

Committee Correspondence  
**STANDARDS COMMITTEE**

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**Reply to:** W. J. Richards  
Argonne National Lab  
P. O. Box 2528  
Idaho Falls, ID  
83404-2528

The Honorable N. J. Palladino, Chairman  
U. S. Nuclear Regulatory Commission  
Washington, D. C. 20555

Dear Chairman Palladino:

In the last couple of weeks I have been reading a number of articles, some of which I have enclosed with a brief summary, regarding research reactor fuels. I was very dismayed and saddened that such remarks and information have been made and distributed. The problem becomes even larger when an NRC Commissioner uses such emotional wording as is used in the letter to U. S. University Department Heads and also used in the speech before the Japan Atomic Energy Research Institute's International Meeting on Reduced Enrichment.

The research reactor community has been working very hard to maintain a first-class research capability in the U.S. The small research reactors provide a very essential educational training and public information function in this country. For articles of this nature to be read by the public does a disservice to not only the research community but to the NRC as well, as they have been working hard to meet their obligations, also. In addition, one of these articles, Chronicle of Higher Education, actually put the specific reactors at risk.

I realize you have little control over what the press releases or their accuracy may be, but I feel the Commissioners themselves should be very extremely careful in the terminology they use for public release. This is certainly not the case in these articles (see Summary). If an NRC Commissioner is making such statements, it is little wonder that the press is reporting in the same vein.

We in the area of research reactor standards development will continue to strive toward the goals of first-class research facilities and education in the U. S. through efficient and beneficial standards for research reactors. I respectfully request that your cooperation and help in this effort is greatly needed and appreciated.

Sincerely,

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PDR FDIA  
HRSCH44-784 PDR

*Wade J. Richards*  
W. J. Richards, Chairman  
ANS-15 Standards Committee

WJR:kk

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## SUMMARY

1. Remarks before the Japan Atomic Energy Research Institute's International Meeting on Reduced Enrichment, also same terminology used in letter sent to University Presidents:

"The reason we are here is, of course, that the interests of domestic and international security are threatened by use of research reactor fuels that are nuclear explosives, that is to say, highly enriched uranium."

- Only a small number of research reactors actually fit this category; certainly not this broad brush statement. These highly charged words "nuclear explosives" are inappropriate here and in the letter to the University Presidents.

2. The New York Times 1/29/84

Dr. Taylor

- "Quantities of highly enriched uranium, used in research reactors at 23 universities around the nation and an essential ingredient for making nuclear weapons, could easily be stolen by terrorist groups...."

This is not true; not only is the list incorrect (i.e. Oregon State University, Texas A&M, Washington State, and the University of Wisconsin all have 70% fuel which cannot be used to make nuclear weapons) but all these universities have approved security plans.

- The University of Missouri at Columbia and MIT are singled out and the information in this article puts these facilities at risk, especially since there is no mention that the fuels are highly radioactive.

3. NRC Commission

".....urged Friday at a hearing that research reactors be barred from using such uranium....." He also said that "low-enriched uranium would not affect the performance of the reactors".

- This is not the case for Missouri or MIT.

# 23 Colleges' Weapon-Grade Uranium Called Risk

By JANE PERLEZ

Special to The New York Times

WASHINGTON, Jan. 25 — Quantities of highly enriched uranium, used in research reactors at 23 universities around the nation and an essential ingredient for making nuclear weapons, could be easily stolen by terrorist groups or nations intent on acquiring such weapons, a physicist has told the Nuclear Regulatory Commission.

He said the presence of the enriched uranium in universities with often lax security was "highly undesirable and dangerous" and that there was no justification on research grounds for the use of the fuel.

One of the reactors is in New York City, on the campus of Manhattan College in the Bronx.

The physicist, Dr. Theodore B. Taylor, who was on the staff of the Los Alamos National Laboratory and sat on the official panel that looked into the accident at Three Mile Island, said the reactors should be required to use low-enriched uranium, which cannot be used for nuclear weapons.

