

[6450-01-P]

U.S. DEPARTMENT OF ENERGY

**ENVIRONMENTAL IMPACT STATEMENT
FOR THE HIGH FLUX BEAM REACTOR TRANSITION PROJECT
AT THE BROOKHAVEN NATIONAL LABORATORY, UPTON, NY****AGENCY:** Department of Energy**ACTION:** Notice of Intent (NOI)

SUMMARY: The U.S. Department of Energy (DOE) announces its intent to prepare an Environmental Impact Statement (EIS), pursuant to the National Environmental Policy Act (NEPA), for the High Flux Beam Reactor (HFBR) at the Brookhaven National Laboratory (BNL) in Upton, New York. The EIS will evaluate the range of reasonable alternatives regarding the future of the reactor, as required by NEPA, including: (1) no action (maintaining HFBR in a shutdown and defueled condition); (2) resume operation at a power level of 30 megawatt (MW) or up to 60 MW; (3) resume operation and enhance the facility; and (4) permanent shutdown with eventual decontamination and decommissioning (D&D). DOE invites individuals, organizations, and agencies to present oral and/or written comments concerning the scope of the EIS, including the environmental issues and alternatives the EIS should analyze.

DATES: The public scoping begins with publication of this NOI in the Federal Register and continues until January 23, 1998. Written comments submitted by mail should be postmarked by that date to ensure consideration. Comments mailed after that date will be considered to the extent practicable. DOE will conduct public scoping meetings to assist it in defining the appropriate scope of the EIS, including the significant environmental issues to be addressed. DOE plans to hold scoping meetings in the vicinity of BNL in December 1997 and January 1998. The December meeting will be held at the following date, time and location:

December 10, 1997,
Mastic Beach Property Owners Association,
31 Neighborhood Road,
Mastic Beach, New York 11951;
Time: 4:00 p.m. - 9:00 p.m.

Locations of additional scoping meetings to be held in January will be announced through the local media as soon as possible, but at least 15 days prior to the date of the meetings.

ADDRESSES: Please direct comments or suggestions on the scope of the EIS, requests to speak at the public scoping meetings, requests for special arrangements to enable participation at scoping meetings (e.g., interpreter for the hearing-impaired) and questions concerning the project to: Michael Holland, Brookhaven Group, U.S. Department of Energy, 53 Bell Avenue, Bldg. 464, P.O. Box 5000, Upton, NY 11973-5000, (516) 344-3552, telefax (516) 344-1377, or by electronic mail to mholland@bnl.gov.

FOR FURTHER INFORMATION CONTACT: For general information associated with the research aspects of the HFBR, please contact:

Iran Thomas
Deputy Associate Director
Office of Basic Energy Sciences
Office of Energy Research
U.S. Department of Energy, ER-10
Germantown, MD 20874
telephone: (301) 903-3427.

For technical information associated with reactor operation, please contact:

Robert Lange

Associate Director
Office of Facilities
Office of Nuclear Energy
U.S. Department of Energy, NE-40
19907 Germantown Rd.
Germantown, MD 20874
telephone: (301) 903-2915.

For general information on the DOE NEPA process, please contact:

Carol M. Borgstrom
Director
Office of NEPA Policy and Assistance, EH-42
U.S. Department of Energy
1000 Independence Avenue
S.W., Washington, D.C. 20585-0119
telephone: (202) 586-4600 or leave a message on (800) 472-2756.

SUPPLEMENTARY INFORMATION:

Background. The Brookhaven National Laboratory was established in 1947 as a multi-disciplinary scientific research center. It is located close to the geographic center of Suffolk County, Long Island, about 56 miles (91 kilometers) east of New York City. The Laboratory site consists of 8.2 square miles (21.3 square kilometers, 2,130 hectares) with most principal facilities located near the center. The Laboratory carries out basic and applied research in the following areas: high-energy and nuclear physics; solid state physics; materials sciences and chemical sciences; nuclear medicine, biomedical and environmental sciences; and selected energy technologies.

