetation as possible to support local biodiversity.

Floodplain/WetIands. Jefferson Lab property, at an average elevation of about 32 feet above MSL and with no permanent streams, is in a Zone C area on the local flood maps and not considered in a floodplain. In 1987, the U.S. Army Corps of Engineers determined that the forested temporary wetlands proposed to be disturbed in the course of CEBAF construction were not sufficiently permanent to qualify as wetlands. A representative from the Corps of Engineers visited the site on September 25, 2001 to survey the areas where the construction is proposed. It was determined that the construction sites did not meet defined wetland conditions. Therefore, since no wetlands or floodplains occur on site, no impacts would be expected to these resources.

Health and Safety.

Radiological Impacts, Most of the occupational radiation exposure at Jefferson Lab would continue to occur during maintenance activities on activated components. The level of induced radioactivity in the components is directly proportional to the amount of electron beam power lost in the components. Consequently, the additional operation of the Helios would not be expected to increase occupational radiation exposure.

The chief source of radiation exposure for members of the general public is "skyshine" radiation. The Helios accelerator produces no skyshine at the site boundary due to its position on the lab site and because it is not designed as a fixed target irradiation facility.

The public may be exposed to small quantities of radioactivity induced in air in an accelerator enclosure as a result of nominal ventilation during routine operations. Since the production of ozone and oxides of nitrogen stop when an accelerator is turned off normal chemical dissociation and ventilation loss quickly reduce ozone and oxides of nitrogen to negligible values in the accelerator facility. Thus, the operation of the Helios would contribute only negligible levels, if any, of these pollutants. Therefore, there would be no impact from these pollutants to the public or to workers.

Non-Radiological Impacts, Non-radiological hazards associated with the proposed action include normal construction-related hazards, electrical hazards, chemical hazards, and non-ionizing radiation hazards (lasers), which could injure and in extreme cases kill, occupational workers. Administrative procedures at Jefferson Lab to minimize accidents involving electricity, chemicals and lasers are specified in the Jefferson Lab EH8iS Manual and implemented during operation.

Cumulative Impacts. Cumulative impacts are those that result from the incremental contribution from each effect discussed above along with impacts expected from other ongoing or planned actions within the same geographic area. Aside from the actions evaluated in this EA, there are no other sources of induced radioactivity or prompt radiation planned for the accelerator site. The only other know source of radioactivity in the general site area is in the adjacent Applied Research Center. The Helios, CEBAF and PEL will be operated within their proposed or specified operating limits and within identified site limits to minimize cumulative impacts to the environment, occupational health factors, and public health and safety.

Thus, there would be cumulative impacts when taking into account the construction, operation, and use of the new buildings and Helios operation when combined with the other impacts from beyond the site boundaries, though none of the actions described in this EA either individually or cumulatively would have major impacts to the environment, occupational and public health or safety.

DETERMINATION: Based on the findings of this EA, DOE has determined that the proposed Improvements at the Thomas Jefferson National Accelerator Facility does not constitute a major Federal action that would significantly affect the quality of the human environment within the context of the National Environmental Policy Act. Therefore, preparation of an environmental impact statement is not required.

Issued at Oak Ridge, Tennessee, this 13th day of July 2002.

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