The Federal agency, at the instigation of one of its Commissioners, Victor Gilinsky, is holding hearings on a possible rule to restrict the use of highly enriched uranium. Mr. Gilinsky urged Friday at a hearing that research reac-

tors be barred from using such uranium as a way for the United States to set an example of its commitment to nonproliferation of nuclear weapons. He also said that low-enriched uranium would not affect the performance of the reactors.

The fuel at commercial power reactors is not sufficiently enriched to be used in the manufacture of nuclear weapons.

The college campuses that have weapons-grade enriched uranium are these:

Manhattan College, Riverdale, Bronx  
Rensselaer Polytechnic Institute, Troy, N.Y.  
University of California at Los Angeles  
University of California at Santa Barbara

University of Florida  
Georgia Institute of Technology  
Iowa State University  
University of Kansas  
University of Lowell (Mass.)  
Massachusetts Institute of Technology  
University of Michigan  
University of Missouri at Columbia  
University of Missouri at Rolla  
Ohio State University  
Oregon State University  
Purdue University  
Texas A&M University  
University of Virginia (two reactors)  
Virginia Polytechnic Institute  
University of Washington  
Washington State University  
University of Wisconsin, Madison  
Worcester (Mass.) Polytechnic Institute

The University of Michigan is converting its reactor from highly enriched uranium to the low-enriched uranium.

The commission allows the University of Missouri at Columbia to have the largest amount of highly enriched uranium, 45 kilograms, roughly 100

pounds, and M.I.T. is second at 29 kilograms. Manhattan College is allowed to have one of the smaller amounts, 3.2 kilograms.

The reactors are chiefly used for the training of nuclear engineers and for medical research.

Dr. Taylor told the regulatory commission, which licenses the university reactors, that he would be "very concerned" about the theft of even one kilogram of highly enriched uranium.

"I want to make sure I am not being taken to say that one kilogram of highly enriched uranium is the minimum quantity necessary to make a bomb," Dr. Taylor said. "The minimum quantity is not a well-defined number at all. It depends on the talents, experience and requirements of the designers."

The administrator in charge of the

reactor at Manhattan College, Ronald S. Kane, wrote to the commission this month that the college opposed changing its reactor fuel unless the costs were assumed by the Government.

Mr. Gilinsky said that it was estimated to cost \$15 million to convert all the reactors and that money seemed to be the only stumbling block. He suggested the Department of Energy pay.

Three key members of Congress, including Representative Richard L. Ottinger, Democrat of Westchester County and chairman of the House Energy and Commerce Subcommittee on Energy Conservation and Power, wrote this week to the chairman of the commission, Nunzio J. Palladino. They said they would seek to legislate the necessary money.

## Uranium at universities insufficiently protected 1/29/84

WASHINGTON (AP) — Enough highly enriched uranium to make a bomb is stored at several universities, sometimes in filing cabinets with a simple burglar alarm wired to the campus police station as the only security measure.

The Nuclear Regulatory Commission is trying to stop the use of the bomb-grade uranium at 25 campus reactors and six others operated by private companies. But the commission is running into opposition from university officials who contend that converting to a lower-grade uranium fuel is too costly.

On Friday, NRC officials said they hope to have new regulations ready by late March that would require the schools and companies to quit fueling their reactors with bomb-grade uranium by 1988.

"I just don't think it belongs on a campus," Commissioner Victor Gilinsky said Friday.

The NRC regulations would provide the enforcement power for a policy announced by the commission in August 1982 to convert the nation's research reactors from 93 percent enriched bomb-grade uranium to a 20 percent enriched vari-

ety less usable in weapons. Most atomic power plants use only 3 percent to 5 percent enriched uranium.

That new NRC policy, viewed as essential for convincing foreign nations to make the same conversion on their civilian research reactors, was endorsed by the Reagan administration as part of its anti-proliferation program.

Implementing it has proven more difficult. Several university officials asked the commission last month for regulations that would allow all but five to seven of the 25 campus reactors to keep on using bomb-grade fuel.

Two schools, the University of Missouri at Columbia and Massachusetts Institute of Technology, have told the commission it is technically infeasible to convert their reactors to the lower grade fuel.

