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AUTHOR: GOV Gary Locke
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SUBJECT: Concerns expressed by Citizens for Medical Isotopes regarding the FFTF in Hanford

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GARY LOCKE
Governor



STATE OF WASHINGTON
OFFICE OF THE GOVERNOR

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January 16, 2004

The Honorable Spencer Abraham, Secretary
U.S. Department of Energy
1000 Independence Avenue
Washington, D.C. 20585

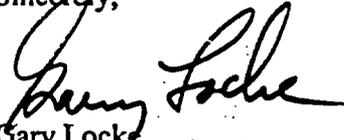
Dear Secretary Abraham:

I am writing to bring to your attention two strong concerns expressed by the Citizens for Medical Isotopes (CMI) regarding the Fast Flux Test Facility (FFTF) in Hanford.

The first concern is that the Department of Energy (DOE) is proceeding with decommissioning activities relating to the FFTF. In his February 2003 decision, U.S. District Court Judge Edward Shea found that deactivation and decommissioning are not connected activities, and that the DOE may continue its deactivation work. However, Judge Shea also stated that the DOE must prepare an Environmental Impact Statement (EIS) prior to deciding on a decommissioning plan. The CMI argues that the recently signed "start to finish" contract eliminates any meaningful distinction between deactivation and decommissioning. By moving ahead as anticipated, the DOE will, in effect, preclude options such as a *no action* alternative in a decommissioning EIS. In keeping with the spirit of Judge Shea's decision, I hope the DOE would not engage in any irretrievable actions prior to the completion of the decommissioning EIS.

The second issue pertains to CMI's forceful argument for a commercial role for the FFTF in the areas of food security, homeland security, and medical isotope production. In light of recent developments, I urge you to consider convening a cabinet-level meeting to discuss whether such roles could effectively be performed by this facility. I believe that DOE, Health and Human Services, the Department of Homeland Security, and the Department of Agriculture all should be represented at such a meeting.

Sincerely,



Gary Locke
Governor

cc: Senator Patty Murray
Senator Maria Cantwell
Congressman Richard Hastings
Congresswoman Shirley Hankins
Claude Oliver, Citizens for Medical Isotopes



Locke urges federal meeting on commercial use of FFTF

■ *Sent letter Friday to Energy secretary*

By **Annette Cary**
Herald staff writer

Washington Gov. Gary Locke called for a federal cabinet-level meeting to consider commercial use of Hanford's Fast Flux Test Facility in a letter sent Friday to Energy Secretary Spencer Abraham.

The letter was written after he was approached in the latest campaign launched by Citizens for Medical Isotopes in the Tri-Cities to win support for saving the test reactor. Abraham has called for the reactor to be permanently shut down, and work has started to permanently dismantle it, including draining sodium.

Locke also wrote he hoped the Department of Energy "would not engage in any irretrievable actions" before a required environmental study is completed.

Supporters of the reactor asked him to call for heaters to be turned on for the secondary cooling system. Because the sodium has been drained from that system, the cold weather may cause the pipes to crack and make restart of the reactor unsafe without extensive repairs.

"Doing nothing is irretrievable," said Bob Bromm,

chairman of the Eastern Washington Section of the American Nuclear Society.

A request for bids to dismantle the reactor appears to violate a federal court decision saying that an environmental study must be done before the reactor is decommissioned, according to supporters of a restart.

"By moving ahead as anticipated, the DOE will, in effect, preclude options such as a 'no action' alternative in a decommissioning (study)," said the letter.

The cabinet-level meeting should consider the possible role of the Hanford nuclear reactor for food security, homeland security and medical isotope production, Locke wrote in the letter.

"I believe that DOE, Health and Human Services, the Department of Homeland Security, and the Department of Agriculture all should be represented at such a meeting," he wrote.

The letter mentioned "recent developments," which Kirsten Kendrick, the deputy communications director, said referred primarily to food safety issues.

Although irradiating meat with isotopes produced at the reactor would be unlikely to kill the abnormal proteins characteristic of mad cow disease, it could kill organisms that cause other food-borne illnesses.

Supporters of the reactor said the mad cow issue raised general concerns about food safety.

In addition, supporters pointed out a December article in the newsletter for the Radio-

logical Society of North America that said scientists and doctors lack a reliable source of isotopes for research on new ways to diagnose and treat disease. It also said the United States is too dependent on isotopes produced in other countries, including Canada, Holland, Sweden, Africa and the states of the former Soviet Union.

