



The World's First Spy Satellite...

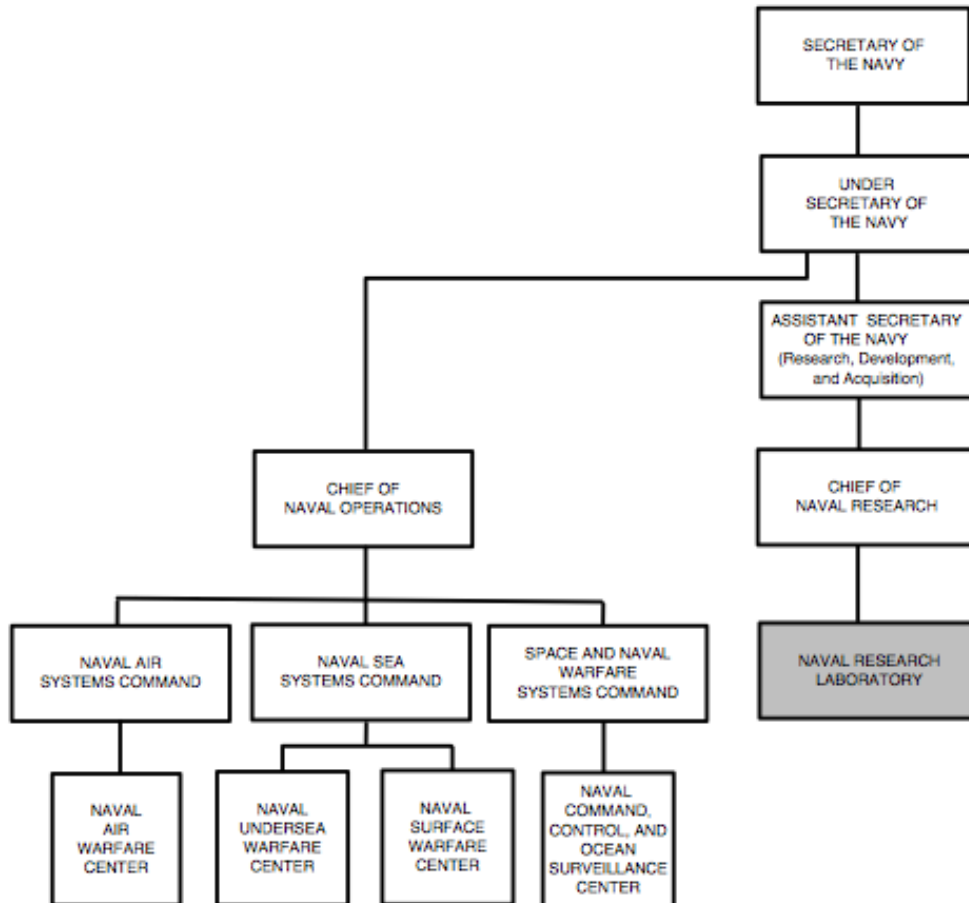


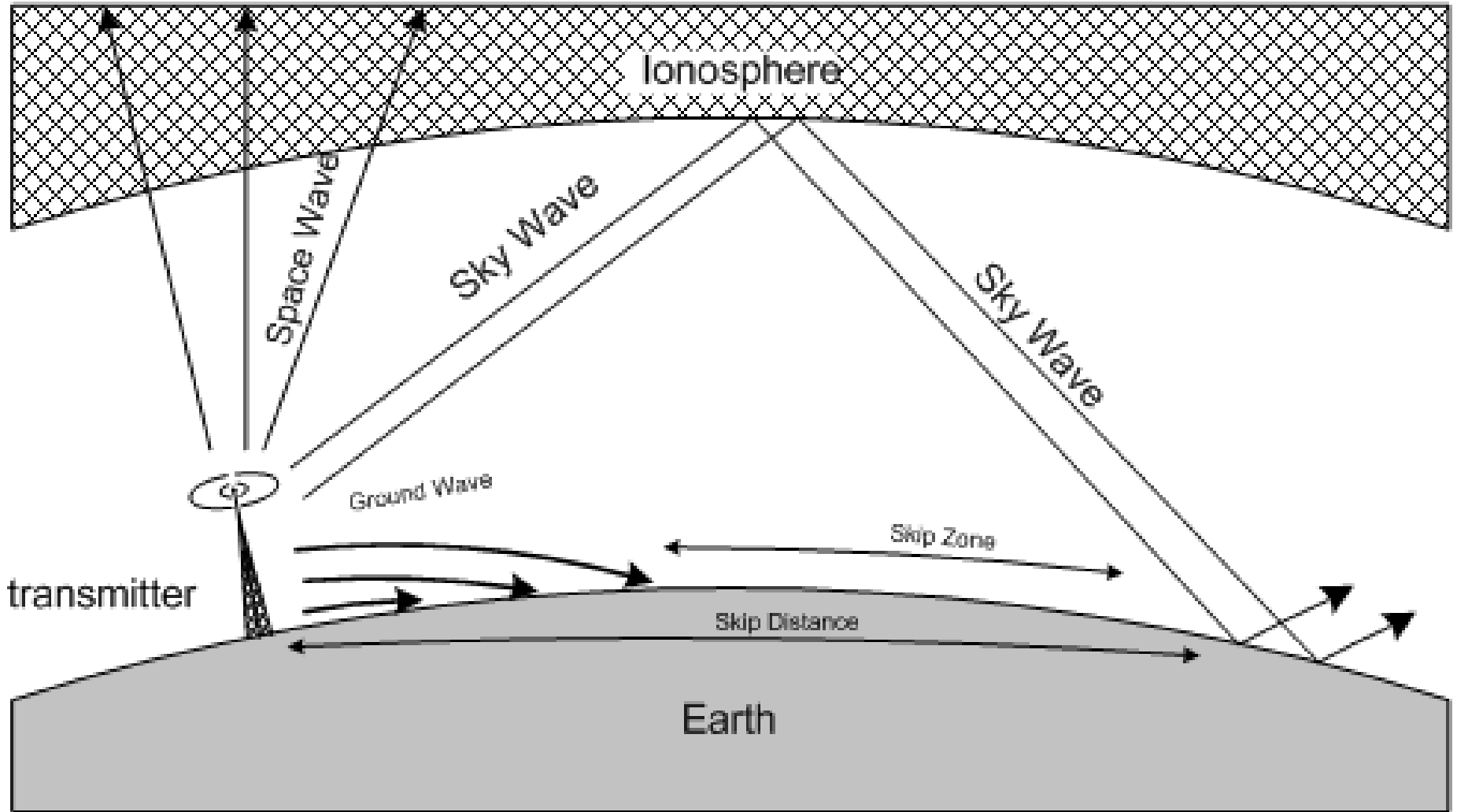
... as far as we know of

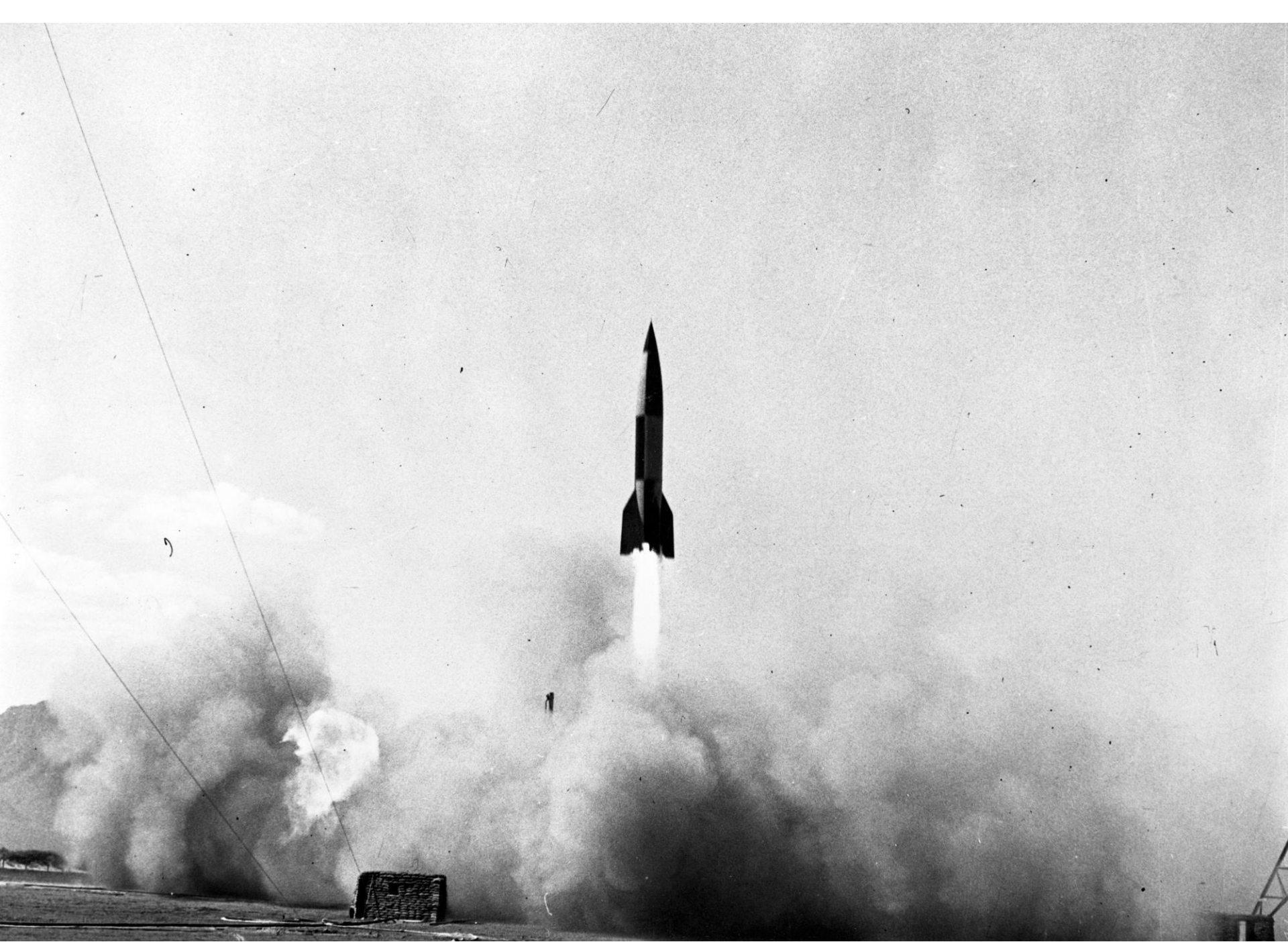
Ivan Amato
Journalist in Residence
Kavli Institute for Theoretical Physics
April 2, 2014



Naval Research Laboratory, Washington DC

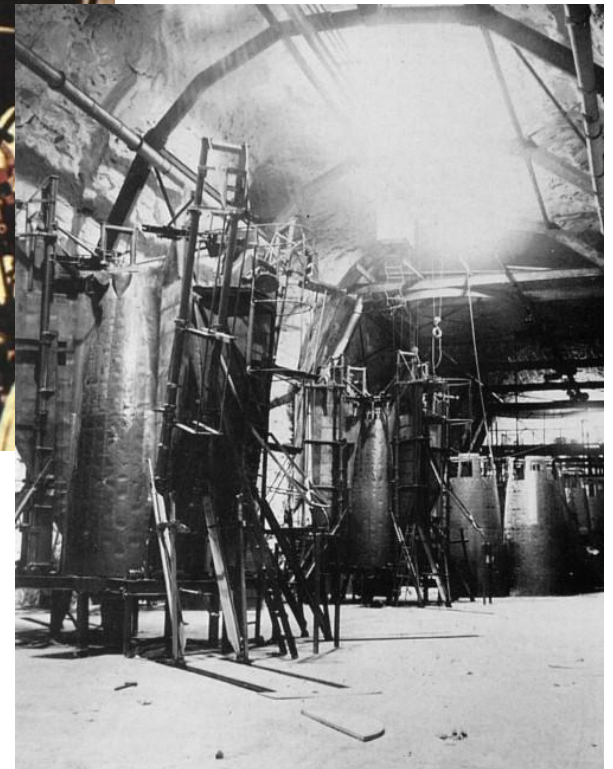
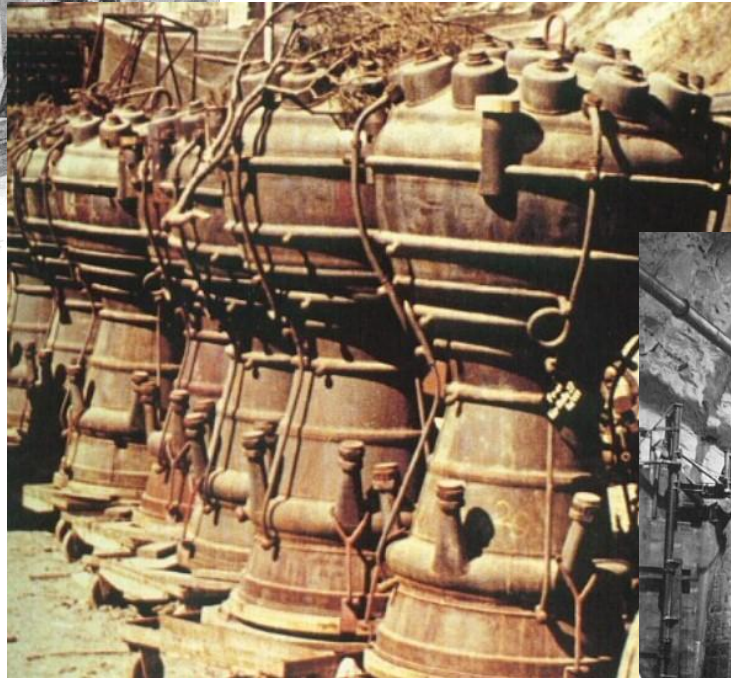
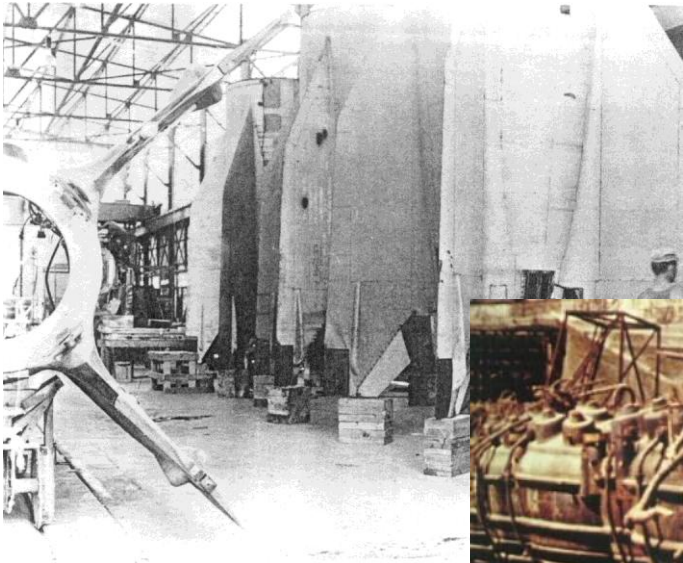