Those two reactors should be given more time to make the conversion but should not be granted exemptions from the regulations that are being sought by the universities, Paul Leventhal of the Nuclear Control Institute told the commission Friday.

# SPEECHES

NO. 8-14-83  
Tel. 301/492-7715

FOR IMMEDIATE RELEASE

Remarks by Victor Gilinsky  
Commissioner, U.S. Nuclear Regulatory Commission  
Before the Japan Atomic Energy Research Institute  
International Meeting on Reduced Enrichment  
for Research and Test Reactors  
Tokai-mura, Japan  
October 24, 1983

## SHIFTING TO NON-EXPLOSIVE FUELS FOR RESEARCH REACTORS

I am very pleased to be able to participate at this International Meeting on Reduced Enrichment for Research and Test Reactors. I would like especially to thank the organizers for their kindness in giving me the opportunity to address the meeting.

I would like to commend the Japan Atomic Energy Research Institute for hosting this meeting, and all of you for participating in this very important activity.

The reason we are here is, of course, that the interests of domestic and international security are threatened by use of research reactor fuels that are nuclear explosives, that is to say, highly enriched uranium. At the same time, technological advances in fuels have made it possible to produce lower enrichment fuels for most, if not all, reactors without significant reduction in performance. We need to make the fullest use of this opportunity. To do this we will need to pool our knowledge and our experience. That is why gatherings such as this one are so important.

The United States has taken a special interest in reducing uranium fuel enrichment not only because of the security significance of this step, but also because we are the supplier of most of the highly enriched uranium in the world, which gives us a special responsibility.

There are several dozen research and test reactors which use U.S.-origin highly enriched uranium. About two-thirds of these are outside the United States. Our highly enriched uranium exports have averaged a couple of hundred kilograms annually, and there are tons of highly enriched uranium of U.S.-origin in use at any one time. Much of this fuel is highly irradiated and therefore self-protecting, but, inevitably, a good deal of it will not be.

The weapons potential of this material -- a bomb could be made using about 20 kilograms -- has dictated careful and frequent inspection by domestic and international inspectors, and tight physical security. A far higher level of protection, however, would be achieved by eliminating the weapon potential altogether. Insofar as research reactors are concerned, the best security is to make use of low-enriched fuels that cannot be exploded.

There is no firm dividing line between uranium that can be exploded and that which cannot until one gets to rather low enrichments. Traditionally, 20 percent enrichment has been considered a reasonable dividing line between low enriched uranium and high enriched uranium and our goal should be to stay below that point. We should, in any case, try to come as close to that goal as possible.

It is interesting that in the first days of the Atoms for Peace program, our international cooperation was restricted to uranium enriched only up to 20 percent. Gradually, for reasons that are much less persuasive today, that restriction was lifted to permit export of many kilograms of almost fully enriched uranium. Among other things, no thought was given at the time to the possibility of nuclear terrorism.

We now live in a different world, in which information and technology which underly bomb design and manufacture are much more readily obtainable. I do not want to minimize the other difficulties, but the main technical barrier to making a bomb is getting the nuclear explosive material. And it is well to remember that nuclear explosives stolen or diverted at one end of our globe can be used or threatened to be used at the other end.

It would be helpful if research reactors did not use such material at all. You are all probably familiar with with the Reduced Enrichment for Research and Test Reactors program established by the Department of Energy to develop and demonstrate the technology that will facilitate the use of reduced enrichment fuels in research and test reactors. The Nuclear Regulatory Commission is very much interested in the REPTR program and fully supports it, as we noted in a recent statement of policy.

The REPTR program is not just an American program, it is an international program and it can succeed only with wide support and participation. Excellent work underway at research laboratories in several countries is making a vital contribution. The cooperative spirit shown by all participants is particularly gratifying.

