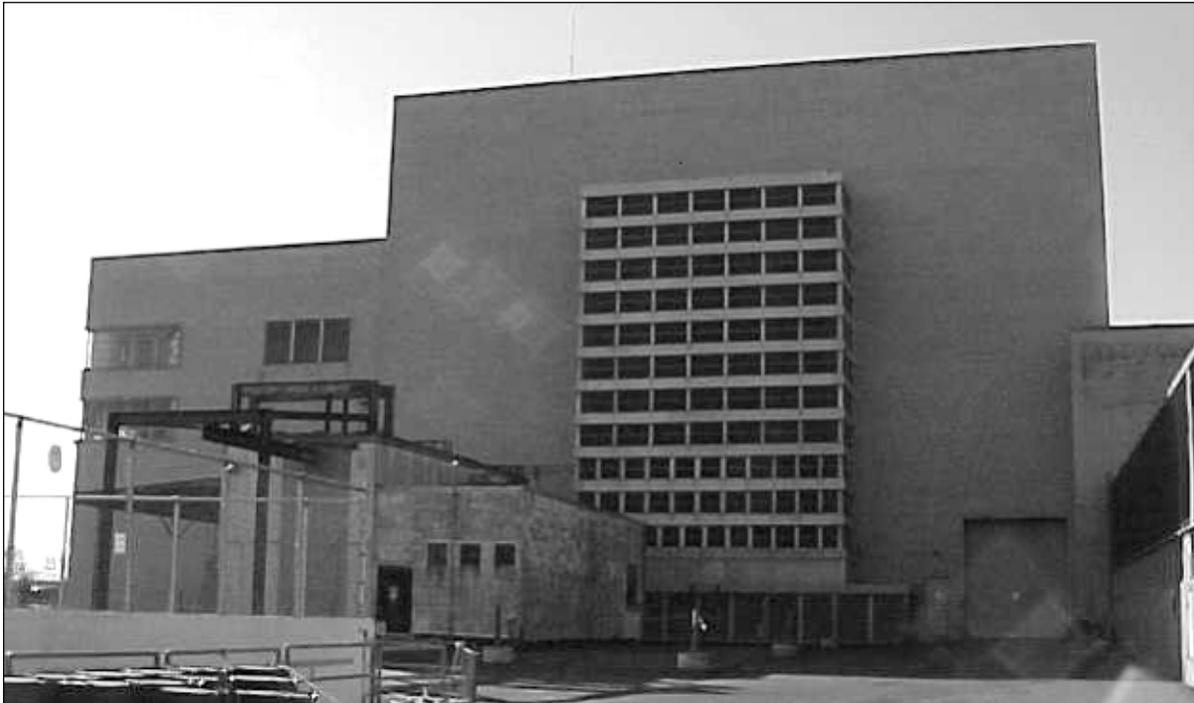




## FACT SHEET

# Brookhaven Graphite Research Reactor Removal Action Alternatives Study



Building 701 (Reactor Building) surrounds Building 702 (Reactor Pile). Office space in this building (on the left side) is used by the BGRR Decommissioning Project Team. In use from 1950 to 1969, the reactor was deactivated in 1972.

### **What is the BGRR?**

The Brookhaven Graphite Research Reactor, or BGRR, was the first major research facility constructed at the U. S. Department of Energy's Brookhaven National Laboratory. It was the world's first research reactor dedicated solely to the peaceful exploration of atomic energy. Research at the graphite reactor led to breakthroughs in nuclear physics, medicine, and technology.

The graphite reactor operated from 1950 to 1969. Final decommissioning at this facility

is now underway as part of a nation-wide Department of Energy project to clean up legacy waste.

### **What is the "BGRR Removal Action Alternatives Study"?**

This report describes the range of alternatives which have been considered for the remediation of the BGRR. Once potential alternatives were identified, they were evaluated for feasibility, cost effectiveness, and how well each of them met legal requirements and community concerns.

## What are the possible alternatives for decommissioning the BGRR?

The project team reviewed possibilities ranging from taking no action at all (an alternative required by law) to full removal of buildings and equipment. Seven basic alternatives were considered in the report.

**Alternative 1**, the “no action” alternative, would involve surveillance and monitoring of the facility for the next 50 years, without taking any removal action. This alternative must be included as a baseline against which other alternatives are compared.

**Alternative 2** would address three areas:

- the requirements of the Interagency Agreement between the Department of Energy, the Environmental Protection Agency, and the New York State Department of Environmental Conservation;
- the sealing of the reactor pile; and
- the “common elements” of all alternatives, except Alternative 1.



Remediation of the Canal House (above) is one of the removal actions that would be performed in Alternatives 3, 4, 5, 6, and 7.