The HFBR, which is centrally located within the BNL site (about 1 mile from the eastern site boundary and 1.5 miles from the southern boundary), was commissioned in 1965 as a scientific facility dedicated to neutron scattering research and other research programs in solid state physics, nuclear physics, materials technology, structural biology, medicine and chemistry. Neutron scattering techniques are used to study the structure and properties of materials. The HFBR has provided about two-thirds of the Department's experimental capability at reactors for neutron scattering.

The HFBR uses heavy water (deuterium) for cooling and a highly enriched uranium core to produce beams of thermal neutrons that are guided to experimental areas by nine horizontal aluminum alloy tubes called "beam tubes." In addition, there are seven vertical tubes for irradiating research samples in the reactor. The entire reactor and its control room are enclosed within a confinement dome. This reactor does not produce electric power. The HFBR staff presently consists of about 110 scientists, engineers, technicians, and administrative personnel. The HFBR scientific user community numbers about 300 researchers, including several from Japan and Europe.

In some research areas the HFBR is the best facility in the United States. For example, the facility's Small Angle Neutron Scattering (SANS) capability is regarded as a particularly useful technique by structural biologists, who represent a rapidly growing user community for neutron scattering. The HFBR SANS offers unique capabilities for the study of biological samples and is the best resource in the United States for this type of work. In addition, the HFBR's Single Crystal Neutron Diffraction equipment complements x-ray techniques in determining the structure of complex organic molecules because of its ability to locate hydrogen atoms. The HFBR facility has also been used for radioisotope production, neutron activation analysis, and material irradiation.

The reactor was originally designed for operation at a power level of 40 megawatts (MW). An equipment upgrade in 1982 allowed operation at 60 MW, which greatly enhanced the reactor's scientific capability. Beginning in 1991, the operating power of the reactor was limited to 30 MW until additional analysis could be performed to address safety concerns associated with a hypothetical loss of reactor coolant accident while operating at 60 MW. Subsequent analyses, currently under review as part of an on-going Safety Analysis

Report revision program, indicate that the HFBR could be safely operated at 60MW. Scientific users have recommended operating the reactor at 60MW, and that the Department upgrade and modernize the scientific instrumentation and other features such as the beam tubes.

Current Status of HFBR. On December 21, 1996, the HFBR was shut down for refueling and maintenance, a routine activity which normally occurs almost every month. Before the reactor returned to scheduled scientific operations, however, monitoring indicated that a plume of tritiated water was contaminating the groundwater in excess of drinking water standards south and down gradient of the reactor. DOE, in cooperation with the U.S. Environmental Protection Agency (EPA), New York State Department of Conservation (NYSDEC), and Suffolk County Department of Health Services (SCDHS), immediately initiated activities to identify and eliminate the source of the tritium plume. These activities, now collectively called the Tritium Remediation Project, continue as part of the Department's commitment to remediate the contaminated groundwater.

Data collection and analysis identified the HFBR spent fuel pool as the likely source of the tritium plume. In May 1997, a short-term removal action, in the form of a groundwater extraction system, was undertaken to ensure that tritium contaminated groundwater in excess of drinking water standards does not leave the BNL site boundary.

The short-term removal action has been incorporated into the site's cleanup program in accordance with the Interagency Agreement among DOE, EPA and NYSDEC entered into pursuant to the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA). A description of the removal action taken, alternatives considered, regulatory interaction, and public participation activities associated with the short-term removal action are documented in the Action Memorandum for Operable Unit III Tritium Removal Action, dated May 9, 1997, which is available in the reading rooms identified in this notice.

The final remedial action will be determined through the CERCLA Operable Unit III Remedial Investigation/Feasibility Study (RI/FS) process and will be based on additional data collected, groundwater modeling, and evaluations of various remediation options, including those activities which comprise the Tritium Remediation Project. The CERCLA Record of Decision that completes this process is scheduled to be published in the fall of 1998. The potential environmental impacts associated with this CERCLA action will be reflected and accounted for in the environmental analysis contained in the EIS.

