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History of Laser Weapon Research

Authors: [Melissa Olson](#); [NAVAL SURFACE WARFARE CENTER DAHLGREN DIV VA](#)

Abstract: The idea of using light as a weapon can be traced back to Hippocrates, commander of the Greek forces in 212 B.C. His forces supposedly set fire to the sails of the Roman fleet by focusing sunlight with mirrors. **Weapons** systems based on lasers and ray guns, long a staple of science fiction, have captured the imagination of people everywhere. But with steady progress toward the development of lasers in the last 40 years, viable, state-of-the-art laser weapon systems have now become a reality. The production of lasers in the modern scientific world is fairly new. The first laser was developed in the 1960s and represented the beginning of a drastic change in how the military viewed warfare. The late 1970s and 1980s, too, marked a busy time period for developing lasers into possible weapon systems. All branches of the military and industry were striving to master high power levels, beam control, and adaptive optics. In 1999, the Department of Defense (DoD) formally recognized lasers as future **weapons** and began research and development (R&D). In 2000, the Joint Technology Office for High Energy Lasers was formed to bring all laser technologies together to develop a complete laser weapon system that could be used by the warfighter. This article discusses the following topics: the **Electromagnetic** Spectrum; Laser Fundamentals; Military Laser History and Laser Types, including Solid-State Lasers, Chemical Lasers, Gas Lasers, Fiber Lasers, and Miscellaneous Lasers; and Laser Weapon Development, which highlights some of the laser **weapons** that have been successfully developed over the past 40 years (i.e., Baseline Demonstrator Laser (BDL) Hydrogen Fluoride (HF), Navy-ARPA Chemical Laser (NACL) HF, Alpha HF -- Built for Strategic Defense Initiative (SDI) Space-Based Laser (SBL), Tactical High-Energy Laser (THEL), Advanced Tactical Laser (ATL), Airborne Laser (ABL) (CO2) Chemical Oxygen, Joint High-Power Solid-State Laser (JHPSSL), and the Navy Laser Weapon System (LaWS)).

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Limitations: APPROVED FOR PUBLIC RELEASE

Description: Journal article

Pages: 11

Report Date: Jan 2012

Report Number: A657755

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