



New Energy Times

The Honorable Christopher T. Hanson
Chairman, U.S. Nuclear Regulatory Commission
11555 Rockville Pike, Rockville, MD 20852

August 24, 2022

Dear Chairman Hanson,

I understand that the United States Senate Committee on Environmental and Public Works sent you a letter on August 18, 2022, encouraging you to be proactive to formulate appropriate regulation for nuclear fusion reactors.

Kindly allow me to point out that after 70 years of experimental fusion research:

- No experimental fusion reactor has produced even a single usable Watt of thermal power.
- Despite an overabundance of breathless stories in the news media, no experimental fusion reactor has come closer to producing net energy than the Joint European Torus (JET) reactor did on Oct. 31, 1997. That reactor consumed electricity at a rate of 700 megawatts and produced fusion reactions with 16 megawatts of power. In other words, the reactor lost 99 percent of the power it consumed.
- Tritium, one of the two required fuel components for most fusion reactors, doesn't exist as a natural resource. Its production in a few dozen heavy-water CANDU reactors will cease by 2060.
- Lithium, the material fusion scientists hope to make tritium from, will not work in its natural isotopic state. It must be enriched to either 30 percent Li-6 or 90 percent Li-6, depending on reactor design.
- After the COLEX process was banned in the U.S. in the 1960s, no new environmentally acceptable industrial-scale process to enrich Li-6 has been invented. As such, no industrial-scale facility for such enrichment has been built.
- Even if there was such a process, and such a facility, there is no known method to breed tritium from enriched lithium fast enough to make a fusion reactor tritium self-sufficient.

The most credible scientific research in fusion, backed by peer-reviewed literature, indicates the possibility of commercial nuclear fusion no earlier than mid-century — assuming that net power is achieved, assuming that the fuel problem is solved. As such, it may be premature for NRC to apply its limited regulatory resources for this risky, private-sector-driven, fusion promotion and media spectacle.

Sincerely,

Steven Krivit

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