In addition to the activities associated with the cleanup of the contaminated groundwater plume, all fuel has been removed from the reactor and the pool and shipped off-site in preparation for removing all water from the fuel pool. Decontamination and dewatering of the storage pool is underway in order to eliminate the current source of the tritium to the groundwater beneath the HFBR. Operation of the groundwater plume pumping, treatment, and recharge system continues. The groundwater tritium plume has been characterized and modeled, and continues to be sampled and monitored. Removal of the water from the spent fuel pool is scheduled for completion by the end of 1997.

Purpose and Need for the Agency Action. The Department of Energy needs to make a decision regarding the future of the HFBR at BNL. This EIS will aid DOE in its decisionmaking process. In July 1997, the Department issued its "Action Plan for Improved Management of Brookhaven National Laboratory," which summarized the Department's planned process for deciding the future of the HFBR. The Action Plan states that the Secretary of Energy will decide the future of the HFBR and directs an appropriate environmental review process. That review process consists of this EIS on the HFBR, which will incorporate the results of the tritium remediation project being conducted in conjunction with the ongoing CERCLA process. The Secretary is scheduled to decide upon a preferred alternative for the future of the HFBR in early 1998 for inclusion in this EIS. As stated in the Action Plan, that decision will take into account several factors, including: public input from the local Long Island community; input from the HFBR scientific user community and the DOE Basic Energy Sciences Advisory Committee; and the value of the scientific information produced using the HFBR. The alternatives listed in this Notice for evaluation in the EIS reflect the full range of options available for the future of the HFBR. The results of the EIS scoping process will be considered in selecting the preferred alternative. The preferred alternative will be noted in the Draft EIS, but the EIS will analyze all reasonable alternatives, as required by NEPA.

The Conference Report accompanying Public Law 105-62, the Energy and Water Development Appropriations Act of 1998, directed that an EIS be prepared on the HFBR. The Report noted the conferees' expectation that the EIS include a "comprehensive survey of any environmental hazards that the tritium leak or other contamination

associated with the HFBR pose to the drinking water and health of the people in the surrounding communities, and that it will provide a detailed plan for remediation." The EIS will provide this analysis, while concurrently proceeding with, the Tritium Remediation Project and applicable Interagency Agreement and CERCLA commitments. Long-term remediation plans are being prepared under the ongoing CERCLA program and will be discussed with the local community. Consistent with Congress' direction, the EIS will summarize this remediation plan and program, and assess the HFBR's potential for further contributing to groundwater contamination.

The Report also directed the Department to drain the spent fuel pool, meet the requirements outlined in the Suffolk County Sanitary Code Article 12, complete seismic upgrades, and repair and seal the floor drains. These modifications and repairs, in addition to those indicated in 3) below, are needed to place the HFBR into a radiologically and industrially safe condition, regardless of which alternative is selected for the future of the HFBR, and do not result in any adverse environmental impacts. Accordingly, since these activities do not have an adverse impact and do not limit the choice of reasonable alternatives, DOE intends to proceed with these activities prior to completion of the EIS. These modifications include repairs needed to bring the HFBR into compliance with applicable Federal, State, and local laws and requirements, including the requirements of Suffolk County Sanitary Code Article 12, which is relevant to reducing risks and preventing future leaks from the facility to the groundwater. These four specific modifications and repairs include:

1. Several floor joints and conduit penetrations in the floor of the HFBR would be repaired and sealed to ensure that there is no leakage path to groundwater from any accidental spill within the reactor confinement building. The potential for spills exists during both reactor operations and deactivation activities, when there would be a need to move large quantities of radioactive liquids into tanks and drums for storage, treatment or disposal.
2. Several piping systems and sumps in the HFBR would be modified and repaired by replacing single-walled piping and sumps with double-walled components, or installing new components above the floor, thus meeting the requirements of Suffolk County Sanitary Code 12 for protection of groundwater. These systems would be used during operations and during deactivation activities to flush systems and reduce contamination.
3. The drains from the 350-foot tall stack (handles exhaust gases from HFBR and other nearby facilities) would be repaired, along with the collection piping and sump, to convert them from a single-walled to a double-walled system. This would enhance the confinement integrity of the HFBR by providing a barrier against potential accidental release of radioactive materials to groundwater.
4. The HFBR control room and operations level crane would be reinforced to protect radiological monitoring and control systems, as well as operations personnel, in the event of a design basis earthquake. The control room and crane are needed to ensure safe reactor operations or deactivation activities.