Locke's letter came after January's cold snap. Even supporters warned cold weather could irreparably damage the reactor.

Benton County Commissioner Claude Oliver said Friday that he believes the plant remains viable.

DOE has referred questions on the issue this month to contractor Fluor Hanford. Fluor has not monitored for damage, because its job is to permanently shut down the reactor, according to a spokesman.

DOE ordered the reactor permanently shut down after Republican and Democratic administrations said there was no economically feasible plan for a restart.

Copies of Locke's letter were sent to Washington's democratic U.S. senators and Republican U.S. Rep. Doc Hastings. State Rep. Shirley Hankins, R-Richland, who met with the governor on the issue on behalf of the citizen group, also was sent a copy.

■ Reporter Annette Cary can be reached at 582-1533 or via e-mail at acary@tri-cityherald.com.



Locke

Fast Flux Test Facility - Unique Capabilities and Vital Missions

Views of the American Nuclear Society
July 2001

FFTF is Unique

FFTF is unique among our test reactors in its size, flexibility in accommodating a wide variety of instrumented test assemblies, high neutron flux, high temperatures for testing, and accessibility for experiment control and measurement instrumentation. In fact, FFTF's instrumentation capability is unmatched by any other reactor of its kind in the world. The facility was built to the highest design and construction standards. Many of the quality assurance concepts used today in the commercial nuclear power industry were applied at FFTF.

FFTF provides the United States with technical capabilities not available abroad, capabilities that will be sought out by other countries. In fact, the foreign fast reactor capabilities that do exist are rapidly diminishing. The last French fast reactor is to be shut down in a few years, the Monju reactor in Japan has an uncertain future, and one reactor in Russia may well be the only large fast reactor other than FFTF available.

In addition, FFTF's capability of producing essentially any neutron spectra desired makes it the preferred, and some cases the only, tool for materials research that can support many of the new Generation IV power reactor design concepts.

What FFTF Can Do

In the energy area, FFTF can provide important support, such as:

- Superior accelerated fast flux damage testing of ceramics and innovative cladding materials.
- Feasibility testing of fuels studied as part of the Nuclear Energy Research Initiative (NERI).
- Testing of some of the DOE Generation IV reactor concepts and direct-energy conversion systems (the lack of FFTF may cause abandonment of some of these promising concepts).
- Demonstration of proliferation-resistant recycling of spent nuclear fuel.

Outside the energy area, FFTF has several additional roles. For example, it can offer:

- High-temperature irradiation tests in support of nuclear space missions and nuclear fusion materials requirements.
- Production of radioisotopes for medical purposes, especially cancer therapy.
- Candidate fuel performance tests and materials testing for transmutation systems (accelerator- and reactor-based).
- Production of radioactive materials needed to demonstrate experimentally the practicality and economics of separations technology proposed for partitioning and transmutation of high level nuclear "waste."

Other Considerations

The DOE EIS issued last year appears to be incorrect in concluding that projected needs for

U.S. medical and other, high atomic weight, isotopes can be met by other U.S. test reactors without interfering with other missions. In this connection, please consider the following:

- Most of the test holes at the two other U.S. test reactors would be totally occupied in providing one key isotope for the DOE-estimated needs for the space program.
- Projected terrestrial production needs of the same key isotope appear not to have been considered.
- The development and production of existing and new medical isotopes are almost certainly curtailed because of a lack of available production facilities.
- Economical production of isotopes in FFTF will allow multipurpose missions at other facilities.

Although beyond the scope of the American Nuclear Society review, it is well known that FFTF has the backup capability to make significant contributions to the national security program by the production of tritium.

Preserving America's Nuclear Energy Options

The FFTF is important for preserving various nationally strategic nuclear energy options. For example,

- Without a facility such as FFTF, some concepts for new nuclear power generation cannot be brought to fruition.
- The closure of some older test reactor facilities and the aging and closure plans for others abroad have substantially increased the importance of FFTF.
- FFTF would provide the ability to develop technology and perform fuel testing to preserve options for recycling commercial reactor fuel after a few decades (and reduce the volume of high-level "waste"), and also support synergistic transmutation concepts.

To construct a facility in the future with the required research and development capabilities would cost well over \$2 billion - many times the restart costs for FFTF.

