

EIR Science & Technology

X-ray laser: the full report of the GAO

Part 3 of Charles B. Stevens's report on recently declassified materials that reveal that EIR publicly, and Teller et al. in secret reports, were right about the potential of this anti-missile technology.

For years, the opponents of the Strategic Defense Initiative have focused attacks on the X-ray laser and Dr. Edward Teller and other scientists' claims for that technology's anti-missile potential. During those years, Teller and others could barely defend themselves, because the facts about the system was classified top secret. Then, in June 1988, the Government Accounting Office issued a report, "Strategic Defense Initiative Program: Accuracy of Statements Concerning DOE's X-Ray Laser Research Program." Teller stood vindicated.

In this issue, *EIR*, unique among public sources in its projections for the X-ray laser since 1982, publishes the full text of the GAO report.

In the same period that the GAO report was issued, declassified versions of Dr. Teller's secret letters to various government policymakers were released. Those letters were published in *EIR* last week (No. 36), along with letters from former Lawrence Livermore National Laboratory scientist Roy Woodruff, seeming to dispute Teller's claim that "a single X-ray laser module the size of an executive desk which applied this technology could potentially shoot down the entire Soviet land-based missile force."

Ironically, the letters from Woodruff, whose claims were seized upon by such sources as the *Los Angeles Times* to claim that Teller and other Livermore scientists were overstating the case for the technology and deliberately misleading the nation's top policymakers, actually support and expand on the most crucial aspects of the projections made by Dr. Teller and *EIR*. This was also the conclusion arrived at by the Government Accounting Office, which undertook an investigation of the charges against Teller at the request of anti-SDI congressmen.

What the X-ray laser is

A full description of the X-ray laser appeared in *EIR* two weeks ago (No. 35). In principle, its workings are quite simple. A primary H-bomb generates a burst of intense, incoherent X-rays. If this intense X-ray output is properly tailored, then it will generate X-ray lasing action when incident upon material containing the appropriate chemical elements. When a sufficiently intense X-ray laser pulse hits the surface of a target, the interaction generates a highly focused particle beam which penetrates to the interior of the target, destroying all electronic elements and circuits.

It is clear in stark military terms that the X-ray laser and other directed-energy weapons represent a general transformation in the meaning and performance of firepower. They can kill a missile target when only a few joules per gram of target is achieved, but in fact, can generate pulses in excess of billions of joules. This provides an indication of the ultimate potential firepower involved. They can kill billions of warheads, in principle.

Based on experiments through 1984, Dr. Teller and his leading collaborators at Livermore Laboratory had concluded that it was possible to realize an X-ray laser which could develop virtually as many beams as desired, and fire each at a separate target over thousands of miles. That is, a single weapon could produce more than 100,000 separate beams and destroy all Soviet missiles, warheads, and decoys over several thousand miles. From a military standpoint, the X-ray laser would thus appear to fulfill President Reagan's objective of making ballistic missiles "impotent and obsolete." The GAO report that follows, confirming the accuracy of this projection, has left the foes of SDI at long last speechless.