

From: Steven Crockett
To: internet:Joan.Rohlfing
Date: 6/23/98 11:48am
Subject: Some Stray Words in the Tritium Nonproliferation Report

Dear Ms. Rohfling,

I was calling late yesterday about some wordprocessing errors that you may since have corrected, but just in case ... here they are:

Page 2, 2nd full parag., second line:
There should be an "of" before "nonproliferation."

Page 8, footnote 7, 2nd line:
There should be an "it", I think, before "inaccessible."

Page 9, 1st full paragraph, fourth line from the end:
The first "of" in that line should be removed.

Page 9, 1st full paragraph, 3rd line from the end:
There should be an "of" before "HEU-fuel," I believe.

Page 9, 2nd full paragraph, 3rd line:
There should be a "the" before "HEU."

Thanks for letting us read the draft.

Steve Crockett
(Commissioner McGaffigan's staff)

B/3



DEPARTMENT OF ENERGY
Washington, DC 20585

OFFICE OF THE SECRETARY

TO: Commissioner McGaffigan

Phone: 415 - 1800

Fax: (301) 415 - 1890 ~~415-1890~~

FROM: Joan Rohlfing

Phone: 586-8900

Fax: 586-6828

DATE: 6-19

Number of pages 10 (excluding cover)

COMMENTS:

TRITIUM NONPROLIFERATION REPORT

Would like comments by Monday,
7/22/98 am.

*Types on 2, 8, & 9. Otherwise, we have
no comments. Seems fine.*

*- s/c
Conveyed by e-mail to
Rohlfing.*

INTERAGENCY REVIEW
OF
THE NONPROLIFERATION IMPLICATIONS
OF
ALTERNATIVE TRITIUM PRODUCTION TECHNOLOGIES
UNDER CONSIDERATION
BY
THE DEPARTMENT OF ENERGY

A REPORT TO THE CONGRESS
JUNE 1998

INTRODUCTION

This report to Congress is provided in response to the direction set forth in the National Defense Authorization Act for Fiscal Year 1998 (P.L. 105-85) Conference Report. The report directs the Secretary of Energy to utilize a senior level, interagency process to review and assess the issues associated with the commercial reactor option for tritium production.

The Department of Energy (DOE) must establish a new source of tritium to maintain the U.S. nuclear weapon stockpile. Currently, the Department is considering three alternative technologies for producing this material: commercial light-water reactors (CLWRs), a proton accelerator, and an existing research reactor, known as the Fast Flux Test Facility (FFTF). Although the congressional direction required the Department to report only on the issues associated with the commercial reactor option, the Department chose to evaluate the nonproliferation issues associated with all three technology options under consideration. This report reflects the Administration views on all three.

The report outlines the findings of the review and summarizes the conclusions of Executive Branch agencies developed in the course of the review.

**The Nonproliferation Implications
of
Alternative Tritium Production Technologies
Under Consideration
by
The Department of Energy**

Summary of Conclusions of DOE Review

and

Results of Interagency Evaluation

I. Background

The Department of Energy (DOE) must establish a new source for producing tritium needed to maintain the U.S. nuclear weapons stockpile. Tritium, a radioactive isotope of hydrogen, is required for all U.S. nuclear weapons to function as designed. The United States has not produced tritium since 1988, when the last of the defense production reactors at DOE's Savannah River Site was shut down. Because tritium decays at a rate of about 5.5 percent per year, it must be replenished in all U.S. weapons on a routine basis, and a new production source of tritium must be established in order to maintain the reliability of the enduring nuclear weapon stockpile.

It is important to note at the outset that tritium is not a fissionable material capable of sustaining a nuclear reaction. Thus it is not classified as a special nuclear material that would be subject to the prohibition in the Atomic Energy Act on the use of such materials for nuclear explosive purposes if produced in a commercial light water reactor.

In December of 1995, DOE, in consultation with the Department of Defense (DOD), decided to pursue research and development of two tritium production technologies: (1) a commercial light water reactor, and (2) a proton accelerator. In January 1997, Secretary Hazel O'Leary directed that a third technology, an existing DOE test reactor (called the Fast Flux Test Facility), also be evaluated for its potential role in tritium production.

