

**U.S. Department of Energy**  
**Oak Ridge Operations, Oak Ridge, Tennessee**

**FINDING OF NO SIGNIFICANT IMPACT FOR AUTHORIZING THE  
PUERTO RICO ELECTRIC POWER AUTHORITY (PREPA) TO ALLOW  
PUBLIC ACCESS TO THE BOILING NUCLEAR SUPERHEAT (BONUS)  
REACTOR BUILDING, RINCÓN, PUERTO RICO**

**AGENCY:** Department of Energy

**ACTION:** Finding of No Significant Impact

**SUMMARY:** The U.S. Department of Energy (DOE) has prepared an environmental assessment (EA), DOE/EA-1394, for authorizing the Puerto Rico Electric Power Authority (PREPA) to allow public access with existing controls to the Boiling Nuclear Superheat (BONUS) reactor building in Rincón, Puerto Rico. The BONUS was an experimental reactor constructed from 1960 to 1962 through the combined efforts of the Atomic Energy Commission (AEC, predecessor to DOE) and the Puerto Rico Water Resources Authority (PRWRA, predecessor to PREPA). The facility operated from 1962 to 1968, when it was shut down for economic reasons and the reactor was subsequently decommissioned. Decommissioning included: (1) removal of all special nuclear materials and certain highly activated components for disposal on the United States mainland, (2) in-place entombment of the pressure vessel and internal components within a three-story-tall concrete monolith within the dome-shaped reactor building, and (3) decontamination of contaminated systems located outside the entombed pressure vessel.

PREPA has proposed development of the BONUS reactor building as a museum that would be open to the general public, since this facility is one of only two reactors of this design ever built. Although the BONUS reactor building and associated equipment is owned by PREPA, DOE retains title to radioactive materials within the facility. Residual radioactive material is present in some areas of the reactor building, including the main level, which is the proposed site for the museum. Since DOE retains ownership for this material, DOE must ensure that the development of the proposed museum would not result in unacceptable radiation exposure of the public. The proposed action considered in the EA is limited to authorizing PREPA to allow public access to the proposed museum with existing controls. Radiological monitoring and surveillance would continue at the facility under the proposed action, although the potential for radiological exposure is considered to be low.

Based on the analyses in the EA, DOE has determined that the proposed action does not constitute a major Federal action significantly affecting the quality of the human environment, within the meaning of the *National Environmental Protection Act* of 1969 (NEPA), 42 U.S.C. Code § 4321, et seq. Therefore, the preparation of an environmental impact statement (EIS) is not required, and the Department is issuing this Finding of No Significant Impact (FONSI).

**PUBLIC AVAILABILITY:** Copies of the EA and FONSI are available from:

U.S. Department of Energy  
Information Center  
475 Oak Ridge Turnpike  
Suite 300  
Oak Ridge, Tennessee 37831  
(865) 241-4780

For further information concerning the DOE NEPA process, contact:

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Oak Ridge, Tennessee 37831-8540  
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**PUBLIC PARTICIPATION:**

The DOE Oak Ridge Operations Office issued an Environmental Assessment Determination (EAD) on March 29, 2001. In April 2001, DOE notified affected and interested stakeholders of its intention to authorize PREPA to allow public access to the BONUS reactor building in support of PREPA's proposal to develop a public museum at this facility. A public information meeting was held in Rincón, Puerto Rico on April 19, 2001.

The draft EA was distributed for public comment in August 2001, and the public comment period ended on October 17, 2001. Copies of the draft EA were distributed by mail to identified interested parties, and multiple copies were placed in the public library in Rincón.

A public notice of availability was published in the local newspapers announcing the availability of the draft EA for review. Public meetings were scheduled to be conducted on September 18, 19, and 20, 2001, in Rincón, but were canceled due to travel restrictions following the tragic events of September 11, 2001. Comments were received only from the U.S. Department of the Interior, Fish and Wildlife Service, regarding potential concerns about threatened and endangered species, and these comments have been addressed in the final EA.

**DESCRIPTION OF PROPOSED ACTION:**

Under the proposed action, DOE would authorize PREPA to allow public access to a museum to be developed within the BONUS reactor building. Under the proposed action, DOE would continue to provide radiological monitoring of the facility, including monitoring and surveillance of the concrete monolith within the BONUS reactor building, to ensure that no unacceptable radiation exposures occur. Public access would be allowed in the outer portion of the ring on the reactor floor. Public access to the basement and the other portions of the reactor-building

interior would be prohibited. Metal or plexiglass barricades and other physical barriers have been installed to prevent access to these areas, and these physical and administrative controls would be maintained under the proposed action. Residual radioactive materials exist in portions of the building where public access would be allowed, but are primarily fixed in place, and not removable and do not represent risk to the public, workers, or the environment.

