January 28, 1994

To: Jack Gibbons

From: Frank von Hippel

Cc: Jane Wales

Advanced Neutron Source MEU/LEU Study

This is for background in case either Alvin Trivelpiece [Director of Oak Ridge National Laboratory] or Martha Krebs [Director of the Department of Energy's Office of Science, which was funding the project] bring the issue up with you.

Both are being told by the people reporting to them that the ANS cannot be converted to MEU or LEU without unacceptable degradation of performance or unacceptable cost increases and both are being told that we [OSTP] are pursuing a "nonproliferation ueber alles" policy. In this context, both were alarmed by the sentence in your December 30 letter to Hazel O'Leary (attached):

> "I was pleased to learn of the optimistic preliminary results of Oak Ridge's calculations of the feasibility of fueling the ANS with non-weapons-grade uranium."

I have been trying to make clear that all we want is a good-faith study of the tradeoffs. Indeed, I am convinced that, in the absence of such a study -- and a good faith commitment to follow through if it is shown that MEU (35% enriched) or LEU (19.9% enriched) fuel can be used without unacceptable performance, safety or cost penalties -- the ANS will be killed in Congress by the same coalition of anti-spending and nonproliferation groups that killed the Clinch River breeder. Indeed, because of the DoE's and Oak Ridge's

recalcitrance on this issue, the ANS is already on the nonproliferation groups' target list.

Trivelpiece. In response to your suggestion, I spoke with Trivelpiece and found that he has been a long-term opponent of the DoE's program to convert university and foreign research reactors to non-weapon-grade uranium. His impression was that this program has been a complete failure. My own is that it has been a tremendous success.

Alvin was unaware that the preliminary findings of the Oak Ridge study were that the ANS could be fueled with 35% MEU at a fuel density of 3 gm-U/cc with only a 20% flux degradation [10 percent if the power is raised to 405 MW] and with 20% LEU at a fuel density of 4.8 gm-U/cc with a flux degradation of 35% (the base fuel density is 1.7 gm-U/cc). [Argonne thinks that further improvements are possible by, for example, changing the beam tubes from aluminum to magnesium.] He also argued that the nonproliferation benefits would be vitiated by the fact that the lower-enriched spent fuel would contain more plutonium. My response was that we have plenty of plutonium in spent fuel -- our main proliferation concern today is with directly-useable materials, i.e. separated plutonium or weapon-grade uranium.

In any case, we agreed that a good-faith study should be completed and then policy should proceed from there.

Martha Krebs. Martha became involved when the OMB proposed the addition of language in the FY95 budget statement to the effect that the DoE would take into account the results of the core-enrichment study in the ANS design. There was a big blowup and a lot of

paranoia at DoE but finally language was negotiated that was agreeable to both OMB and DoE (see attached).

I appreciate your support for obtaining a good-faith study on the ANS core enrichment question and hope that I haven't caused you too many headaches as a result.

I will be away most of this week:

- Monday-Tuesday: Albuquerque at a DoE meeting on the stockpile-stewardship program;
- Wednesday (plus possibly Thursday): Los Alamos -- mostly about plutonium disposition;
- Thursday or Friday: Pantex on transparency in warhead dismantlement.