I know some of you are concerned about the practical difficulties you may encounter with your safety regulatory agencies in modifying your reactors. We at the Nuclear Regulatory Commission intend to demonstrate that conversion to low enriched fuel is not a difficult process by taking steps to enable domestic reactors operating in the United States to convert to low enriched fuels. We are now preparing a proposed regulation limiting the use of highly enriched uranium in domestic reactors.

In this connection, I would like to assure you here today that, with respect to safety studies and requirements, the U.S. Nuclear Regulatory Commission will be prepared to cooperate with reactor operators from other countries in the safety area as it relates to the conversion process. We are ready to consult with you and provide assistance in this crucial area. And we expect to gain from your experience, too.

We are fortunate that this is one problem in the very vexing area of non-proliferation that has a technological solution. We should make full use of the opportunity. Not only does reducing enrichment eliminate the basic security concern much more effectively than inspection or other protection, but it reduces the security burdens on the organizations that use the fuels. Beyond that, by participating in lowering the enrichment of your research reactors you can have the personal satisfaction of knowing that you are helping to make this a safer world.

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# UNITED STATES NUCLEAR REGULATORY COMMISSION

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WEEK ENDING November 1, 1983

## NEWS RELEASES

No. 83-157  
Tel. 301/492-7715

FOR IMMEDIATE RELEASE  
(Thursday, October 27, 1983)

### NRC PUBLISHES SAFETY EVALUATION FOR FULL-TERM OPERATING LICENSE FOR THE GINNA NUCLEAR POWER PLANT

The Nuclear Regulatory Commission staff has published a Safety Evaluation Report on an application of Rochester Gas & Electric Corporation for a conversion of its provisional operating license for the Ginna nuclear power plant to a full-term operating license.

From 1959 to 1971, the former Atomic Energy Commission issued provisional licenses as an intermediate step before issuing a full-term license. The Nuclear Regulatory Commission subsequently stopped its review of applications for conversion of provisional licenses because of a backlog of unresolved generic safety issues.

In 1977, the NRC began a Systematic Evaluation Program (SEP) to reconfirm the safety of older nuclear power plants. The SEP review included plants with provisional licenses. A major portion of the technical review supporting the SER for Ginna comes from the SEP review.

The SER will be reviewed by the independent Advisory Committee on Reactor Safeguards (ACRS). The advice of the ACRS as well as resolution of outstanding matters for which the staff review has not been completed will be addressed in supplements to the SER.

Copies of the SER will be available for public inspection at the NRC Public Document Room, 1717 H Street, N.W., Washington, D.C., and the Rochester Public Library, 115 South Avenue, Rochester, New York. The report, designated NUREG-0944, will be available for purchase at current prices at the National Technical Information Service, Springfield, Virginia 22161 or from the GPO Sales Program, Division of Technical Information and Document Control, Nuclear Regulatory Commission, Washington, D.C. 20555.




OFFICE OF THE  
SECRETARY

UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D.C. 20555

IN RESPONSE, PLEASE  
REFER TO: M840127B

January 31, 1984

MEMORANDUM FOR THE RECORD

FROM: Samuel J. Chilk, Secretary 

SUBJECT: STAFF REQUIREMENTS - COMMENTS ON IMPLICATIONS  
OF A PROPOSED RULE REGARDING USE OF HEU IN  
DOMESTIC RESEARCH REACTORS, 11:15 A.M.,  
FRIDAY, JANUARY 27, 1984, COMMISSIONERS'  
CONFERENCE ROOM, D.C. OFFICE (OPEN TO PUBLIC  
ATTENDANCE)

The Commission\* heard from a panel of speakers on the  
implications of a proposed rule on use of HEU in domestic  
research reactors. Making presentations were:

P. Leventhal, Nuclear Control Institute  
T. Taylor, Nuclear Control Institute  
D. Hirsch, Committee to Bridge the Gap

There were no requirements at the meeting.

cc: Chairman Palladino  
Commissioner Gilinsky  
Commissioner Roberts  
Commissioner Asselstine  
Commissioner Bernthal  
Commission Staff Offices  
EDO  
✓ PDR - Advance  
DCS - 016 Phillips

\* Commissioner Asselstine was not present.

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CMUSC Committee

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