Ernst Krause, NRL

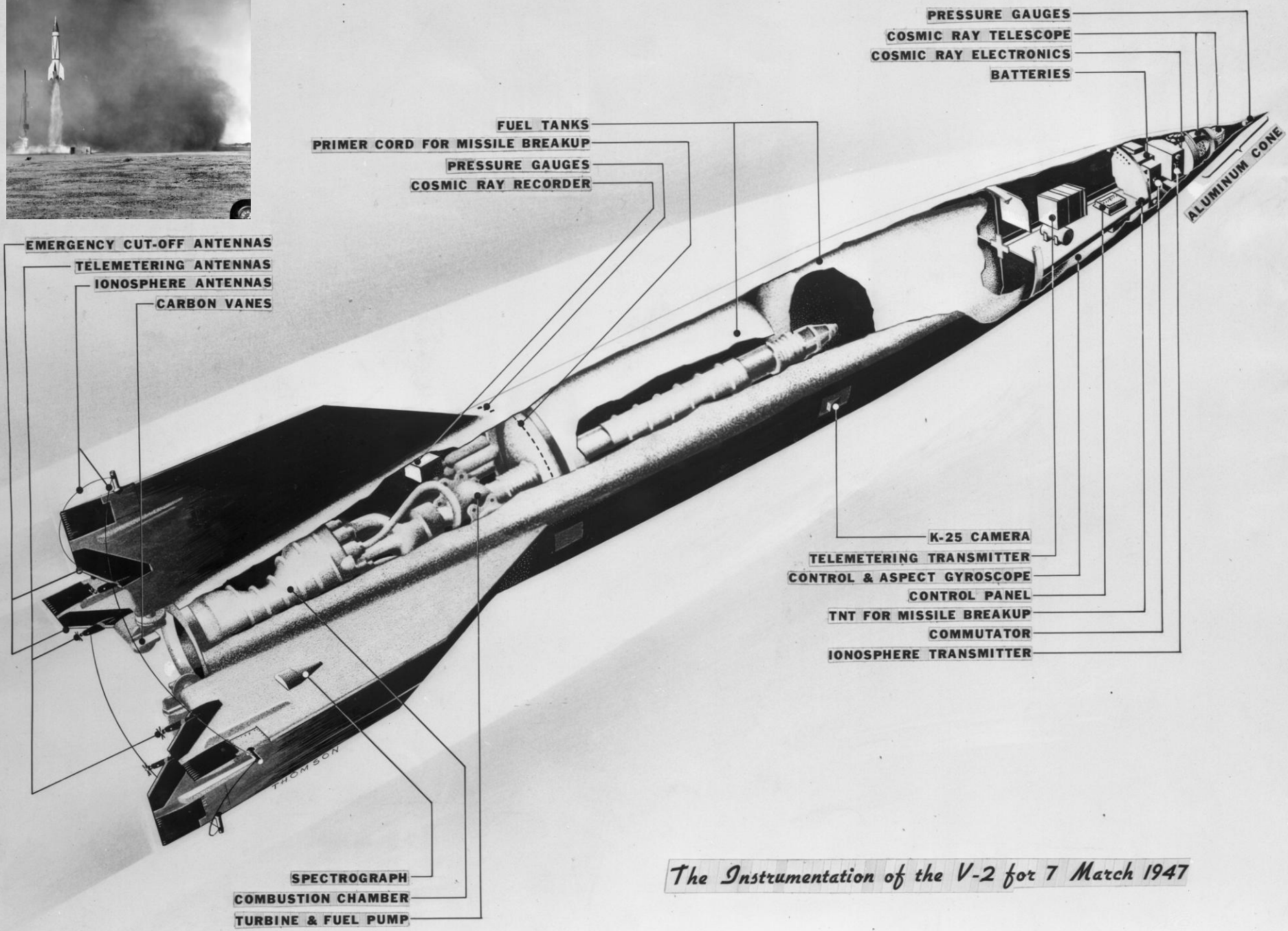




Mittelwerk (Central Works)

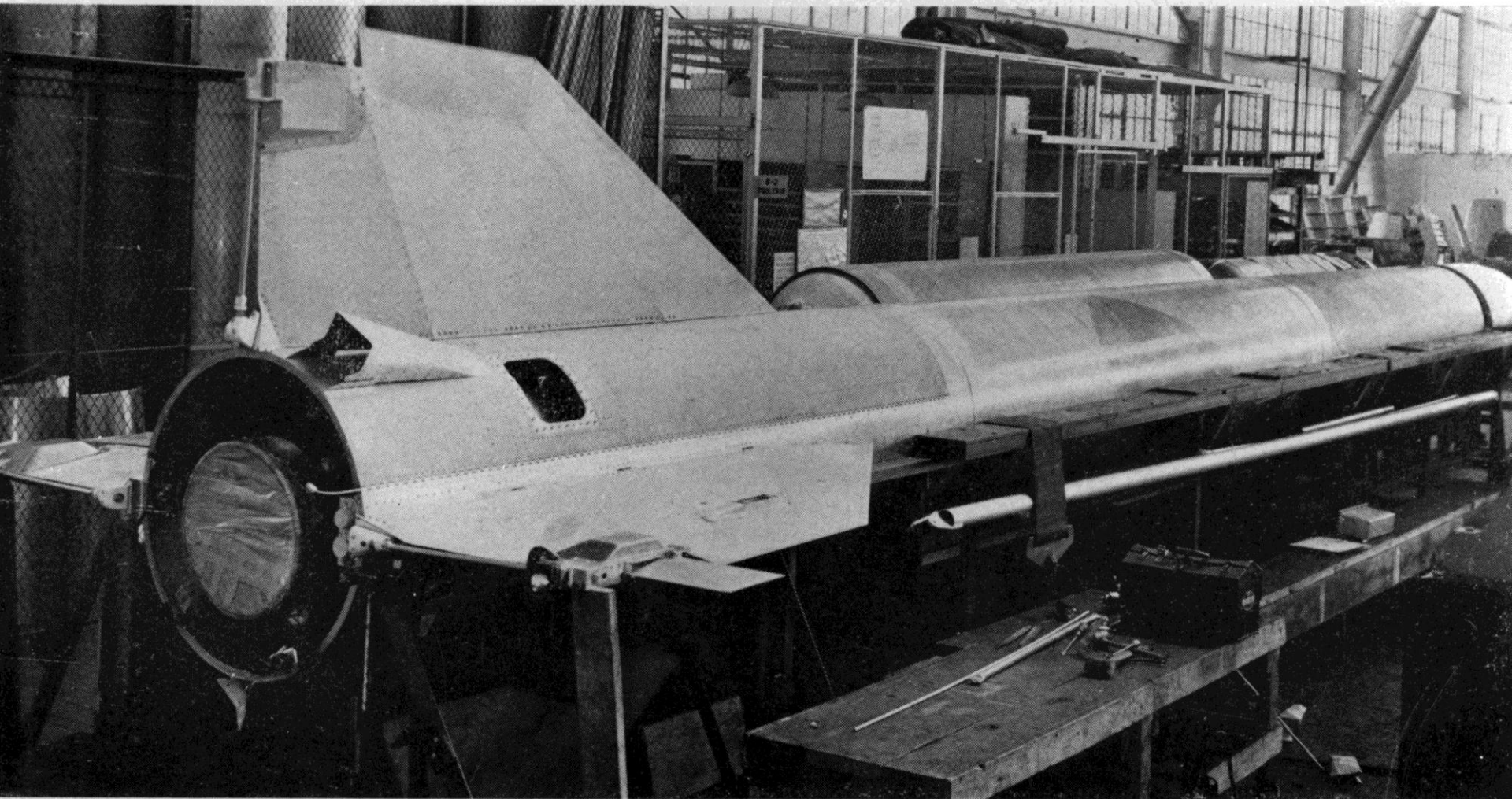


White Sands Proving Ground, NM

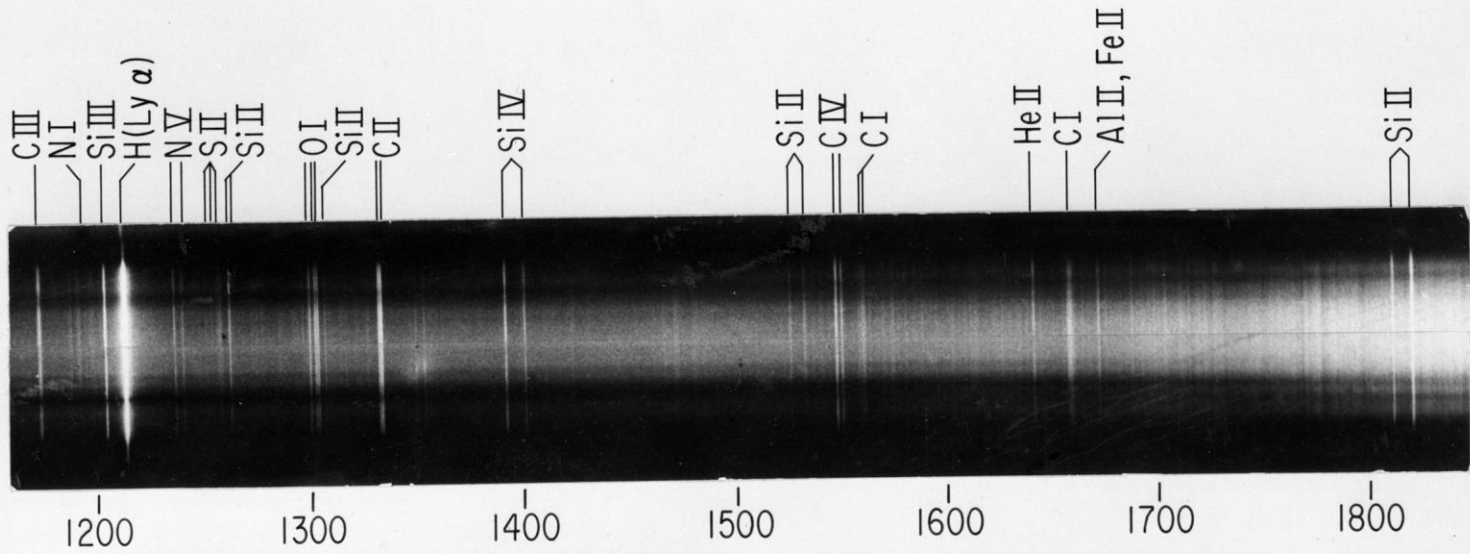
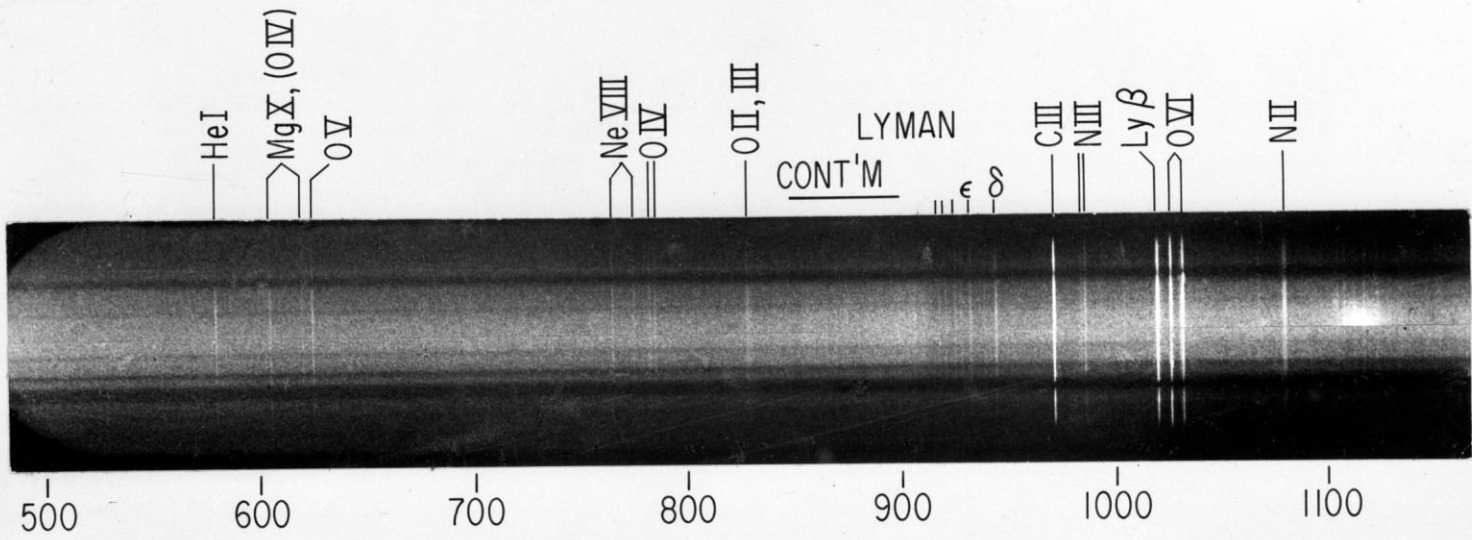