The “common elements” include: disposal of water collected from the underground cooling ducts; removal of fans and decontamination of the Fan House; removal of the pile fan sump; isolation of Building 701 (Reactor Building) from Building 703 (Reactor Laboratory); and removal of soils found to be above remedial action levels.

The project team determined that Alternative 2 does not sufficiently address potential contamination issues.

**Alternative 3** would include all activities of Alternative 2, plus remediating the below ground ducts, filters, coolers, Instrument House, Canal House, Water Treatment House, and the spent fuel canal. Experimental equipment would be removed from Building 701. The project team identified this as a viable alternative that should be examined further.

**Alternative 4** is the same as Alternative 3, plus removal of reactor operational support equipment and systems (such as the control rod drive mechanisms and the charging elevator) from Building 701. The project team feels this is a viable alternative, too, and should be examined further.

**Alternative 5** includes all activities listed in Alternative 4, plus the removal of Building 701, and the construction of a weather-tight cocoon around Building 702. Building 702 is the reactor pile itself and is wholly enclosed within Building 701. The project team feels little is to be gained by removing Building 701, and replacing it with another protective structure around Building 702.

**Alternative 6** would include all activities listed in Alternative 4, plus removing Building 702 while leaving Building 701 intact. The project team has determined that this alternative creates risk for workers, and would require handling and transportation of large amounts of various types of waste materials, including clean, hazardous, and radioactive waste. This alternative, however, also allows the reuse of buildings while removing the pile. Therefore, the project team feels that this alternative should be examined further.

**Alternative 7** would remove all BGRR-related structures and equipment, including

Buildings 701 and 702. In addition to the worker risk and the handling and transportation of large amounts of waste, this alternative is significantly more expensive because of the cost of removing structures and the loss of a useful building, 701.

### How will the decision be made?

Choosing among the alternatives involves balancing community values, legal requirements, Laboratory land use expectations, and environmental protection. Ultimately, the Department of Energy will make this decision based on all of these factors.

### Is there a recommended alternative?

Alternatives 1 and 2 do not meet the criteria set by legal requirements and community values. Alternatives 5, 6, and 7 are increasingly expensive, present worker risks, and require handling and transportation of large quantities of waste. Further analysis in the form of an *Engineering Evaluation/Cost Analysis* for Alternatives 1, 3, 4, and 6 is expected.

### How can you get involved?

Although public input on this document is not a legal requirement, it is important to the BGRR project team. Therefore, there will be a public comment period before the final document is prepared. The public comment period will close on February 28, 2000.

On January 28, 2000, the *Removal Action Alternatives Study* will be available electronically at <http://www.bgrr.bnl.gov/>. People without web access may contact Jen Clodius at 631-344-2489, or [clodius@bnl.gov](mailto:clodius@bnl.gov) for a copy of the Executive Summary of the document.

The entire draft document is available for public review at the Longwood Public Library, the Mastics-Moriches-Shirley Public Library, the BNL Research Library, and the U.S. EPA Region II Library.



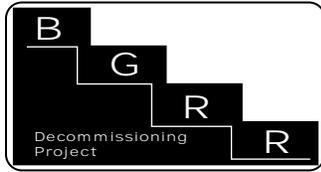
Project engineers balance community values, legal requirements, cost, and effectiveness as they develop removal alternatives.

### Opportunities to provide input

- **Workshop:** The BGRR project team will host a walk-in workshop explaining the document format on February 1, 2000 from 4:30 to 7:30 at Berkner Hall, BNL. Information presented at that meeting will also be made available on the web.
- **Open House:** Additionally, there will be an "open house" question-and-answer opportunity on February 16, 2000 from 3:00 to 6:30 at the BGRR at BNL.

For reservations for either session, or for directions, please contact Kathy Gurski at 631-344-7459, or [gurski@bnl.gov](mailto:gurski@bnl.gov).

- **E-mail** comments to James D. Goodenough, [goodenough@bnl.gov](mailto:goodenough@bnl.gov)
- **Mail** to BGRR Decommissioning Project Team, Building 701, Brookhaven National Laboratory, Upton NY, 11973-5000
- **Future:** Additional opportunity to provide input will be provided after the *Engineering Evaluation/Cost Analysis* is issued. Notice about up-coming decommissioning activities, documents, and public meetings are posted on the BGRR web site, at <http://www.bgrr.bnl.gov>.



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## Brookhaven Graphite Research Reactor Decommissioning Project Update



### Inside:

- **Brookhaven Graphite Research Reactor Decommissioning Project update**
- **public involvement opportunities**
- **meeting announcements**

### **For more information:**

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