## **ALTERNATIVES:**

Two alternative to the proposed action were evaluated: (1) the no-action alternative (i.e., continued monitoring and surveillance of the BONUS facility without allowing public access), and (2) authorizing PREPA to allow public access to the BONUS reactor building for use as a museum only after additional decontamination to remove residual radioactivity above guidelines. Additional alternatives considered but not evaluated in detail included the removal and disposal of the concrete monolith, including shipment to an off-site disposal facility; and modification of the BONUS facility to enhance the structural stability of the reactor building and monolith structure.

### **No-Action Alternative**

The no-action alternative is considered in accordance with the requirements of National Environmental Policy Act (NEPA) regulations (40 CFR 1500-1508), and provides a baseline against which the proposed action and other alternatives can be compared. Under this alternative, public access to the facility would not be allowed and the proposed development of a museum at this location would not proceed. Radiological monitoring and surveillance of the BONUS reactor facility by DOE would be continued.

### **Authorizing PREPA To Allow Public Access Following Additional Decontamination**

Under this alternative, additional decontamination would be performed in those areas where elevated levels of residual radioactive materials remain above DOE guidelines, in order to further reduce radioactivity levels within the facility. Residual radioactivity above guidelines would be removed using standard decontamination techniques, such as scabbling of concrete surfaces, or additional shielding materials would be installed to reduce potential radiation exposures. The concrete monolith will remain inside the facility with residual radioactivity above DOE guidelines, and administrative and physical controls will maintain it as a restricted area to the public. Therefore, DOE would continue to be responsible for radiological monitoring and surveillance of the facility.

Following completion of the additional decontamination efforts, public access to a museum developed at the BONUS facility would be authorized. Public access would be allowed in the outer portion of the ring on the reactor floor and other specified areas of the building where residual radioactivity meets DOE guidelines; public access to the reactor monolith and any portions of the building containing residual radioactivity above DOE guidelines would be prohibited. Metal or plexiglass barricades and other physical barriers and administrative controls would be maintained to prevent access to these areas under this alternative.

## **ENVIRONMENTAL IMPACTS OF THE PROPOSED ACTION:**

The potential environmental impacts of the proposed action and alternatives were analyzed in the EA. All components of the proposed action were reviewed and appropriate agencies concerned with the protection of wildlife, threatened and endangered species, and cultural and historic resources were notified of the proposed action (authorizing PREPA to allow public access to the BONUS reactor building as a museum). Through the application of best management practices and with the implementation of appropriate mitigative measures, potential adverse environmental impacts to soils, water resources, and ecological resources would be expected to be minimal. The FONSI for the proposed action is based on the following factors, which are supported, by information and analyses in the EA.

### **Demography and Socioeconomics**

The proposed action would be expected to have positive socioeconomic impacts both in the short-term and long-term. Short-term impacts would include increased employment during the renovation of the BONUS facility and development of the proposed museum. Longer-term impacts would include employment of museum staff, guards and ancillary personnel, and also increased tourism revenues from museum visitors. No environmental justice concerns are associated with the proposed action, as there would be no high and adverse impacts, which would disproportionately impact any minority or low-income population.

### **Land Use**

The proposed action would have no negative impacts on land use at the BONUS reactor site. The currently inactive BONUS facility would be operated as a museum for the public benefit. Surrounding land use would be unimpacted, except for the potential development of additional service businesses that might be developed in the vicinity to serve the increased tourist traffic.

### **Geology and Soils**

No adverse impacts to geology and soils would result from the proposed action. The proposed action would take place within the existing reactor building and would result in renovation of the facility as a public museum.

### **Air Quality**

Impacts to air quality would be negligible. There may be some increase in automobile traffic, both by construction workers during development of the museum facility and by visitors to the museum after its opening. However, any increase in traffic congestion and vehicle exhaust emissions would be expected to have negligible impact on local air quality.

## **Hydrology and Water Quality**

No adverse impacts to hydrology and water quality would occur under the proposed action. The proposed action would take place within the existing reactor building and would involve no planned releases to surface water or groundwater.

## **Floodplains and Wetlands**

No impacts to floodplains or wetlands have been identified under the proposed action. The BONUS site does not lie within the 100-year floodplain of any surface water body, and no wetlands have been identified at the site. All operations would be conducted within the existing BONUS reactor building.