The Instrumentation of the V-2 for 7 March 1947

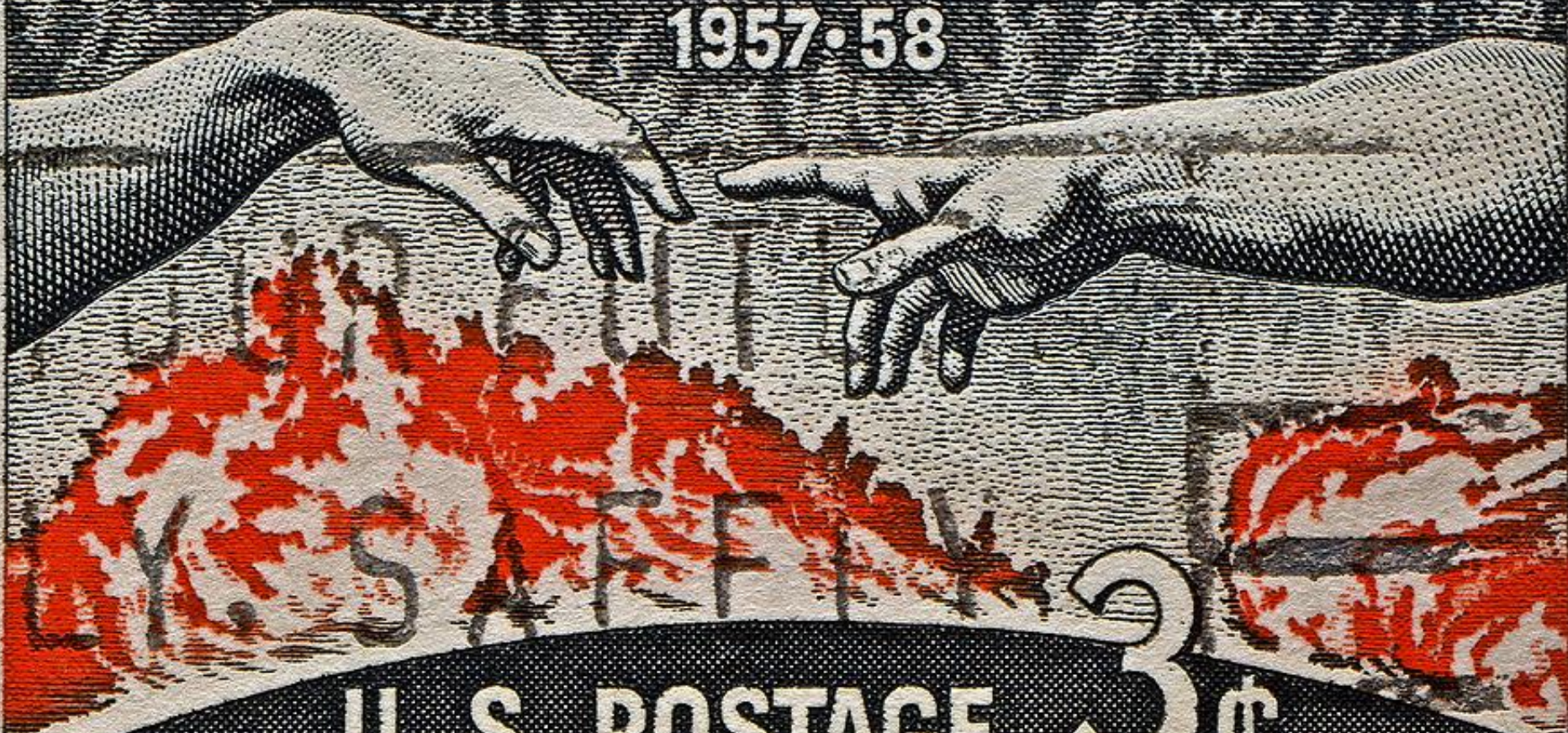
The MARTIN Star (Martin Aircraft) Jan. 1951



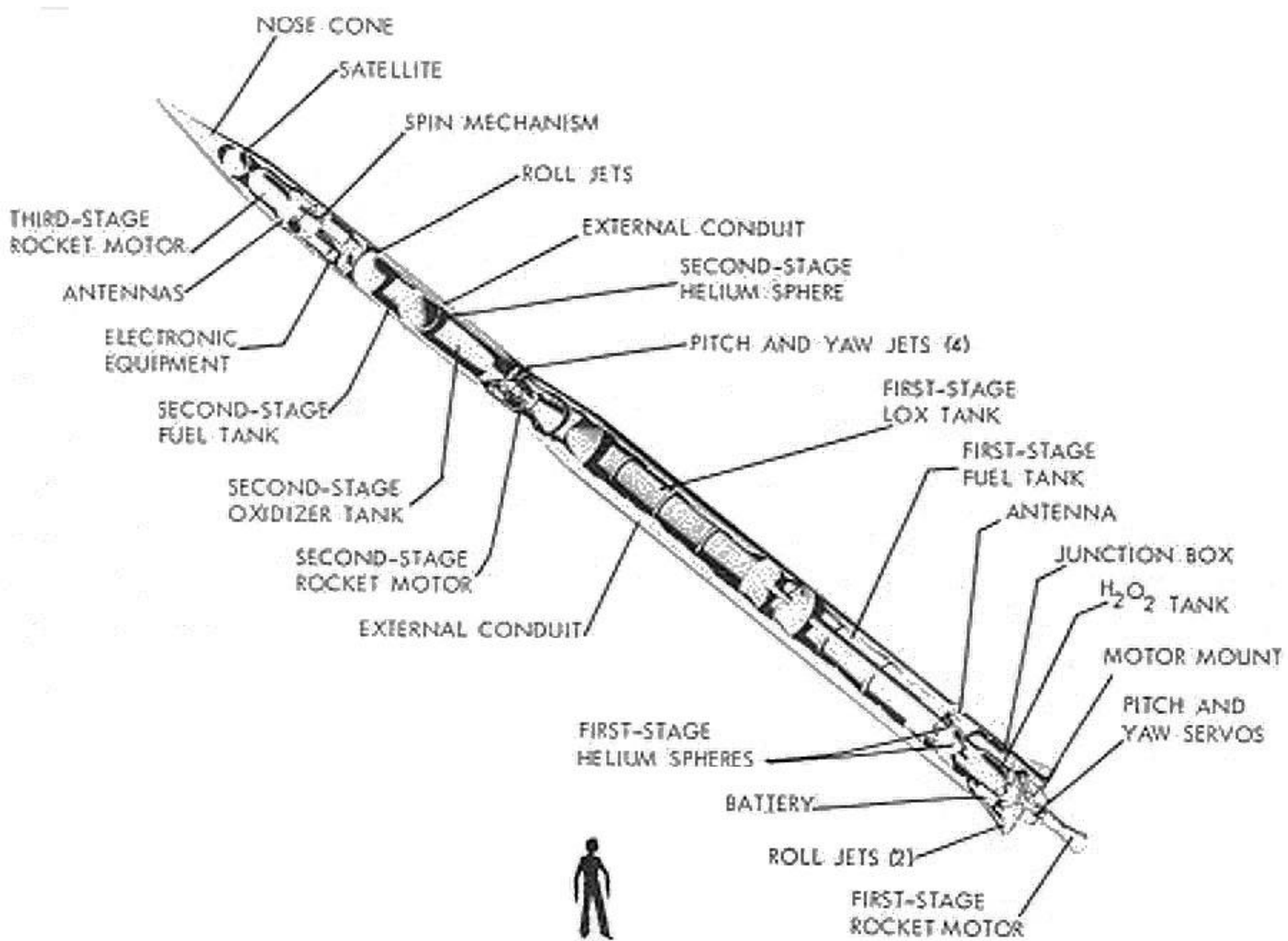
1—Viking rocket during early manufacturing stage at the Martin factory.

