

(8) NATIONAL RECONNAISSANCE OFFICE WASHINGTON, D.C.

THE NRO STAFF

12 November 1975

MEMORANDUM FOR MR. MYRON KRUEGER, NASA

SUBJECT: News Release on Laser Communications

Attached is a copy of page 36 of "Electronics" magazine dated 16 October 1975. I am quite concerned about the statements attributed to NASA officials. As you recall, we made a point of consolidating potential Air Force and National applications for your consideration, and encouraged NASA in the pursuit of the CO₂ laser communication program.

Request you investigate these statements. If they indeed derived from Air Force actions, I would appreciate any detail you can provide.

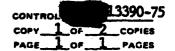
HAROLD P. WHEELER, JR. Colonel, USAF

Attachment Excerpt

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the willing among the defendants is that we suit will have lattle impact on the industry.

Cooperation upswing

Attor yours of txilling, services. charles suppliers are cooperativit. In the mucroprocessor area, intersit Inc. and Harris tiensiconductor will each supply three ve-sions of Intersit's new 12-bit C-MUS microprocessor, the IM 6100, input/output and readonly memory chips, and 1-kilobit C-MOS random-access memories Coming on the heals of National/Rockwell and Motorola/ American Microsystems duals, the agreement, according to litetersil president Marshall Cox, enables a supplier to share the high development costs and have a line of second-sourced parts. advantage in the market

NASA laser relay bows to Air Force

Satellites

An unusual conjunction of military security, budget priorities, and adcances in spacehorno-faser technology has put the National Acronautics and Space Administration out of the satellite communications relay business and left the Air Force in charge.

NASA's Goddard Space Flight Center is phasing out its live-year program to develop a spaceboune carbon monoxide laser communications system. Researchers there have been told that the \$15 20 n illion needed to flight-test their spaceto-space data relay will not be available in future fiscal years.

More than that, Goddard officials say the Air Force brought increasing pressure to stop the program lecause the NASA charter requires it to be unclassified. The systems approach of the NASA and USAL efforts "is very similar." one NASA official explains and "too much of it is being published" in open scientific

literature The Air Force is scheduled to Like its own classified 405B advanced development program for satellite reconnaissance in 1979.

Compounding NASA's problem was that development of earth sennuss and small, high-data-rate computers to be carried aboard advanced earth-observation satellites has not kept pace with NASA's development of a CO laser transceiver. NASA could not in the near tuture make use of the laser's 300-millionbit-per-second data rate.

Military. The Air Force 405B program, led by McDonnell Douglas Astronautics Co. East, is a 1-gigabitper-second relay system aboard a much bigger satellite that also has room for a larger data processor and a laser of neodymium and yttrium aluminum garnet. The feasibility model of the Nd-YAG laser subsystem, developed by GH-Sylvania Inc., Mountain View, Calif., operates at 500 million pulses per secopd. It is mode-locked and achieves its gigabit data rate by frequency doubling, say its developers.

With its high data rate, the Ndrati laser in the 405B program will be capable of relaying digitized TV signals in real time between satellites for retransmission to earth. Among other applications, the Air Force is anxious to monitor Soviet intercontinental missile sites with the system, to achieve a superior early warning capability.

Instrumentation

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IR sensor protects transfer standard

By comparing the heating effect of a signal and a known de voltage, an ac-de transfer standard measures true-rms voltages with a high degree of precision. But the circuitry that protects the device's thermoelement not only introduces errors, preventing correlation of the standard with National Bureau of Standards voltage cells, it also has to be switched in and out of the system for every measurement, preventing use of the

Electronics/October 16, 1975