## **Ecological Resources**

No adverse impacts to ecological resources would be expected under the proposed action. All operations would be conducted within the existing BONUS reactor building.

The beaches adjacent to the BONUS facility provide potential nesting habitat for the endangered hawksbill sea turtle (*Eretmochelys imbricata*) and leatherback sea turtle (*Dermochelys coriacea*). In addition, the endangered plant *Buxus vahlii* is known to grow on the BONUS property. This site is one of five known locations on the island of Puerto Rico and it has one of the largest populations of this endangered plant. Since the scope of this DOE proposed action is limited to authorizing PREPA to allow public access to the proposed museum, the U.S. Department of Interior, Fish and Wildlife Service has concurred with DOE's determination that the proposed action is not expected to adversely impact any endangered species or its habitat.

## **Historical, Cultural and Archaeological Resources**

No adverse impacts to historical, cultural or archeological resources would occur under the proposed action. All activities would take place within the existing BONUS reactor building. DOE discussions with the Advisory Council determined that no formal consultation with the State Historic Preservation Office would be required for the proposed action, and that the proposed action would be considered beneficial to the preservation of historical and cultural resources.

## **Noise**

Noise impacts from the proposed action would be negligible. A minor, short-term increase in noise may be associated with renovation of the BONUS facility and construction of the proposed museum. Increases in vehicular traffic associated with the new museum would be expected to have a negligible impact on noise over the longer term.

## **Transportation**

Transportation impacts associated with the proposed action would be minimal. There may be a minor increase in automobile traffic, both by construction workers during development of the museum facility and by visitors to the museum after its opening. However, no modification of roads or other infrastructure would be required to accommodate the additional traffic.

## **Human Health and Safety**

No detrimental impacts to human health and safety would occur under the proposed action. Monitoring and surveillance of the renovated BONUS facility would continue to ensure that no radiation exposures in excess of applicable radiological protection standards would occur and that any physical or chemical hazards comply with applicable occupational, health and safety standards. Worker and visitor scenarios were studied and presented in the EA. Estimates of potential radiation dose to facility workers and the public are well below the limit of 100 mrem/year for members of the public set by DOE and the Nuclear Regulatory Commission. All radiation exposures would be reduced to levels as low as reasonably achievable (ALARA) in accordance with the PREPA radiation protection program for the BONUS facility. No unique occupational health and safety hazards would be associated with the proposed action; potential hazards, such as falls, spills, vehicle accidents, and injuries from tool and machinery operations, would be routine industrial hazards, which would be managed in accordance with OSHA requirements.

## **Accidents**

Accident impacts associated with the proposed action would be minor. No radioactive or hazardous materials at the facility would be available for release under plausible accident scenarios. Accidents could occur during construction activities or operation of the new museum due to operator error, equipment malfunction, or from natural phenomena, but would be comparable to those at other industrial facilities and would be mitigated through appropriate safety procedures. Transportation accidents also could occur but would be expected to be similar to those that could occur under existing conditions at the BONUS site.

The site of the BONUS reactor building is susceptible to impact from hurricanes, and the basement area has been known to experience flooding during such events. Based on evaluation of the design basis accident, specifications of the reactor entombment system, and facility surveillance and monitoring, the existing entombment system is expected to be capable of withstanding anticipated hurricane, earthquake, and accident events.

## **Waste Management and Waste Minimization**

The proposed action would have no impacts pertaining to waste management and waste minimization.

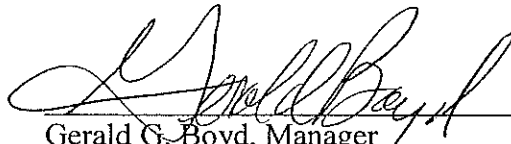
## **Cumulative Impacts**

The proposed action would have minimal cumulative impacts on local or regional air quality, surface water and groundwater resources, existing habitats and biota, socioeconomics, transportation, and public and occupational health. Cumulative impacts would not be expected to increase appreciably over those that currently exist around the BONUS reactor site.

## **DETERMINATION:**

Based on the analyses contained within the EA, DOE has determined that the proposed action to authorize the Puerto Rico Electric Power Authority (PREPA) to allow public access to the BONUS reactor building does not constitute a major Federal action significantly affecting the quality of the human environment within the meaning of the National Environmental Policy Act of 1969. Therefore, an Environmental Impact Statement on the proposed action is not required.

Issued in Oak Ridge, Tennessee, this 24th day of February, 2003.

  
Gerald G. Boyd, Manager  
Oak Ridge Operations Office