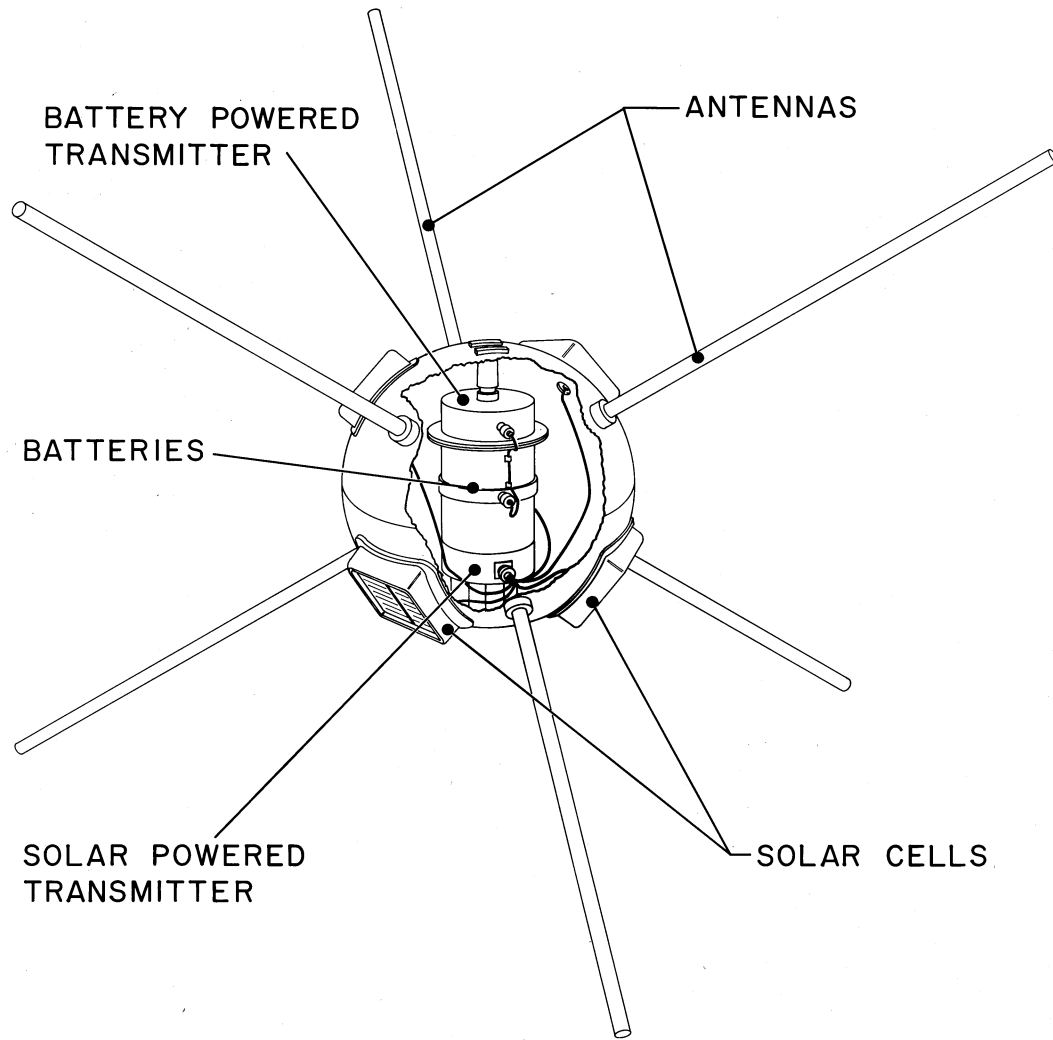


**INTERNATIONAL GEOPHYSICAL YEAR
1957-58**

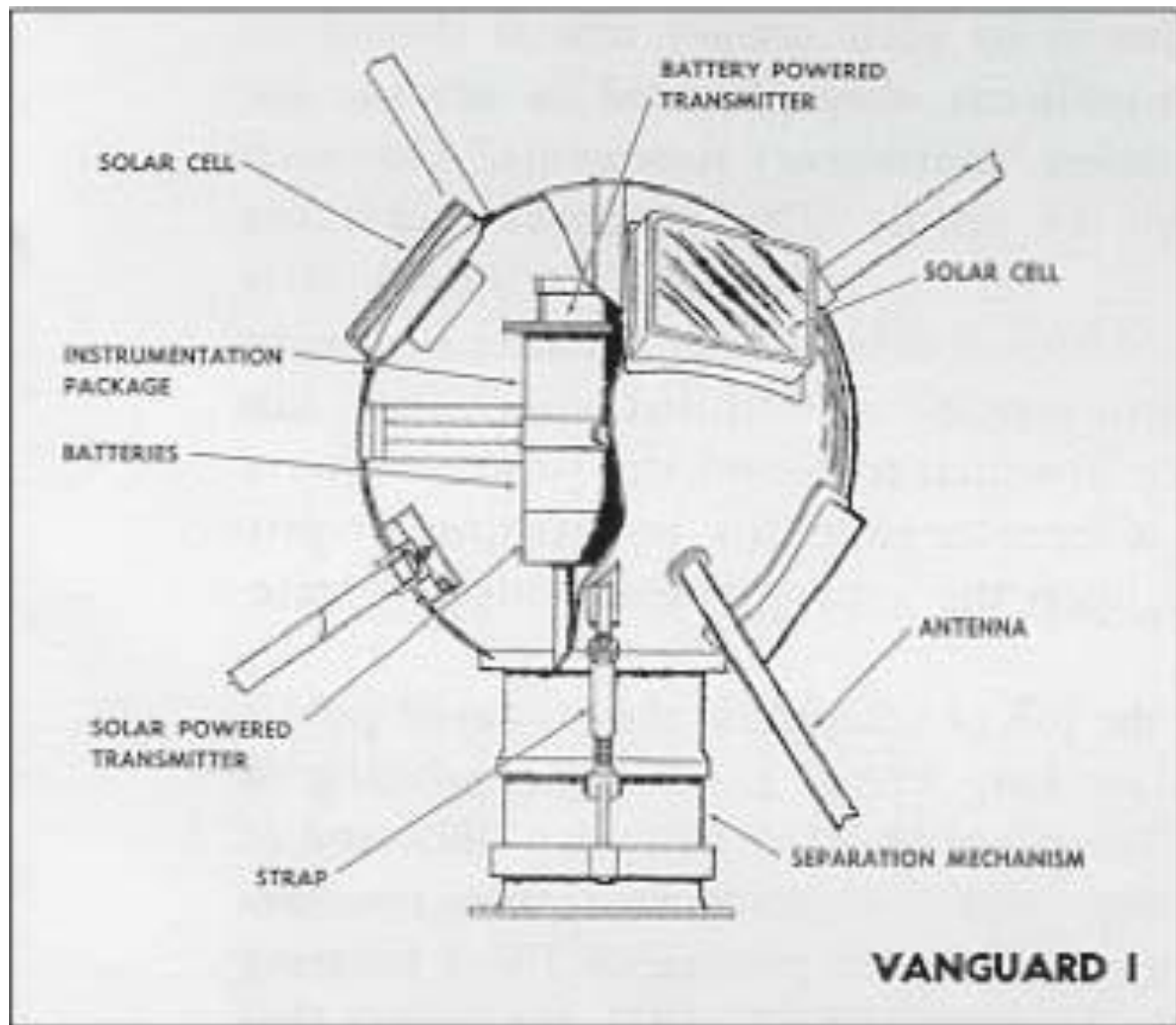


U. S. POSTAGE 3¢



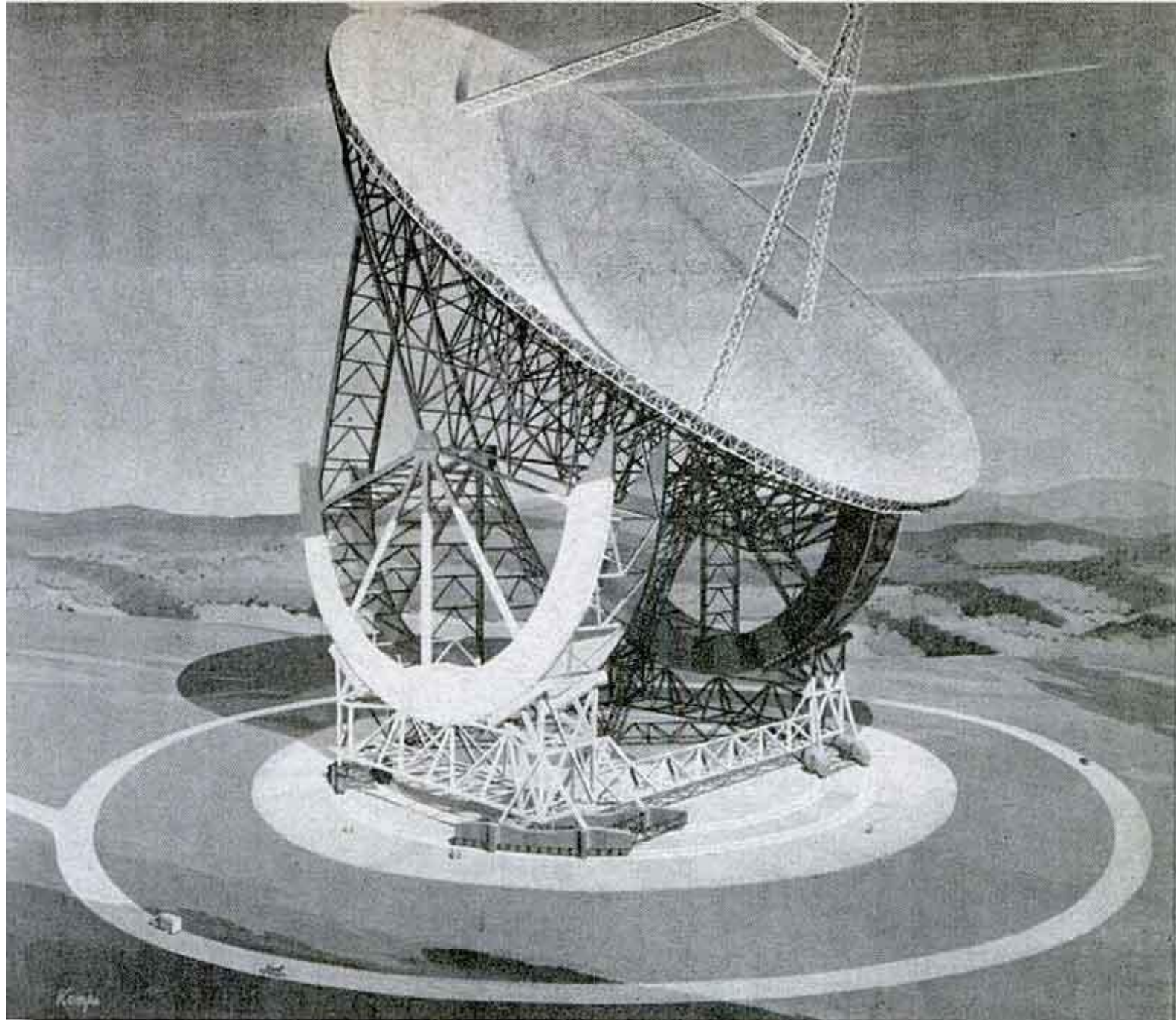


CUTAWAY DRAWING OF VANGUARD 6.4 INCH TEST SATELLITE



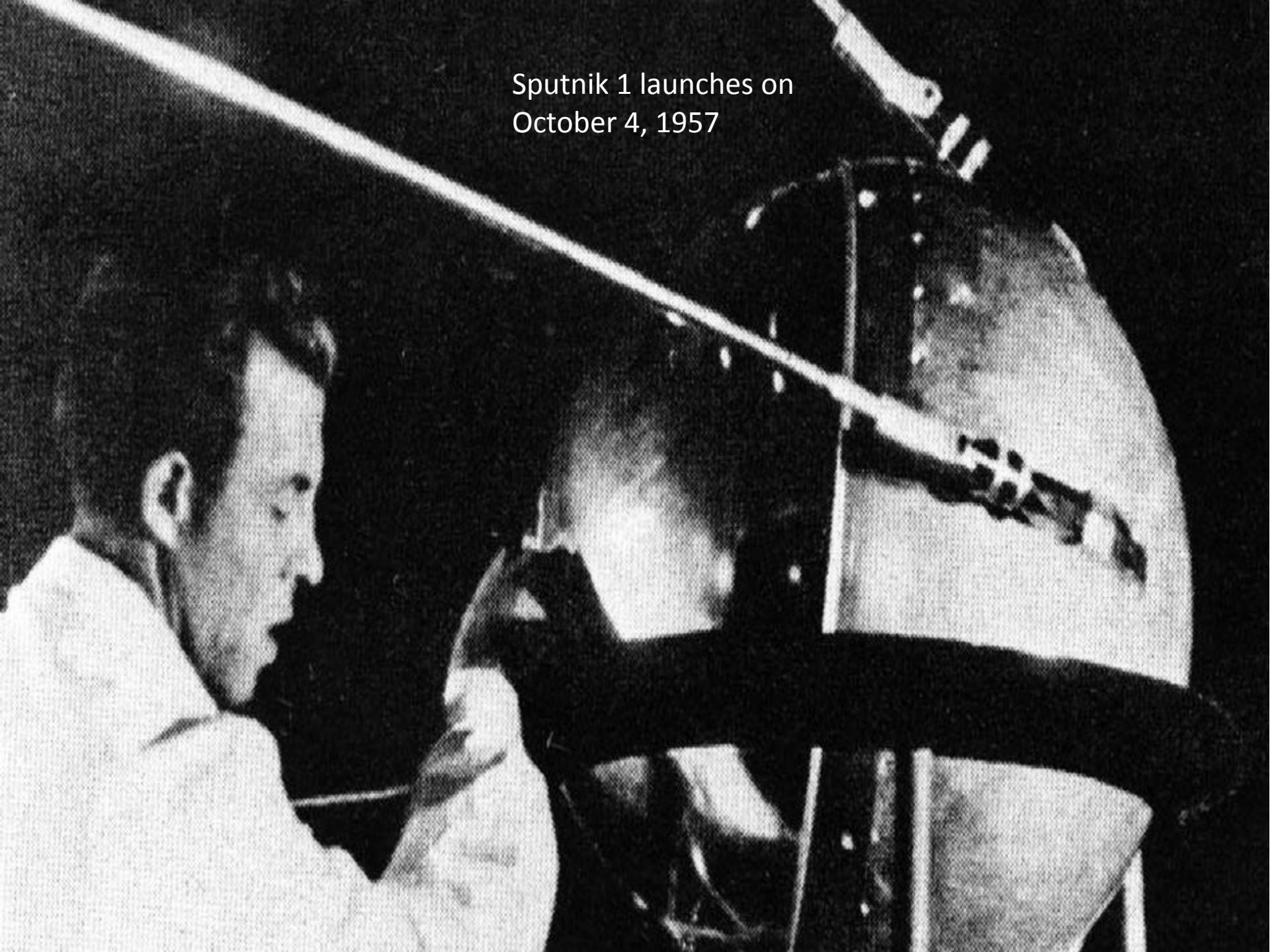






Those dots on concrete apron are people, shown to scale in drawing of Navy's huge telescope.

Sputnik 1 launches on
October 4, 1957



this day in history:

My God in Heaven!
It's..it's...

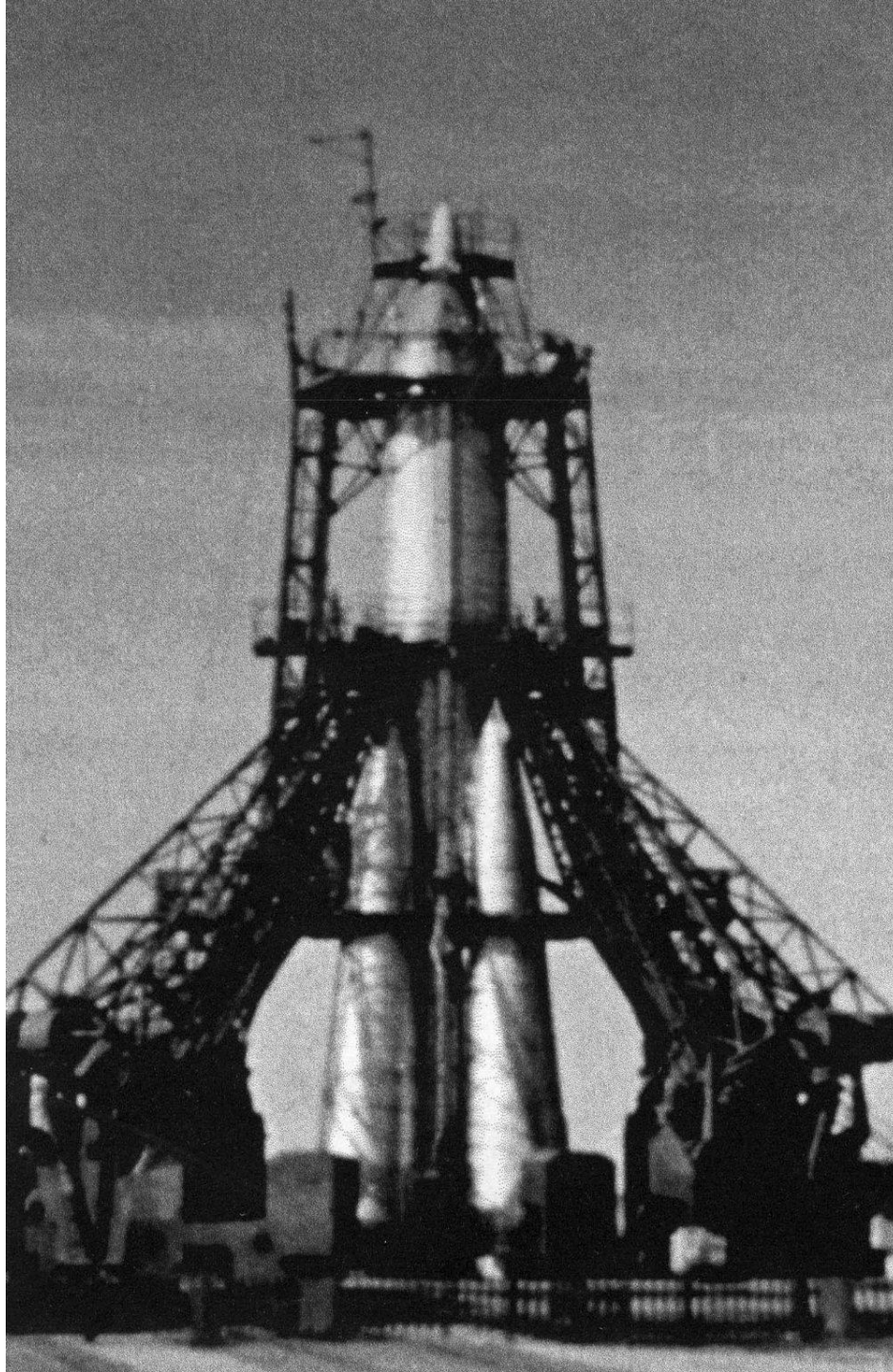
COMMUNISM!