While resolution of any nonproliferation policy issues is important in making a final determination on a future tritium source, it should be noted that the nonproliferation issues identified in this report represent only one of a range of factors that the Department must take into account in making the tritium production technology decision. The Secretary of Energy must also consider cost, technical risk, legal or regulatory challenges, and environmental impacts associated with each option in making his final selection. In particular, it should be recognized

that there can be a wide divergence in the relative attractiveness of the various options depending upon which selection criterion is being considered.

DOE analyses have estimated, for example, that the investment cost of the Commercial Light Water Reactor option could be as low as \$613 million over the next seven years, while the cost of building an accelerator for tritium production is currently estimated to be in the range of \$3.4 - 4.4 billion over a similar time frame. A second critical factor in making the selection of a tritium production technology will be the ability of the respective technologies under review to meet anticipated tritium requirements in a timely and reliable manner. In this respect, the CLWR option promises to meet these requirements, and the accelerator option is also capable of meeting the production requirements. The FFTF, at best, appears able to meet a substantial portion, but not the full requirements, of projected total tritium demand.¹

These points regarding selection factors are highlighted ^{of} at the outset to remind readers that a final decision will not be made exclusively on the basis of nonproliferation considerations, but must be taken in the broader context of the best overall technology after all factors have been thoroughly weighed.

In accordance with the direction provided in the FY 98 National Defense Authorization Conference Report the DOE undertook a two-phased review of the nonproliferation issues associated with the three tritium production options. In the first phase of the review, the Department solicited contributions from elements within the Department, as well as from outside experts recognized in the field of nonproliferation. The DOE "experts group" developed findings and issues that were presented for discussion within the broader interagency context during the second phase of the review, which consisted of a series of meetings and discussions with senior officials in other agencies beginning in April, 1998.

Participants in those meetings included high-level representatives from the National Security Council, the Department of Defense, the Department of State, the Arms Control and Disarmament, the White House Office of Science and Technology Policy, the Office of the Vice President, and the Nuclear Regulatory Commission. *who?*

After an extensive interaction, involving a wide range of Executive Branch agencies, the Administration has concluded that the nonproliferation policy issues associated with the use of a government-owned light water reactor are manageable and that the Department should continue to pursue the reactor option as a viable source for future tritium production. Σ

With respect to the FFTF, there was general agreement that the plutonium-fueled option for the FFTF was undesirable, because after an initial period, it would be necessary to begin

¹ The amount of tritium required to maintain the U.S. nuclear weapons stockpile is classified.

fueling the FFTF with plutonium that the President had declared excess to defense needs and never to be used for nuclear arms. Highly enriched uranium (HEU) could be used as an alternative fuel source for the FFTF, but the use of HEU fuel would run counter to U.S. policy to minimize the use of this fuel globally and would reduce the tritium production output of the FFTF to levels below those required for the stockpile, even under a reduced START II-level requirement.

Finally, there was general agreement that the accelerator options raised no significant nonproliferation policy issues.

II. Summary of Review

Commercial Light Water Reactor

With respect to the nonproliferation impacts of the CLWR option, the DOE review determined that the principal impact was that this option departed from the de facto U.S. policy of separating civilian and military nuclear activities. The review concluded, however, that the use of CLWRs for tritium production was not prohibited by law or international treaty;² that, historically, there had been numerous exceptions to the practice of differentiating between U.S. civil and military facilities;³ and that several factors would mitigate the possible impact of the selection of this option on U.S. nonproliferation policy. On this basis, the Administration has concluded that the nonproliferation policy issues associated with the use of a commercial light water reactor are manageable and that the Department should continue to pursue the reactor option as a viable source for future tritium production.

Background. As just noted, one of the key issues associated with the CLWR option is the potential impact on U.S. nonproliferation policy of using a civil reactor to produce an essential material for U.S. nuclear weapons. The civil/military distinction in U.S. nonproliferation policy evolved gradually during the 1950s and 1960s, as the non-defense component of the U.S. nuclear program grew. The separation facilitated the development of the commercial nuclear power industry, both here and abroad, by insulating that industry from any direct connection to nuclear weapons production. In addition, the civil/military distinction enabled the United States to respond, at least partially, to international demands for nuclear

² If enacted into law, the Markey Amendment to the House-passed version of the FY 1999 Defense Authorization bill would be the first legally binding restriction on the use of CLWRs for the production of tritium for defense purposes.

³ These included the operation of the N-Reactor at Hanford, the dual-use nature of the U.S. enrichment program, and the use of defense program plutonium production reactors to produce radio-isotopes for civilian purposes.