Monju restart called vital for fast reactor research

The 16-member Technical Working Group on Fast Reactors (TWG-FR), the oldest standing expert advisory group of the International Atomic Energy Agency (IAEA), agreed at its 36th annual meeting—held in Daejeon, South Korea, May 12–16—that the restart of Japan's Monju prototype fast breeder reactor would be crucial for fast reactor development worldwide.

Asked to explain Monju's significance, scientific secretary Alexander Stanculescu told *Nuclear News* that if Monju did not restart within about five years, there would not be a fast reactor anywhere in the world that could be used as an irradiation tool when France's Phénix (itself due to be recommissioned soon, but for a limited lifetime) is finally closed.

"Then everything that needs to be done in R&D of new fuels, especially for transmutation cores, fuels that contain high content of minor actinides, will be held up. All those fuels have to be developed and they have to be irradiated in order to qualify them. You need a reactor to do this, and Monju [will be] the only one. So the expectation is that it will restart before or at least in parallel with the Phénix closure."

Stanculescu said the buzz words for the fast reactor community are international cooperation, adding "this is fine, but everything people are talking about right now—for instance, the U.S. Advanced Fuel Cycles Initiative, which is looking at how to utilize plutonium and reduce radiotoxicity of waste, initially in current water reactors, and later possibly in fast reactors and much later maybe in accelerator-driven systems—for all these, you need to develop the new fuels, and for that you need irradiation reactors. And there will be none."

He said that the U.S. Experimental Breeder Reactor (EBR-2) is being decommissioned, "the fuel is out and being reprocessed already," and the TWG had been informed by U.S. representatives that "the decision has been taken to close the Fast Flux Test Facility (FFTF). . . . So there is no facility in the world apart from Phénix now, and then Monju. That is why Monju is extremely important."

He said that China's 25-MWe/65-MWth experimental fast reactor (CEFR), which is under construction, and India's 13.2-MWe/40-MWth fast breeder test reactor (FBTR), due to start construction shortly, were significant because "they are very necessary links in the respective national FR development, where they will gain experience and will later on have an experimental tool. From the international viewpoint, however, they are, of course, less important than Monju. Monju has higher power and it already exists."

A Japanese paper to the technical working group said the objective of developing Monju—280 MWe/714 MWth, with mixed oxide fuel, cooled by three sodium loops—was to demonstrate the performance, safety, and reliability of a power-generating FBR plant through experience of design, fabrication, construction, operation, and maintenance, as well as to contribute to future FBR development in Japan and worldwide.

The paper, by Yoshiaki Ieda and Takashi Nagata, of the Japan Nuclear Cycle Development Institute (JNC), noted that the plant achieved first criticality in April 1994 and initially supplied electricity to the grid in August 1995. But preoperational tests had been "abruptly interrupted by a sodium leak accident in the secondary heat transport system" in December that year, and the plant has remained shut down since.

A thorough investigation of the cause of the accident from the technical viewpoint and a comprehensive post-accident safety review had been done and countermeasures were drawn up, including:

- a. Modification of thermocouple cells, to prevent sodium leakage.
- b. An additional monitoring system with an enhanced camera network, for early detection of sodium leakage.
- c. Modification of drain circuits, to reduce sodium leakage both in amount and duration.
- d. Further subdivision of the building into airtight zones for the secondary circuits and application of an additional nitrogen gas injection system, for rapid extinguishing and reignition prevention.
- e. Coverage of walls and ceilings with insulation material, to suppress moisture release from the concrete structure.

The JNC paper said the Ministry of Economy, Trade and Industry (METI) had approved an application for a safety licensing examination of Monju to get approval for the countermeasures against sodium leakage, as well as one regarding replacement or removal of the secondary heat transport system (SHTS) thermocouples. An application for the modification of the design-and-construction license was made to METI on December 27, 2002, the paper said.

Some lawsuits were still pending, including one in the Supreme Court, but based on the results of extensive efforts to regain public confidence and other factors, the authors said JNC believed that restart approval was on track. But they added that "after completing the safety licensing examination, Monju has to obtain approval for the detailed design-and-construction procedure for actual improvement work." So it would need "at least three years" post-approval, for the actual work, including fabrication/installation, refueling and startup checks, "for the resumption of operation of Monju."

Stanculescu said the working group had not come up with any firm decisions, "but proposed certain measures for the IAEA to