October 4, 1957



October 5, 1957



November 3, 1957

"All the News
That's Fit to Print"

The New York Times.

LATE CITY EDITION

110 West Street, New York 37, N. Y.
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Cable: 58-10-10, 58-10-11, 58-10-12

News Summary and Index, Page 10

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Published by The Times Company

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PRICE: TWENTY-FIVE CENTS

SOVIET FIRES NEW SATELLITE, CARRYING DOG; HALF-TON SPHERE IS REPORTED 900 MILES UP Zhukov Ousted From Party Jobs; Konev Condemns Him

MEYNER'S VICTORY IS SEEN IN SURVEY OF JERSEY VOTERS

Democratic Governor Likely
to Win Re-election Over
Smaller Forbes Tuesday

A Times Team Report

At least 60 per cent of New Jersey voters believe that the Democratic Party will win the governorship in the November election, according to a survey of political trends and opinions in that State reported by the Times team.

By MICHAEL CALDER WRIGHT

The survey was based on a poll of 1,000 voters in the State last week. It is the first of a series of reports that will be published in the coming weeks.

President and Class Honor Academy



A.F.L.-C.I.O. TARGET DESIGNS AS CHIEF OF TEXTILE UNION

Federic Polak Hope Strong
Will Stay in Federation
—2 More Active Tactics

By MICHAEL CALDER WRIGHT

WASHINGTON, Nov. 8.—The members of the United Textile Workers, American Textiles Institute (ATI) and the Textile Workers Union of America (TWU) are expected to meet in the near future to discuss the possibility of a merger of the two unions.

ZHUKOV HUMBLED

He Admits 'Mistakes'
—Accused of 'Cult'
in Armed Forces

By MICHAEL CALDER WRIGHT

MOSCOW, Nov. 8.—General Georgii Zhukov, the Soviet military hero, admitted today that he had made "mistakes" in his military career. He also admitted that he had been accused of a "cult" in the armed forces.

Marshal Is Linked to Stalin In Blame for '41 Reverses

Lower Charges Ex-Chief
Disputed History to
Create Hero's Role

By MICHAEL CALDER WRIGHT

MOSCOW, Nov. 8.—The Soviet Union's military hero, Marshal Georgii Zhukov, was today accused of being responsible for the reverses suffered by the Red Army in 1941.



Marshal Georgii Zhukov

Marshal Zhukov's role in the Soviet Union's military history is being questioned.

ORBIT COMPLETED

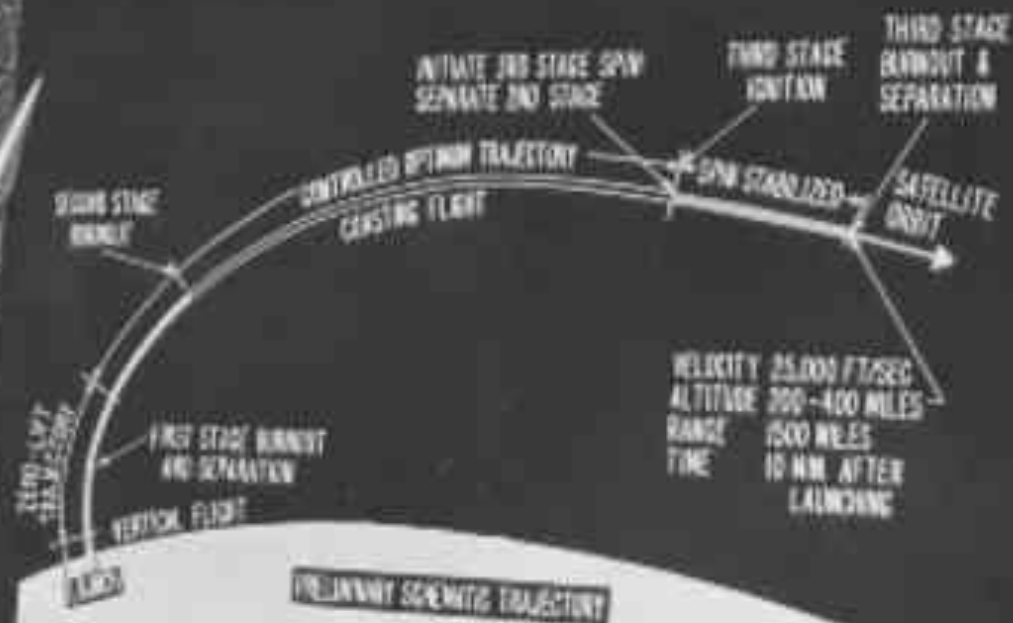
Animal Still Is Alive,
Sealed in Satellite,
Moscow Thinks

By MICHAEL CALDER WRIGHT

MOSCOW, Nov. 8.—The Soviet Union announced today that it had completed the orbit of a satellite animal. The animal is still alive, according to Moscow.



----- NOVEMBER 3, 1957 -----



ARGENTA IMAGES



TV-3 on the launch pad on
December 6, 1957





UNIVERSAL-INTERNATIONAL NEWS

SATELLITE A BUST

**Rocket Blows Up
In First U.S. Try**

(Dept. of Defense)

VOICE: ED HERLIHY





America's Sputnik dies bleeping on the ground

OH, WHAT A FLOPNIK!

Satellite blows up before take-off

By RUBY CAPP

AMSTERDAM (AP)—A Russian satellite satellite, the first of its kind, blew up in a huge blast of smoke and fire shortly after its launch.

The satellite, which was launched from the Cape Canaveral space station, was seen to explode about 100 miles above the earth's surface.

The satellite was launched at 11:30 a.m. EST. It was seen to explode about 100 miles above the earth's surface.

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A Russian satellite satellite, the first of its kind, blew up in a huge blast of smoke and fire shortly after its launch.



Book's Contest

The contest is open to all children...

The contest is open to all children...

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The contest is open to all children...

The contest is open to all children...

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'Escaped Patient May Harm Children'

The patient escaped from a hospital...

The patient escaped from a hospital...

The patient escaped from a hospital...

The patient escaped from a hospital...

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Father Still Hopes...

The father still hopes for his son's return...

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Warship races to banana colony

A Soviet Navy warship raced to British Honduras last night with provisions. And in the region where tactics were of the "banana colony" it was announced that the ship had been sent to the Caribbean's coast.

The warship, which is the Soviet Navy's first of its kind, is expected to arrive in the Caribbean region in the next few days.

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WE SAY

Talking omelette

L... talking omelette... the first of its kind...

Fireworks

The fireworks... the first of its kind...

Quit once to 20,000 Dutch

The Dutch... the first of its kind...

Musts for Monday

Musts for Monday... the first of its kind...

Latter saves her from fire

Latter saves her from fire... the first of its kind...

HAVE LUCK BY BABYCHAM

IT'S HOME FOR CHRISTMAS



The Baby Cham... the first of its kind...



Frank Semerano's

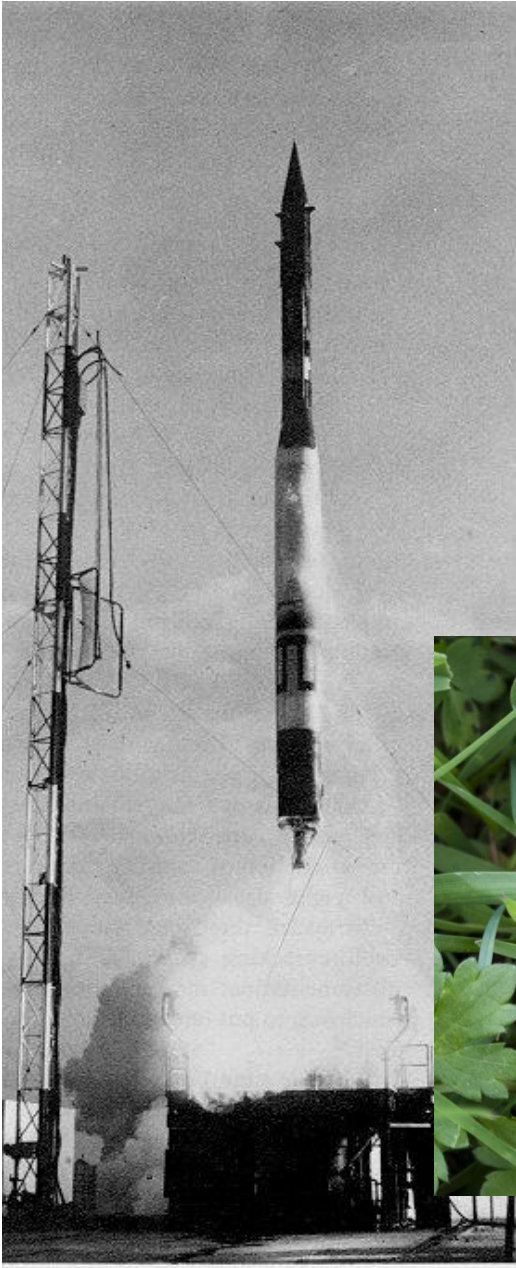
KAPUTNIK





Army's Explorer 1 launched on January 31, 1958. It carried instruments to measure the temperature and to detect cosmic rays and micrometeorites.





Vanguard finally launches
on March 17, 1958

NATIONAL AERONAUTICS AND SPACE ACT OF 1958,
Pub. L. No. 85-568,
72 Stat. 426-438 (Jul. 29, 1958)
As Amended

AN ACT

To provide for research into problems of flight within and outside the earth's atmosphere,
and for other purposes.

*Be it enacted by the Senate and House of Representatives of the United States of America
in Congress assembled,*

TITLE I—SHORT TITLE, DECLARATION OF POLICY, AND DEFINITIONS

SHORT TITLE

Sec. 101. This Act may be cited as the "National Aeronautics and Space Act of 1958".

DECLARATION OF POLICY AND PURPOSE

Sec. 102. (a) The Congress hereby declares that it is the policy of the United States that activities in space should be devoted to peaceful purposes for the benefit of all mankind.

(b) The Congress declares that the general welfare and security of the United States require that adequate provision be made for aeronautical and space activities. The Congress further declares that such activities shall be the responsibility of, and shall be directed by, a civilian agency exercising control over aeronautical and space activities sponsored by the United States, except that activities peculiar to or primarily associated with the development of weapons systems, military operations, or the defense of the United States (including the research and development necessary to make effective provision for the defense of the United States) shall be the responsibility of, and shall be directed by, the Department of Defense; and that determination as to which such agency has responsibility for and direction of any such activity shall be made by the President in conformity with section 2471(e).

(c) The Congress declares that the general welfare of the United States requires that the National Aeronautics and Space Administration (as established by title II of this Act) seek and encourage, to the maximum extent possible, the fullest commercial use of space.

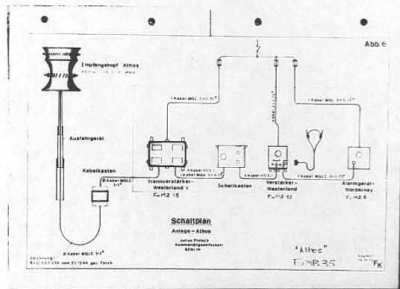
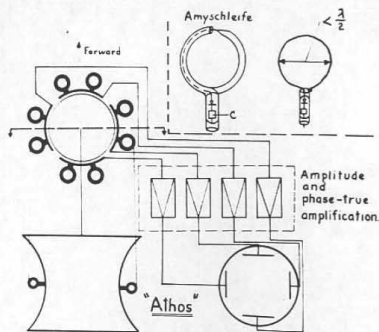
(d) The aeronautical and space activities of the United States shall be conducted so as to contribute materially to one or more of the following objectives:

- (1) The expansion of human knowledge of the Earth and ² of phenomena in the atmosphere and space;
 - (2) The improvement of the usefulness, performance, speed, safety, and efficiency of aeronautical and space vehicles;
 - (3) The development and operation of vehicles capable of carrying instruments, equipment, supplies, and living organisms through space;
-

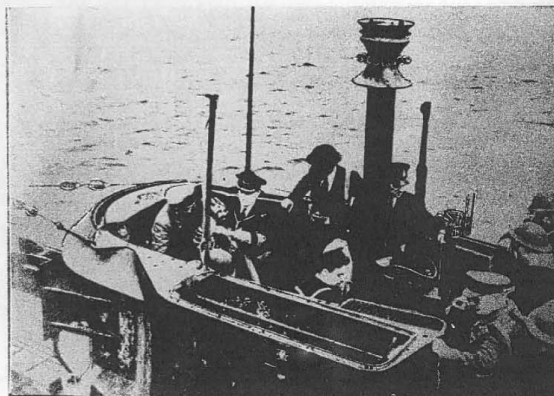




Athos

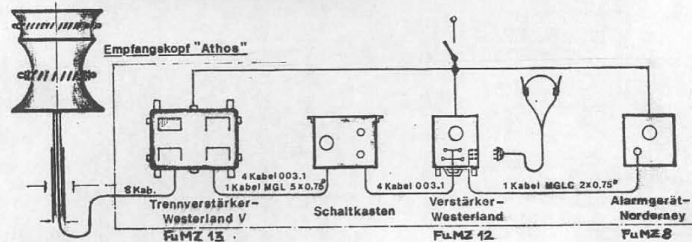
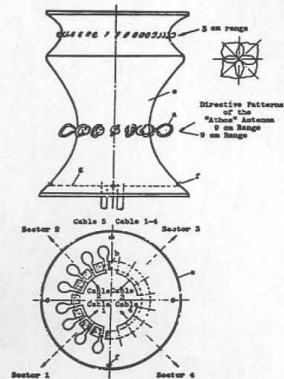
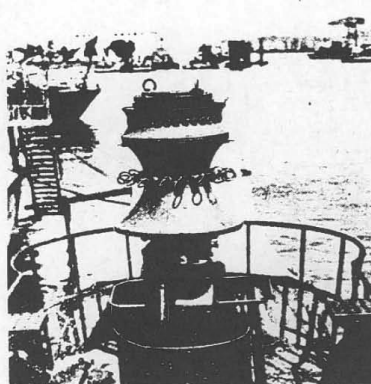