The Department is also evaluating a proposal to construct and install a stainless steel liner in the spent fuel pool during the preparation of the EIS. The installation of this impervious liner and appurtenant leak detection system would result in the pool containing a double-walled barrier to ensure that the storage pool would not be a source of groundwater contamination in the future. DOE considers the storage pool to be an essential component of the HFBR regardless of whether or not the reactor operates. It would be needed to store spent fuel during operations. During deactivation activities, it would be used to handle various highly radioactive reactor components which must be dismantled or cut apart in preparation for shipment offsite. Much of this work would be conducted within the storage pool. A usable pool may also be necessary for maintenance of the HFBR during an extended period of time in its present shutdown condition. As part of the CERCLA cleanup of Operable Unit III, the Department committed to construct and install the liner prior to any use of the pool. As a result, the spent fuel liner is included at this time as part of all alternatives, except No Action. DOE specifically solicits comments on whether the liner should be installed, along with the other modifications and repairs, prior to completion of this EIS. After hearing public comments on this issue, the Department may decide to include installation of the liner as part of all alternatives, including No Action.

Alternatives to be Evaluated. While Public Law 105-62 prohibited the use of funds made available under that Act or any other act to restart the HFBR, this EIS will analyze the following reasonable alternatives for the

future of the HFBR, as required by NEPA:

No Action Alternative. Under this alternative, the reactor would be maintained in the current shutdown and defueled condition for the indefinite future; the four modifications and repairs listed above would be performed. The Department regards this as a non-preferred alternative, because it does not resolve the future of the HFBR.

Resume Operation Alternative. The earliest date that the reactor could be restarted is October 1999, following completion of the NEPA process and all of the modifications and repairs described above (including installation of the spent fuel liner). This alternative includes two subalternatives:

- a. Startup and operation of the reactor at a power level of 30MW (the power level prior to the shutdown).
- b. Startup and operation of the reactor at a power level of 30MW with a planned increase in operation at a level of up to 60MW.

Resume Operation and Enhance Facility Alternative. Under this alternative, the Department would restart the reactor for operation at a power level of up to 60MW, and eventually replace the reactor vessel to extend the life of the reactor, and upgrade the reactor (e.g., add scientific instruments) to enhance the reactor's scientific research capabilities and increase the number of potential reactor users. Because of budget limitations, the Department regards this as a non-preferred alternative.

Permanent Shutdown Alternative. Under this alternative, the HFBR would be permanently shut down for eventual decontamination and decommissioning. Additional NEPA review would be necessary in the future for a proposal to decontaminate and decommission the reactor. This alternative would involve terminating the scientific research mission of the HFBR at BNL and placing the reactor in an industrially and radiologically safe condition for an extended period of time until a proposal were made to decontaminate and decommission the reactor. While an analysis of the full and complete decontamination and decommissioning is beyond the scope of this EIS, the potential environmental impacts associated with decontamination and decommissioning will be analyzed to the extent possible.

At this time, the Department of Energy has no preferred alternative. As noted above, the Secretary of Energy will designate a preferred alternative based on the results of the scoping process and other information in early 1998.

Preliminary Environmental Analysis. The following issues have been tentatively identified for analysis in the EIS. This list is neither intended to be all-inclusive nor is it a predetermination of potential environmental impacts. The list is presented to facilitate comment on the scope of the EIS. Additions to or deletions from this list may occur as a result of the public scoping process.