*but none
in a
civil → def.
direction?
Some. See
4-5.*

disarmament, by demonstrating that a significant portion of U.S. nuclear activities were not contributing to the production of nuclear weapons. The bifurcation of the U.S. nuclear program has also facilitated U.S. exchanges with non-nuclear weapon states on the peaceful uses of nuclear energy and provided the basis for U.S. leadership in the International Atomic Energy Agency (IAEA) and other multilateral organizations involved in civil nuclear activities.

Over the years, the policy of distinguishing between military and civilian activities was made more explicit. In 1983, for example, the Hart-Simpson Amendment to the Atomic Energy Act expressly prohibited the use of plutonium derived from commercial reactors for nuclear arms. Similarly, at the 1985 and the 1990 Treaty Review Conferences, U.S. interagency-cleared issue papers supported the civil/military dichotomy.

Absence of Legal Prohibitions. Notwithstanding this background, U.S. policy does not specifically prohibit the production of tritium for defense purposes in a CLWR, nor is this prohibited by U.S. law or by any international agreement to which the United States is a party. The only legal prohibition against the use of a commercial reactor for defense purposes relates to a ban on the use of special nuclear material (SNM) produced in a commercial reactor for nuclear explosive purposes. Tritium is not classified as a special nuclear material under the Atomic Energy Act (AEA), and it is not a fissionable material capable of sustaining a nuclear reaction. Under that law, tritium falls within the definition of a byproduct material. Section 11(e) of the AEA defines byproduct material as (1) any radioactive material (except SNM) yielded in or made radioactive by exposure to the radiation incident to the process of producing or utilizing SNM and (2) the tailings or wastes produced by the extraction or concentration of uranium or thorium from any ore processed primarily for its source material content.⁴

Exceptions to Policy. Moreover, the civil/military separation has never been absolute. The Department's Hanford N Reactor, for example, was built to produce plutonium for nuclear weapons, but simultaneously generated steam that was in turn sold to a commercial vendor for the production of electricity. Similarly, the U.S. uranium enrichment infrastructure produced enriched uranium for both military and civilian purposes for decades. Moreover, a significant proportion of the electricity produced at several U.S. commercial nuclear power plants owned by the Tennessee Valley Authority (TVA) has been purchased by the U.S. Government to operate

⁴ Section 51 of the AEA authorizes the Nuclear Regulatory Commission (NRC) to determine, in regard to facilities licensed by the NRC, that other material is SNM in addition to the material listed in the Section 11 definition. Before making any such determination, the NRC must find that such material is capable of releasing substantial quantities of atomic energy and must find that the determination that such material is SNM is in the interest of the common defense and security, and the President must have expressly assented in writing to the determination. Tritium, as a byproduct material, is not subject to the more stringent restrictions imposed upon SNM.

uranium enrichment plants at Oak Ridge, whose output, in turn, has been used, in part, for nuclear weapons and naval propulsion fuel.

In addition, the Department's production reactors at the Savannah River Site were also used to create plutonium-238 for NASA's civilian programs, and, over the years, the defense side of the U.S. nuclear program was the primary source of many radio-isotopes used for civilian applications, including cesium and californium. Similarly, in the 1950s and 1960s, the U.S. government purchased spent nuclear fuel from civilian reactors so that its plutonium could be extracted and used for defense purposes. Nonetheless, since the mid-1960s, no U.S. commercial nuclear power reactor has been operated to produce materials for use in nuclear weapons, and today, with the U.S. Enrichment Corporation limited to civilian purposes and the N Reactor shut down, there are no major dual-use nuclear facilities in the United States.

o (#)-6.
in '83)

The Non-Proliferation Treaty (NPT) and US/International Atomic Energy Agency (IAEA) Voluntary Safeguards Agreement. No restriction in the NPT would prevent the use of U.S. CLWRs for production of tritium for defense purposes, because the United States is a nuclear weapon state party to that treaty. For this reason, the United States is not prohibited by the treaty from manufacturing nuclear weapons or producing the materials needed for their production. This, in turn, means that the United States is not required to accept IAEA inspections (known as "safeguards") on its nuclear facilities to ensure that they are not being used for weapons purposes. The NPT thus presents no barriers to the CLWR option for tritium production.