(UR-Gerät Flamingo I)



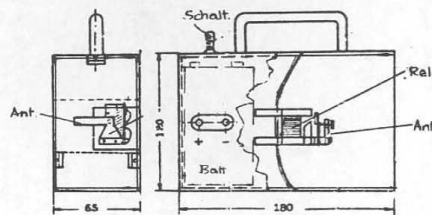
11248 VII C 9.5.45 Beyerholz LK

CMW-Sektor-Teil-A. "Athos" FuMB 35



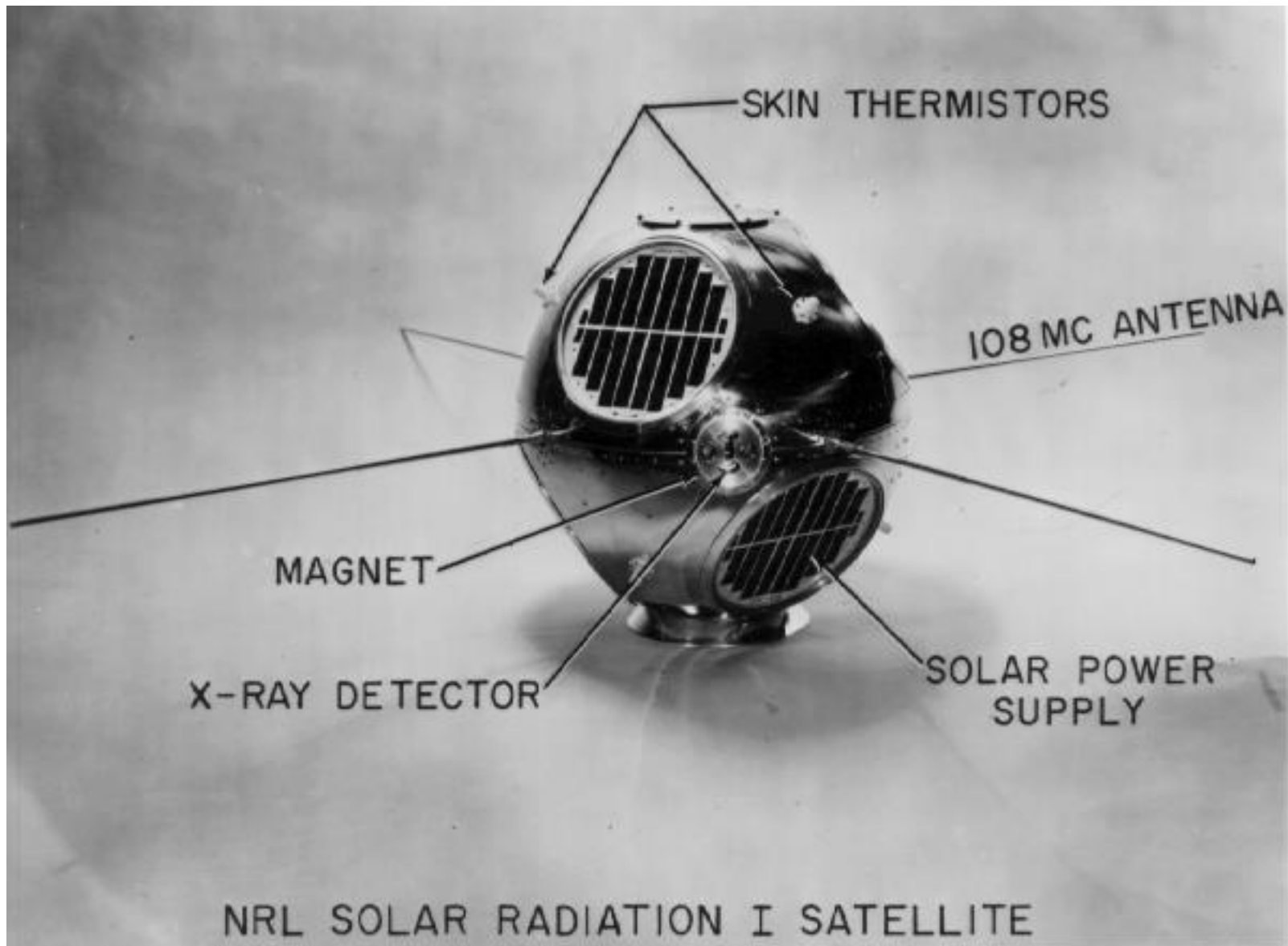
Sektoranlage FuMB 35 "Athos" (1.5 - 15 GHz)

24k



CMW-Prüfsender FuMZ 10 "Puck 901" für $\lambda = 10\text{cm}$

24k



SKIN THERMISTORS

108 MC ANTENNA

MAGNET

X-RAY DETECTOR

SOLAR POWER
SUPPLY

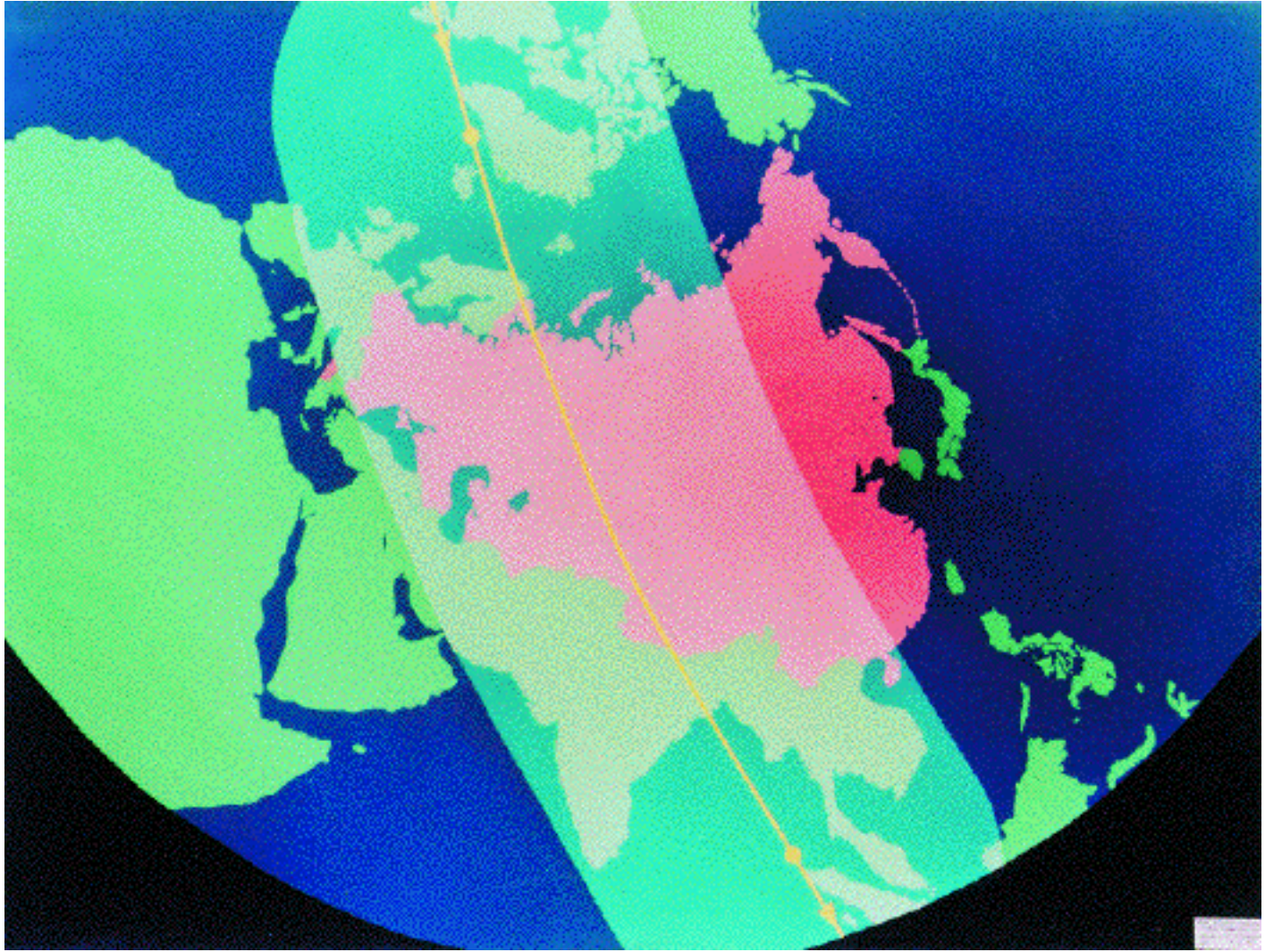
NRL SOLAR RADIATION I SATELLITE



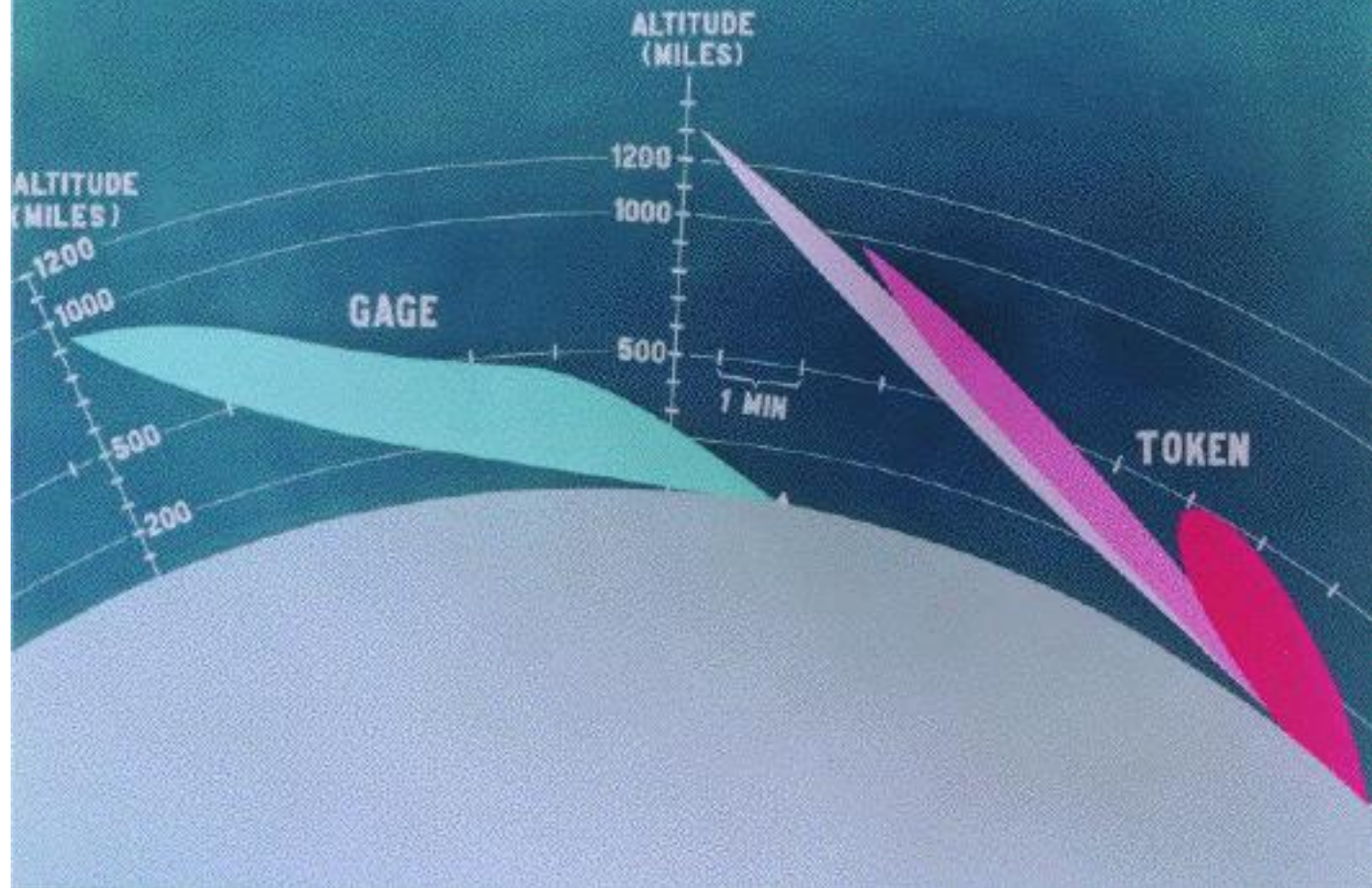
SPECIFIC INTELLIGENCE WHICH "TATTLETALE" CAN SUPPLY