- Health and Safety: potential public and occupational consequences from routine operation and credible accident scenarios.
- Waste Generation/Pollution Prevention: types of wastes expected to be generated and stored, pollution prevention opportunities, and the potential consequences to public safety and the environment.
- Hazardous Materials: handling, storage, and use; waste management both present and future.
- Background Radiation: cosmic, rock, soil, water, and air, and the potential addition of radiation.
- Water Resources: surface and groundwater hydrology, use, and quality, and the potential for degradation.
- Air Quality: meteorological conditions, ambient background, pollutant sources, and potential for degradation.
- Earth Resources: physiography, topography, geology, and soil characteristics.
- Land Use: plans, policies and controls.

- Noise: ambient, sources, and sensitive receptors.
- Ecological Resources: wetlands, aquatic, terrestrial, economically/recreationally important species, threatened and endangered species.
- Socioeconomic: demography, economic base, labor pool, housing, transportation, utilities, public services/facilities, education, recreation, and cultural resources.
- Natural Disasters: floods, hurricanes, tornadoes, and seismic events.
- Unavoidable Adverse Impacts.
- Natural and Depletable Resources: requirements and conservation potential.
- Environmental Justice: any potential disproportionately high and adverse impacts to minority and low income populations.

Alternatives other than those presented in this document may warrant examination, and new issues may be identified for evaluation.

Scoping Meetings. The purpose of this NOI is to encourage public involvement in the EIS process and to solicit public comments on the proposed scope and content of the EIS. DOE will hold public scoping meetings in the BNL area to solicit both oral and written comments from interested parties.

DOE will designate a facilitator for the scoping meetings. The facilitator may ask for clarification of statements to ensure that representatives of the DOE fully understand the comments and suggestions. The scoping meetings will not be conducted as evidentiary hearings nor will there be questioning of the commentors. At the opening of each meeting the facilitator will establish the order of speakers and will announce any additional procedures necessary for conducting the meetings. To ensure that all persons wishing to make a presentation are given the opportunity, a five-minute limit may be enforced for each speaker, with the exception of public officials and representatives of groups, who will be allotted ten minutes each. DOE encourages those providing oral comments to also submit them in writing. Comment cards will also be available for those who prefer to submit their comments in written form.

DOE will make transcripts of the scoping meetings and project-related materials available for public review in the following reading rooms:

1. U.S. Department of Energy
Freedom of Information Public Reading Room
Forrestal Building, Room 1E-190
1000 Independence Avenue, S.W.
Washington, D.C. 20585
Telephone: (202) 586-3142
2. Brookhaven National Laboratory Research Library
Bldg. 477A Brookhaven Ave.
Upton, NY 11973
Telephone: (516) 344-3483
3. Longwood Public Library
800 Middle Country Rd.
Middle Island, NY 11953
Telephone: (516) 924-6400
4. Mastics-Moriches-Shirley Community Library
301 William Floyd Parkway
Shirley, NY 11967
Telephone: (516) 399-1511

Other environmental materials available at these locations or through the Suffolk County Interlibrary Loan

System include BNL's 1977 Site-wide EIS, Annual Site Environmental Reports, and the CERCLA Administrative record for cleanup activities.

NEPA Process. The EIS for the HFBR will be prepared according to the National Environmental Policy Act of 1969, the Council on Environmental Quality's Regulations for Implementing the Procedural Provisions of NEPA (40 CFR Parts 1500-1508), and DOE's NEPA Regulations (10 CFR Part 1021).

The draft EIS is scheduled to be published in the summer of 1998. A 45-day comment period on the draft EIS is planned, and public hearings to receive comments will be held approximately three weeks after distribution of the draft EIS. Availability of the draft EIS, the dates of the public comment period, and information about the public meetings will be announced in the Federal Register and in the local news media when the draft EIS is distributed.

The final EIS, which will incorporate public comments received on the draft EIS, is expected in November 1998. No sooner than 30 days after a notice of availability of the final EIS is published in the Federal Register, DOE will issue its Record of Decision and publish it in the Federal Register. The Record of Decision is expected to be issued in December 1998.

Signed in Washington, D.C., this 19th day of November, 1997.

Peter N. Brush
Acting Assistant Secretary
Environment, Safety and Health

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