Similarly, U.S.-IAEA "Voluntary Offer" Safeguards Agreement does not ban the production of tritium in U.S. CLWRs. In 1980, the United States agreed to make all of its non-defense nuclear facilities -- including all U.S. commercial nuclear power plants -- eligible for IAEA inspections to verify that special nuclear material used or produced in these reactors was not being used for nuclear arms and to reduce the perceived discriminatory nature of the Nonproliferation Treaty regime. The U.S. initiative is known as the "Voluntary Offer," because, as noted above, the United States is a nuclear-weapon-state party to that accord and is therefore not required to accept any IAEA inspections.⁵ In practice, the IAEA has chosen not to inspect any U.S. commercial nuclear power plants under the voluntary offer, but remains empowered to do so.

The IAEA, it should be emphasized, monitors direct-use weapons materials, such as highly enriched uranium and plutonium, and other materials in the nuclear fuel cycle, such as uranium dioxide, that can be transformed into direct-use materials. It does not, however, monitor the production of tritium, which does not fall into these categories but rather serves as a catalyst in nuclear weapons.

⁵ The Voluntary Offer is a legally binding agreement between the United States and the IAEA.

The IAEA Secretariat has indicated that a U.S. civilian reactor providing irradiation services for tritium production would not necessarily have to be withdrawn from the Eligible List under the U.S.-IAEA Safeguards Agreement. After consultations with IAEA officials, representatives of the U.S. Mission to the IAEA in Vienna reported that the IAEA stated that it "does not see a legal impediment to the possible U.S. production of tritium in a facility that is eligible for IAEA safeguards." In addition, the IAEA "confirmed that neither the material being irradiated nor that being produced would be subject to safeguards under the terms of the Voluntary Offer."

Nuclear Suppliers Group. The United States is a member of the Nuclear Suppliers Group (NSG), an organization whose thirty-five member countries have agreed to implement uniform export regulations requiring strict nonproliferation controls on transfers of nuclear equipment and material. Under guidelines issued by the NSG, tritium and tritium production equipment cannot be exported unless the recipient government provides assurances that they will not be used in any nuclear explosive activity or in any nuclear fuel-cycle activity not subject to IAEA safeguards. Before embarking on a tritium production mission in a CLWR, DOE would provide assurances that none of the tritium production equipment came from any NSG country.

Bilateral Agreements. Certain U.S. bilateral agreements for nuclear cooperation prohibit the use of fuel and equipment imported under those agreements from being used for nuclear explosives. In pursuing the CLWR option, DOE would assure its trading partners that no foreign nuclear fuel or equipment supplied pursuant to such restrictions was being used for tritium production in a CLWR.

CLWR: Mitigating Factors. A number of factors associated with the CLWR option help mitigate any potential concerns about using a "commercial" facility for tritium production. First the reactors under consideration for this mission are, or would be, wholly owned by the United States Government, and not by a private sector entity. Importantly, the Tennessee Valley Authority (TVA) is the sole utility to bid for the contract to produce tritium through the use of its reactors. This is significant because TVA is an instrumentality of the United States Government, and the reactors operated by TVA are owned by the U.S. government. Moreover, TVA was chartered in its authorizing statute to serve both the nation's civilian and national security needs. In fulfillment of this mission, for decades, TVA provided the power essential for the production of enriched uranium for the nation's nuclear arsenal. Thus, using a TVA reactor to produce tritium, the review concluded, was, in effect, an extension of the past practice of using government-owned facilities simultaneously for civil and military purposes rather than a radical new precedent imposing a defense mission on a purely private commercial facility.

In addition, to reinforce the special nature of the TVA facility, DOE could mandate that DOE employees would participate in all tritium handling activities of TVA's operation. In all cases, only U.S. Government employees would be involved as TVA is a U.S. government-owned and operated organization/instrumentality.

The review also noted, as discussed above, that under the 1980 U.S.-IAEA Voluntary Offer Agreement, all U.S. CLWRs are eligible for IAEA nonproliferation inspections (to verify that plutonium produced in these reactors is not diverted to military purposes) and that the IAEA, which does not inspect for the production of tritium, had advised the U.S. Government that it would be prepared to conduct its traditional inspections at any CLWR used to produce this material tritium for U.S. nuclear weapons. The interagency review concluded that should the decision be reached to produce tritium at a TVA reactor, the U.S. should continue to provide assurance that no special nuclear material created as a result of normal reactor operation would be diverted to weapons purposes by maintaining the facility on the list of installations eligible for IAEA inspection.