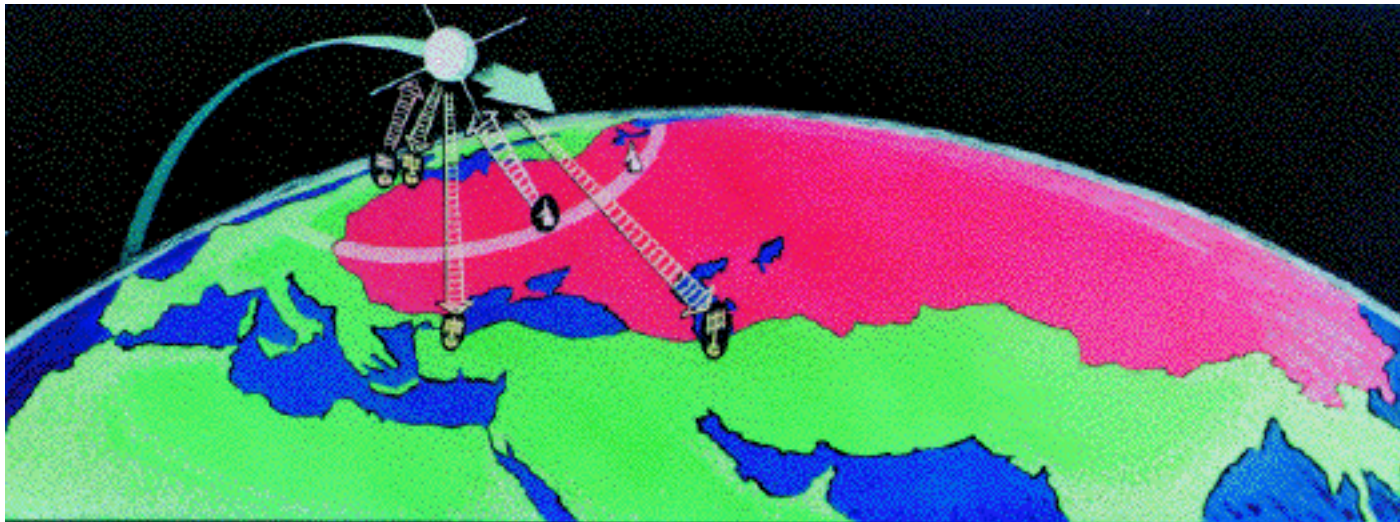
- 1. INFORMATION CONCERNING CHARACTERISTICS AND LOCATION OF AIR DEFENSE EQUIPMENT**
- 2. EVIDENCE OF NEW "S" BAND EQUIPMENT**
- 3. INFORMATION CONCERNING LOCATION OF RESEARCH, DEVELOPMENT AND TESTING ACTIVITY**
- 4. INFORMATION CONCERNING LOCATION OF ELECTRONIC MANUFACTURING AREAS**
- 5. INFORMATION CONCERNING AMBIENT ELECTRONIC ATMOSPHERE WITHIN "S" BAND THROUGHOUT USSR**

S-BAND (1550-3900 MHZ) PARTIALLY COVERED BY FIRST PAYLOAD



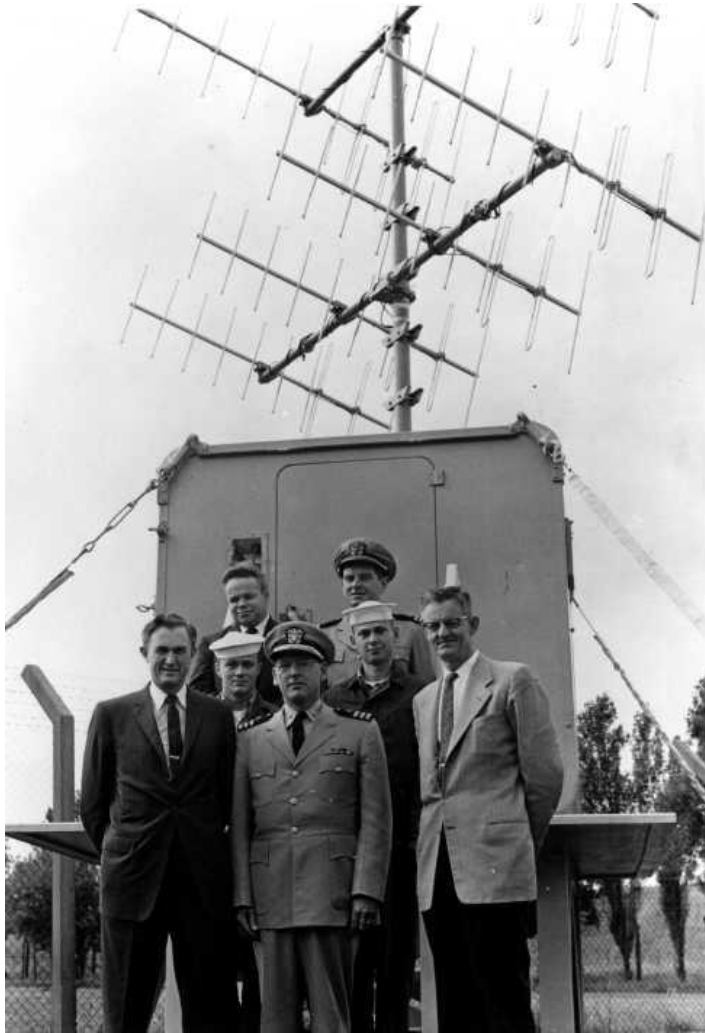
RADAR COVERAGE DIAGRAM





NSA DATA REDUCTION

- 1. ANTENNA SCAN RATE**
- 2. PULSE REPETITION FREQUENCY**
- 3. TYPE OF RADAR**
- 4. RADAR DISPOSITION**
- 5. ANALYSIS OF THREAT**
- 6. LOCATION**



GRAB I

First Operational Intelligence Satellite



- 1 Emit pulsed radar above horizon
- 2 Transpond pulses detected in space, beyond horizon
- 3 Collect & record transponded signal

- 4 Courier tape recordings
- 5 Evaluate & distribute tapes
- 6 Exploit tapes for ELINT product
- 7 Exploit tapes for War Planning





June 22, 1960
Cape Canaveral



Piggy-Back Satellites Hailed As Big Space Gain for U. S.

By Charles Cordry
United Press International

Two new American satellites circled the earth today after a spectacular "double-header" launching with a single rocket. Officials hailed their success as proof that America is "moving into space for real."

The moonlets, launched piggy-back fashion from Cape Canaveral, Fla., at 1:54 a. m. EDT Tuesday, were sent aloft to provide the world a precise all-weather navigation system, to improve the accuracy of its clocks and to measure the sun's radiation.

The larger satellite also carried a space experiment for Canada—a receiver to study background radio noises from the galaxies.

America now has 11 satellites in orbit around the earth, compared with Russia's two.

New Space First

The feat of putting up a pair of satellites simultaneously with a single booster was a new space "first" for the United States. This has not been attempted, so far as is known, by Russia.

A two-stage, Thor-able-star, an Air Force rocket, accomplished the feat.

The Transit II-A satellite, the navigational aide and time-measuring sphere, soared into a near-circular orbit that will carry it over all of the earth's land masses—including Russia—except certain arctic and antarctic points.

As soon as orbit was achieved, this 223-pound aluminum space probe gave birth to the smaller basketball-sized satellite, which checks on solar radiation. It was ejected by spring action.

Payloads Function

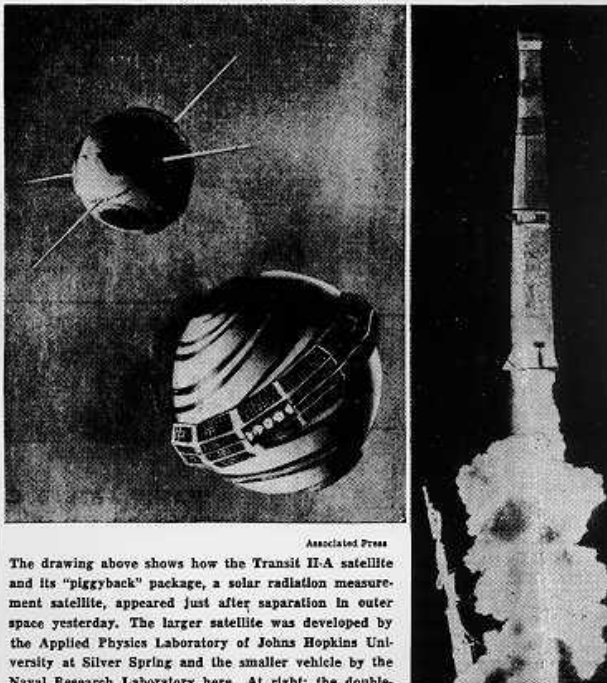
Rear Adm. T. F. Connolly, chief of the Navy Bureau of weapons, told a news conference here that the payloads of the two satellites were functioning properly.

"There are no problems," he said.

Cmdr. R. F. Freitag of the Weapons Bureau said Navy officials are confident now that a system of four Transit satellites, to be in operation by 1962, will be able to fix positions on land and sea within one-tenth of a mile.

The first Transit, launched last April, is giving fixes within a quarter of a mile, they said, and the one launched yesterday will do better.

When all four Transits are in orbit, ships at sea can interrogate them by radio at any time regardless of weather and



Associated Press

The drawing above shows how the Transit II-A satellite and its "piggyback" package, a solar radiation measurement satellite, appeared just after separation in outer space yesterday. The larger satellite was developed by the Applied Physics Laboratory of Johns Hopkins University at Silver Spring and the smaller vehicle by the Naval Research Laboratory here. At right: the double-header satellite rocket takes off at Cape Canaveral.

the satellites will give them "fixes" in code that will tell them where they are.

Moving for Real

Connolly said the launching of a pair of satellites with a single rocket showed that space operations are becoming "something we can count on." "We are rapidly moving into space for real," he said.

R. B. Kershner of the Johns Hopkins Applied Physics Laboratory said the navigation satellite's orbit was taking it to a maximum of 563 miles from earth and bringing it to within 460 miles.

Its orbiting time is 101.5 minutes. The orbit is inclined 65 degrees to the equator.

The smaller, 43-pound solar radiation sphere probably has fallen behind Transit II-A, Kershner said. It will settle into a somewhat larger orbit and circuit the earth more slowly.

The II-A, in addition to the

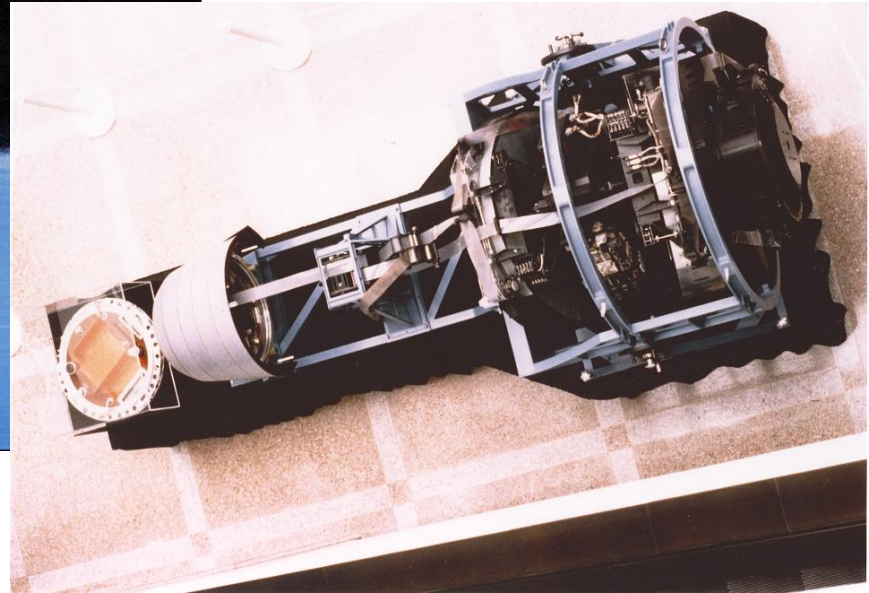
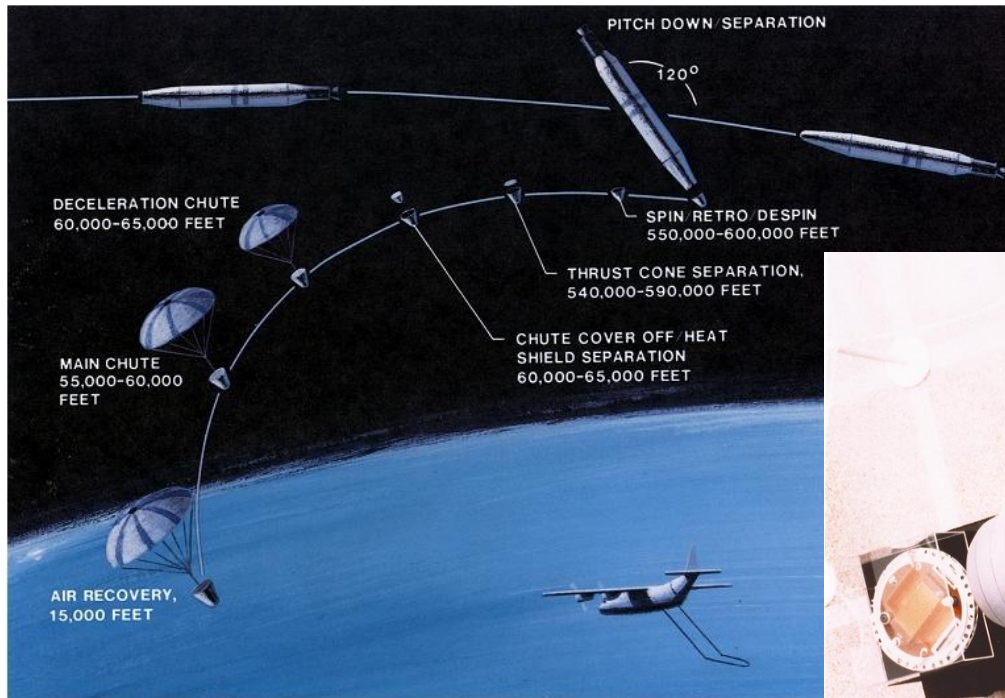
Canadian experiment, carries a new feature not on the first Transit satellite—an electronic

or "digital" clock which the Navy said could "lead to a new global time system."



