

# What role should the INL play in the production of plutonium-powered batteries?

The United States Department of Energy is mulling over various options for production of plutonium-powered batteries for deep space exploration and national security applications. Public comment on options outlined in the *Draft Environmental Impact Statement for the Proposed Consolidation of Nuclear Operations Related to Production of Radioisotope Power Systems* will be accepted through August 29, 2005. (See [www.Oversight.state.id.us](http://www.Oversight.state.id.us) for details on how to comment.)

## Background

In January 2001, the federal government decided to resume production of plutonium-238 (Pu-238) to support space exploration. This draft Environmental Impact Statement is not revisiting the decision to produce Pu-238 for use in batteries, but it is taking another look at where and how to do so.

The INL currently assembles these batteries. DOE's decision in 2001 selected the Idaho National Laboratory's Advanced Test Reactor, along with an existing reactor at Oak Ridge National Laboratory, to restart Pu-238 production.

In the recent draft Environmental Impact Statement, now available for public review and comment, DOE is revisiting whether to consolidate all plutonium-238 and power supply production activities at INL, including activities currently performed or planned at National Laboratories in Tennessee and New Mexico.



## Idaho recognizes concerns, seeks balance

The state works to strike the right balance of competing interests—a strong economy, reliable energy, a healthy environment, open government, security from those who would do us harm, addressing present needs, ensuring bright futures for our children.

The proposal we're discussing today is a significant opportunity for the INL and for the State of Idaho to make contributions to national goals we support – the exploration of space and the security of our country.

However, we must look beyond national interests, research potential and economic benefits to judge such opportunities. Nuclear work at the INL has not only been a source of public pride and economic benefit in Idaho, it has also been a source of public concern and mistrust.

We must learn from history as we look to strike the right balance. DOE is still dealing with contamination from activities during the Cold War, when the federal government was less accountable for how its activities affected the environment. The resulting environmental problems, combined with a culture of secrecy in the Department of Energy and its predecessor agencies, led to public mistrust and suspicion.

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We have made progress since the 1980s. Environmental laws, legal agreements, and other measures now ensure site activities meet environmental standards and remedy historic problems. We have greater independent oversight and environmental monitoring.

We must ensure new proposals keep us on the right track.

### State concerns and conditions

It makes sense for DOE to evaluate reducing shipments and improving operations by consolidating all its battery production activities at INL.

The state needs to be sure that the project will:

- Protect people—both the public and workers—and the environment, from start to finish.
- Ensure DOE meets environmental standards and honors existing commitments for cleanup and waste removal at INL.
- Provide for independent oversight.

### Protection of people and the environment

DOE has to have clear plans for safely managing and disposing of waste from the project. DOE must also plan up front what would happen to facilities at the end of the project. The state isn't satisfied with how plutonium processing activities are currently conducted at Los Alamos. DOE must show how it would improve these operations before bringing them to Idaho.

### Compliance with existing agreements

DOE must earn and retain the trust of the citizens of Idaho if it intends to successfully compete for nuclear projects. Compliance with the agreements it has made with the state of Idaho is a key component of gaining trust.

### Independent oversight

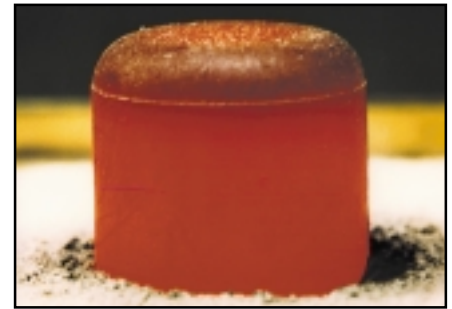
There must be independent oversight of these activities. When the balance between open government and national security favors secrecy, independent oversight and monitoring help protect human health and the environment.

DOE has said all activities conducted in Idaho would be subject to independent examination and scrutiny, and we insist those functions be spelled out.

The state will continue to review the draft Environmental Impact Statement and consider public comments that the DOE receives with these criteria and questions in mind. The state expects to submit additional comments after completing our review.

This proposal is an opportunity for Idaho, but we will do our homework to make sure it merits our support.