The review further concluded that to minimize divergence from the military/civilian dichotomy, the Department would fuel such a reactor exclusively with "unencumbered" U.S. low enriched uranium fuel, precluding the possible use of fuel derived from excess highly enriched uranium that the President has pledged will never again be used in nuclear weapons.⁶

Finally, the review briefly examined the option of formally declaring a CLWR to be a defense facility under TVA's charter. While such a step would ensure that any new tritium production mission would occur within a "defense" facility, it would not resolve the issue of performing both a defense mission and a civilian power mission within the same facility. An undesirable consequence of this designation would be that TVA would be producing and selling electricity from a "defense" facility -- even though the facility's primary mission would in fact continue to be its civilian power generation mission. In addition, it could complicate the government's ability to retain the reactor on the list of facilities eligible for IAEA inspection under the Voluntary Offer Agreement since it would require both the IAEA and the U.S. to agree to a special exception to include a defense facility on the list of eligible facilities. Accordingly, further consideration of this option was deferred.

On balance, the review concluded that although the use of a CLWR to produce tritium for nuclear weapons raised initial concern about keeping military nuclear activities separate from civilian ones, this concern would be satisfactorily addressed by the particular circumstances involved, especially the fact that the reactors under consideration for the tritium mission would be owned and operated by the U.S. Government and thus would be roughly comparable to past instances of government-owned dual-purpose nuclear facilities. Moreover, ensuring that the reactors would remain eligible for IAEA monitoring to verify that no special nuclear material produced in them was being diverted to the U.S. weapons program would further reduce any potential impact on U.S. nonproliferation objectives. Given the essential requirement for tritium to maintain the U.S. nuclear weapons stockpile, and the flexibility, technological maturity, and

⁶ There are ample supplies of unencumbered U.S. low enriched uranium to satisfy the fueling needs of a CLWR used for the production of tritium.

cost-effectiveness of the light water reactor option, DOE was encouraged to continue its pursuit of the reactor option as a viable source for future tritium production.

Fast Flux Test Facility (FFTF)

The FFTF is a DOE, rather than a commercial, facility. Originally built as part of the DOE civil nuclear program, the FFTF has been placed on the list of U.S. nuclear facilities eligible for IAEA inspection. If used to produce tritium for nuclear weapons, however, the FFTF's civil status could be readily changed, and it could be declared to be a part of the DOE defense complex. It could then either be removed from the IAEA-safeguards Eligible List or kept on the list as a unique exception to the rule that limits the list to non-defense facilities.

The FFTF can be fueled either with plutonium or highly enriched uranium (HEU). Virtually all plutonium available for this fuel, however, except for an initial supply that would last for about eighteen months, is encumbered by pledges made by President Clinton, Secretary of Energy O'Leary, and/or Secretary of Energy Peña that this material will never be used in nuclear arms and by the characterization of this material as "excess to U.S. defense needs."

In declaring 200 tons of U.S. fissile material (including the subject plutonium) to be "excess to defense requirements," the President stated in March 1995 that the material would "never again be used to build a nuclear weapon." Similarly, the thrust of Secretary Peña's address to the IAEA General Conference in September 1997 was that the 52 tons of HEU and Plutonium he was making eligible for IAEA inspections had been "removed from military use." Technically, it is true that using the material to produce tritium *for* nuclear weapons is not using the material *in* such weapons. The use of the material for a clearly military purpose, however, would appear to require its removal from its current classification as "excess material." It should also be noted that the use of such material as part of an economical system to produce tritium for the maintenance of nuclear weapons allowed under existing treaties has never been explicitly precluded by U.S. Government policy. Nonetheless, as a practical matter, using such plutonium to produce tritium for nuclear weapons would be perceived as directly violating these undertakings and would raise serious questions internationally about U.S. disarmament commitments.⁷

The second fuel option for the FFTF would be the use of HEU fuel, material that would be enriched to approximately 60 percent U-235. (Uranium enriched to more than 20 percent U-235 is classified as highly enriched uranium.) While not weapons-grade, uranium that is 60 percent U-235 is weapons-usable and is in the category of nuclear materials requiring the highest level of protection under DOE regulations. The United States has enough unencumbered HEU to permit the FFTF to operate without the use of material declared excess to defense needs.

⁷ A nonproliferation benefit from using this plutonium in the FFTF is that it would irradiate the material and make inaccessible for use in nuclear weapons.