UPI Telephoto
DIAGRAM SHOWS ORBIT ... of "mother and daughter" satellites

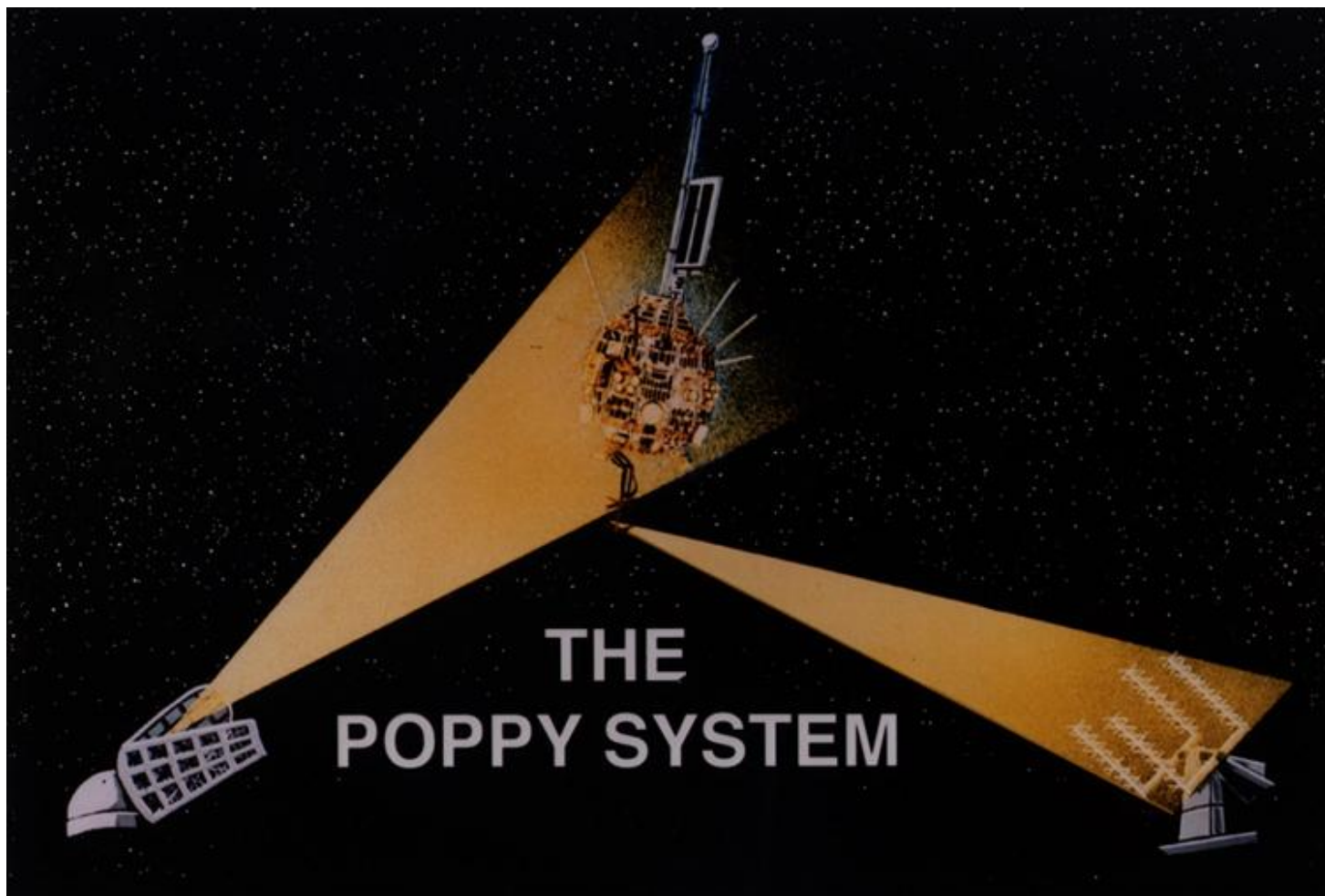
CIA/AF Corona Program for photoreconnaissance



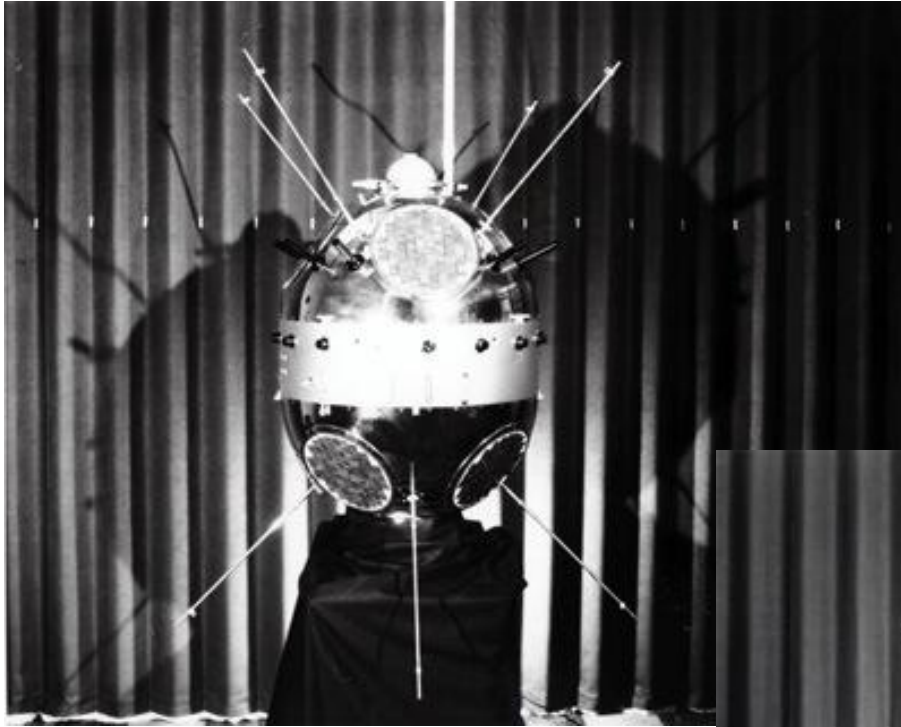
August 12, 1960; first successful capsule recovery after 13 failures.



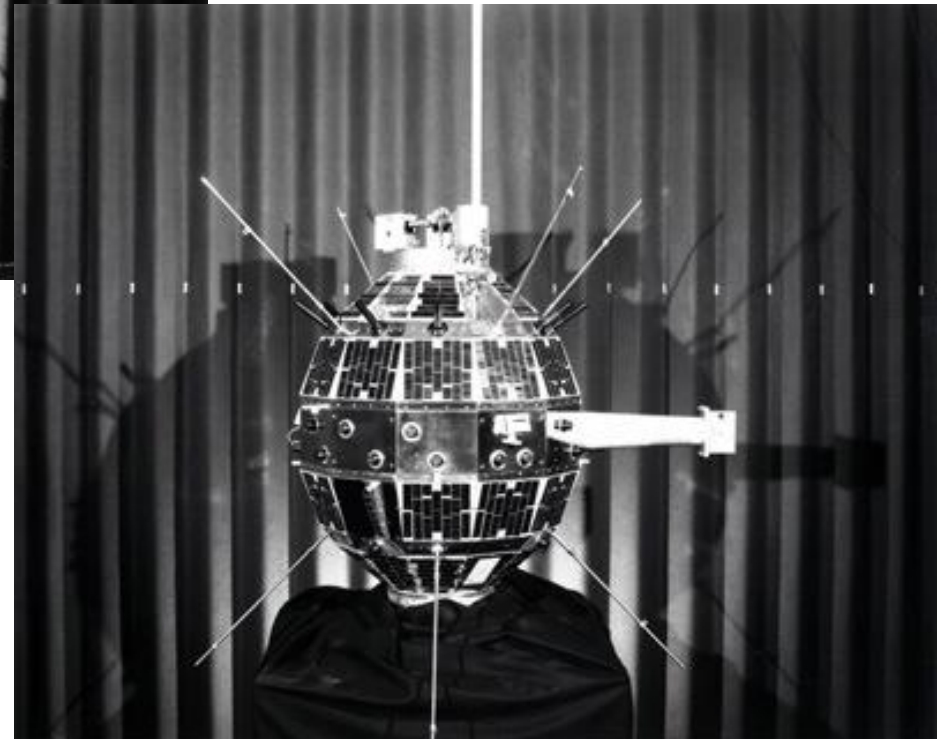




From 1962 to 1977, seven series of Poppy ELINT satellites were successfully launched from the Vandenberg Air Force Base

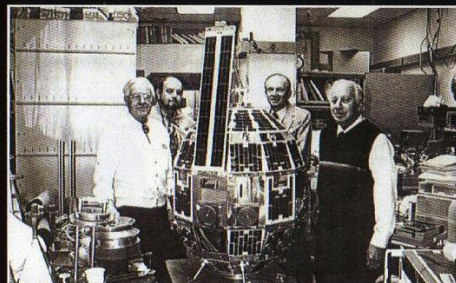
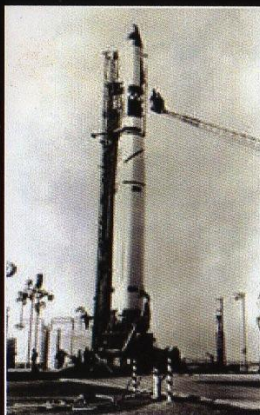
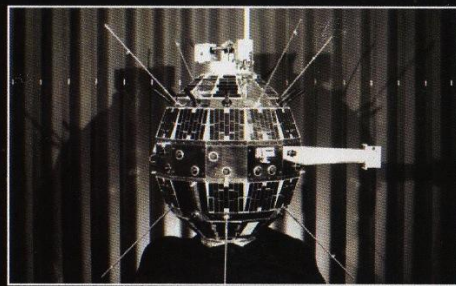
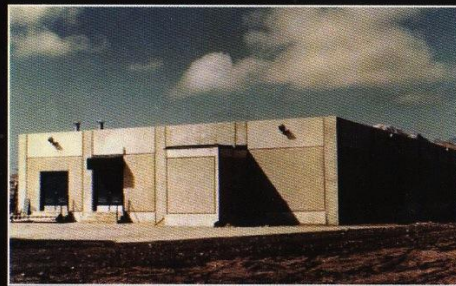
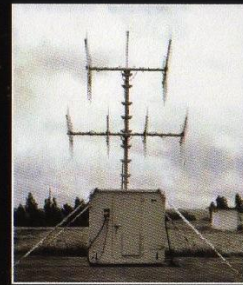
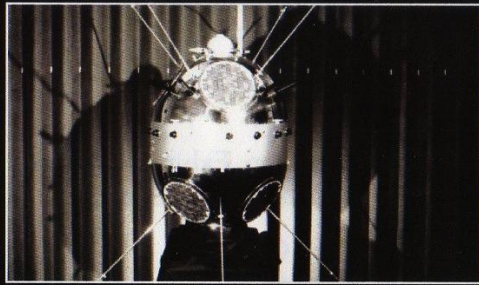


Poppy 1 and 2, launched in 1962 and 1963, respectively



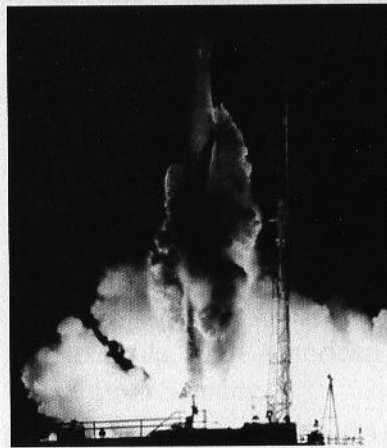
AMERICA'S FIRST INTELLIGENCE SATELLITE





Appendix: Grab, Poppy Launches

Date	Vehicle	Site ¹⁴	Mission	Remarks
GRAB				
22 Jun 1960	Thor Able Star	CC	<i>GRAB 1</i>	
30 Nov 1960	Thor Able Star	CC		Failure
29 Jun 1961	Thor Able Star	CC	<i>GRAB 2</i>	
24 Jan 1962	Thor Able Star	CC		Failure
26 Apr 1962	Scout	NMFPA		Failure
POPPY				
13 Dec 1962	Thor Agena D	VAFB	<i>POPPY 1</i>	
15 Jun 1963	Thor Agena D	VAFB	<i>POPPY 2</i>	
11 Jan 1964	TAT Agena D	VAFB	<i>POPPY 3</i>	
9 Mar 1965	Thor Agena D	VAFB	<i>POPPY 4</i>	
31 May 1967	Thor Agena D	VAFB	<i>POPPY 5</i>	
30 Sep 1969	Thorad Agena D	VAFB	<i>POPPY 6</i>	
14 Dec 1971	Thorad Agena D	VAFB	<i>POPPY 7</i>	



Grab – 22 June 1960



Poppy – 14 December 1971

U.S. Air Force photos

¹⁴ Launch Sites: CC = Cape Canaveral, Florida; NMFPA = Naval Missile Facility, Point Arguello, California; VAFB = Vandenberg Air Force Base, California.







The World's First Spy Satellite...



... as far as we know of

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April 2, 2014