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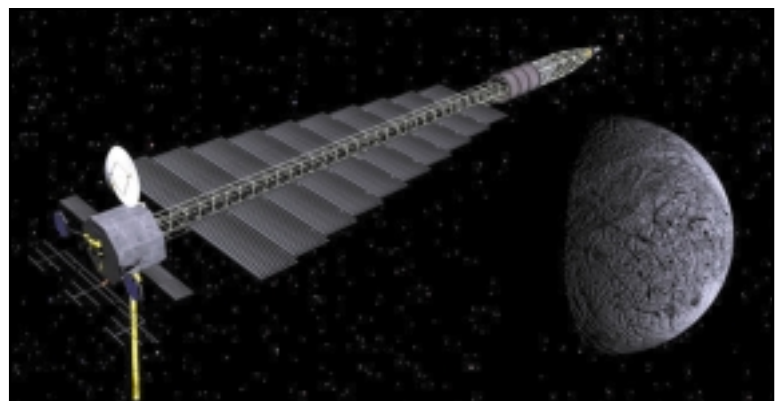
*Hot plutonium-238 dioxide used in an RTG for the Cassini mission to Saturn or the Galileo mission to Jupiter. (DOE/Los Alamos)*



*Abandoned Soviet RTGs. The former Soviet Union used RTGs for unmanned lighthouses and navigational beacons. photo credit: Finnmark region government (c) .*



*Above: Apollo 12, one of the many lunar missions that carried RTGs. Below: An artist's vision of Prometheus, a planned RTG- powered spacecraft. (NASA)*

