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SUBJECT

Final Review of ARGUS Fact Sheet

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FROM BA

DATE 16 Apr 82

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Mr. Kaye/wg/57744

Enclosed is the final draft of the fact sheet for the NTPR history volume of the ARGUS series. It incorporates recommended modification resulting from NTPR team review of ARGUS cond draft.

Comments are requested by COB, 23 April 1982.

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DNA 18 Apr 82
DDR 21 May 82

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ARGUS FACT SHEET

ARGUS was the designation given to the three high-altitude nuclear test shots conducted in the United States in the South Atlantic Ocean in August and September, 1958. The ARGUS tests were conducted to test the Christofilos theory, which argued that high-altitude nuclear detonations would create a radiation belt in the upper regions of the Earth's atmosphere. The theory theorized that the radiation belt would have military implications, including degradation of radio and radar transmissions, damage or destruction of the arming and fuzing mechanisms of ICBM warheads, and endangering the crews of orbiting space vehicles that might enter the belt.

The tests were conducted in complete secrecy and were not announced until the following month. The organization conducting these tests was Task Force 88, a naval organization consisting of nine ships and approximately 4,500 men. A few specialists from the other services and the Atomic Energy Commission and their contractors were with the fleet. Coordinated measurement programs using satellite, rocket, aircraft, and surface stations were carried out by the services and other government agencies and contractors throughout the world. The ships of Task Force 88 were the antisubmarine warfare support aircraft carrier Tarawa (CVS-40); destroyers USS Bearss (DD-654) and USS Warrington (DD-843); destroyer escorts USS Courtney (DE-1021) and USS Hammerberg (DE-1015); guided missile ship, USS Nord (AVM-1); seaplane tender, USS Albemarle (AV-5); and oilers USS Neosho (AO-143) and USS Albatross (AO-26).

The low-yield (1- to 2-KT) devices were lifted to about a 300-mile altitude by rockets launched from the ship, Norton Sound. The detonations occurred at such distances above the horizon that there was no possibility of exposure of task force personnel to ionizing radiation.

Of the 264 radiation-detection film packets distributed to the task force, 21 showed indications of radiation exposure, but the highest exposure recorded by an individual film packet was 0.010 roentgen (R), so low as to be negligible. The highest exposure recorded, 25 R, was by a control film packet. Control film packets were located in radiation-shielded areas within the ships. Even this reading was so low that it could have been spurious or the result of natural background radiation. In any event, both readings were below the accuracy limit of the film, developing system, and densitometers used.

The results of the ARGUS operation proved the validity of the Christofilos theory. The establishment of an electron shell derived from neutron and beta decay of fission products and the ionization of device materials in the upper fringe of the atmosphere was demonstrated. The operation not only provided data on military considerations but also produced a great amount of geophysical data, pure scientific material of great value.