Operation of the FFTF on HEU, however, would run counter to the longstanding U.S. policy of minimizing the civil use of HEU. While FFTF would not be a "civil" facility if used for the tritium production mission, it would nonetheless represent the first new use of HEU in a reactor in the United States since 1978, when the Reduced Enrichment for Research and Test Reactors (RERTR) program was launched, under which the United States took a more active role in minimizing the global commerce in HEU. Use of HEU in the FFTF would undercut the RERTR program and would also erode parallel U.S. efforts to persuade Russia to avoid the use of HEU in several Russia nuclear power plants. As a mitigating factor, however, it was noted that the Department of Energy and the Department of Commerce continue to operate five other non-power reactors that are fueled with HEU, even as the United States has pursued, with considerable success, its efforts to reduce the use of HEU globally. It was therefore not clear that the use of HEU to fuel the FFTF would have an unacceptable impact on this aspect of U.S. nonproliferation policy. The review also noted, however, that the use of HEU-fuel would reduce the tritium output of the reactor by approximately 20% thus further increasing the gap between the total production capacity of the reactor and projected tritium requirements. *of* ^x

On balance, the review concluded that because the use of plutonium to fuel the FFTF would require the reversal of U.S. commitments regarding material declared excess to defense needs, this option appeared highly unattractive. The nonproliferation impacts of HEU option, while, not insignificant, were more difficult to measure, however, and need not, in themselves, preclude further study of this alternative, if after assessment for flexibility, technological maturity, and cost-effectiveness, this option continued to receive consideration. *the*

Accelerator

This option did not raise significant nonproliferation concerns, provided strict controls were placed on the export and/or sharing of this technology, as is currently anticipated.

Conclusions

Overall, the interagency review of the nonproliferation aspects of the Department's selection of a tritium production technology reached several important conclusions.

First, it found that although the government-owned CLWR alternative would raise certain concerns because of its divergence from the policy of maintaining separation between U.S. civil and military nuclear activities, these concerns could be satisfactorily addressed, given the particular circumstances involved. These included the fact that any reactors used for the tritium mission would be owned and operated by the U.S. Government, making them roughly comparable to past instances of government-owned dual-purpose nuclear facilities, and the fact that the reactors would remain eligible for IAEA monitoring to verify that no special nuclear material produced in them was being diverted to the U.S. weapons program. Given the essential requirement for tritium to maintain the U.S. nuclear weapons stockpile, and the flexibility, technological maturity, and cost-effectiveness of the light water reactor option, DOE was

encouraged to continue its pursuit of the reactor option as a viable source for future tritium production.

With respect to the FFTF, there was general agreement that the plutonium-fueled option for the FFTF was undesirable, because under this option, in order to use the FFTF to produce tritium for nuclear weapons, it would be soon be necessary to use plutonium that had been declared by the President to be "excess to defense needs." Highly enriched uranium (HEU) could be used as an alternative fuel source for the FFTF, but the use of HEU fuel would run counter to U.S. efforts to minimize the use of this fuel globally. In addition, the use of HEU fuel would reduce the tritium production output of the FFTF to levels below those required for the U.S. nuclear weapons stockpile, even under a reduced START II-level requirement.

Finally, there was general agreement that the accelerator options raised no significant nonproliferation policy issues.



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

✓ EXM *[Signature]*
✓ SFC *[Signature]*
JEB _____
JRS _____
✓ JMS *[Signature]*
CSG _____
LDL _____
[Signature]
Tritium Production
Water Report

July 15, 1998

MEMORANDUM TO: Chairman Jackson
Commissioner Diaz
Commissioner McGaffigan ✓

FROM: Dennis K. Rathbun, Director *OR*
Office of Congressional Affairs

SUBJECT: REVIEW OF NONPROLIFERATION IMPLICATIONS OF
ALTERNATIVE TRITIUM PRODUCTION TECHNOLOGIES

Attached is a copy of a report entitled, "Interagency Review of The Nonproliferation Implications of Alternative Tritium Production Technologies Under Consideration." Congress directed the Department of Energy to provide them with this report in the National Defense Authorization Act for Fiscal Year 1998 (P.L. 105-85).

Attachment: As Stated

- cc: EDO
- OGC
- OGC/Cyr
- IG
- ACRS
- ASLBP
- SECY
- PA
- IP
- CIO
- CFO
- OCAA

Contact: Betsy Keeling, 415-1776