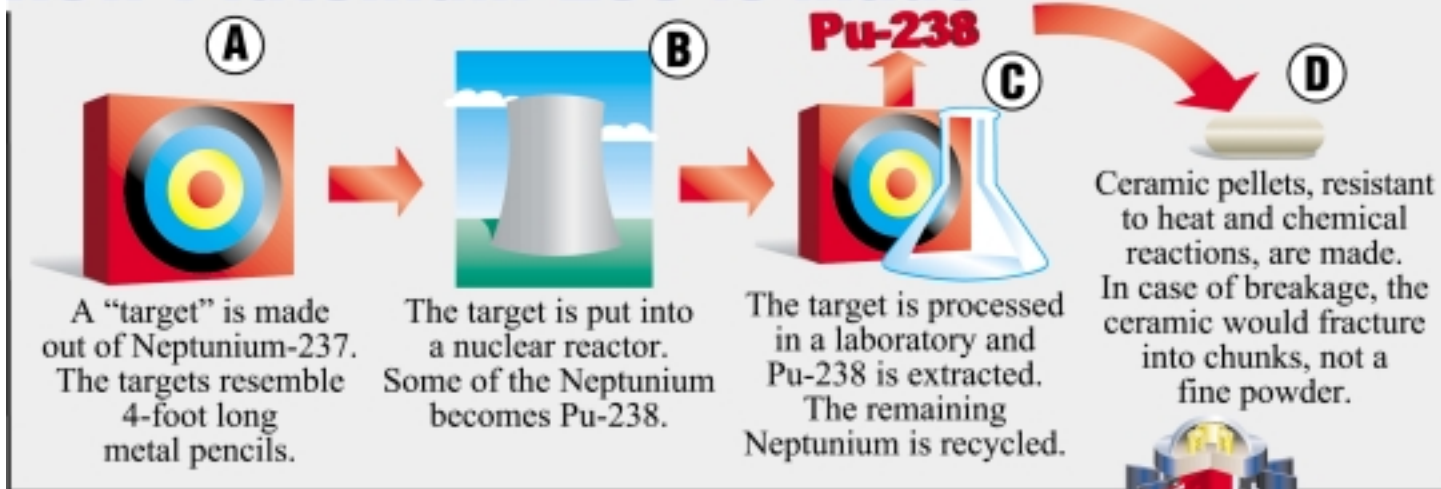


## Why plutonium-238?

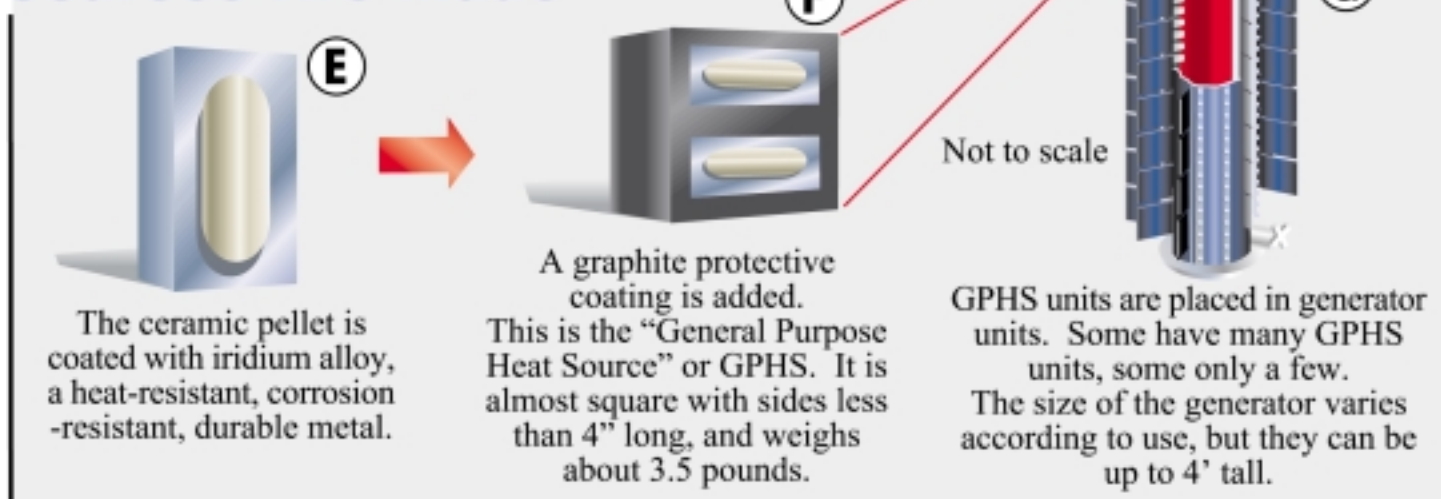
*Heat-generating properties of plutonium-238, different from the type of plutonium used to make nuclear weapons, make it a good power source for applications that require a steady source of heat for many years.*

*Plutonium-238's half-life is 88 years, so generators powered by these batteries are expected to last for decades. Some have already done so.*

## How Plutonium-238 is made



## How General Purpose Heat Sources Are Made



## More Information

The entire draft Environmental Impact Statement is on-line at <http://consolidationeis.doe.gov/>. Public comments will be accepted until August 29, 2005. See the Oversight web site at [www.oversight.state.id.us](http://www.oversight.state.id.us) for more information about the proposal and related issues.





# Radioisotopic thermal generator decision pondered

*United States has decided it needs plutonium-powered batteries, now deciding how and where they should be made*

Power units called “space batteries,” “Radioisotope Thermoelectric Generators,” or “RTGs,” have been in use since the 1960s. The United States uses RTGs to power things that need a reliable source of power in remote locations. Other countries have used them (sometimes powered by other radioactive isotopes) to power things like lighthouses, radio beacons, and weather stations.

The United States uses plutonium-238 to create “general purpose heat sources” to power RTGs. Pu-238 is different from the plutonium used in nuclear weapons. It has a half-life of 88 years; Pu-239, the type used in weapons, which has a half-life of 24,000 years.

Pu-238 purchased from Russia has been used to create RTGs to power space exploration, and stockpiled (domestic) Pu-238 has been used for military applications. Agreements with Russia prevent us from using Pu-238 it sells us for military applications. The domestic stockpile is dwindling, and the demand for

Pu-238-powered generators is growing.

The United States now faces a decision: how and where should these batteries be made?

Some steps of the process—the assembly and testing of generator units—already occurs at the Idaho site. Production of the units that power the generators, called “general purpose heat units,” occurs elsewhere.

Options for production of RTGs are outlined in the *Draft Environmental Impact Statement for the Proposed Consolidation of Nuclear Operations Related to Production of Radioisotope Power Systems*. One proposal involves shifting all of the steps involved in production of RTGs to Idaho.

**Inside this issue: focus on RTGs**

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