DEFUSING THE COLD WAR

THE ROLE OF OVERHEAD RECONNAISSANCE

Learning Institute for Elders (LIFE)
University of Central Florida
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Cold War Chronology

- WW II
- Military Overflights
- Berlin Blockade / Airlift
- Soviet A-bomb
- Korean War
- U-2 Overflights
- Satellite Reconnaissance
- Sputnik & Space Age
- Cuban Missile Crisis
- Soviet H-bomb
- Gary Powers Shot Down

“This kind of knowledge is vital to us.”

“Without knowledge you would only have your fears on which to plan your own defense arrangements and your whole military establishment. Now, if you are going to use nothing but fear and that’s all you have, you are going to make us an armed camp. So this kind of knowledge is vital to us.”

President Dwight D. Eisenhower
1954
The Monuments Men & Women

The “Monuments Men”

Rose Valland
Jeu de Paume
Wehrmacht *Wunderwaffe* – Several Examples

V-2 rocket

Me 262 *Sturmvogel*

Me 163 *Komet*

Tabun nerve gas

Type XXI *Electroboote*

Hs-293 anti-ship missile
German High-Tech Facilities in Russian Zone of Occupation

- Aircraft & Missiles
- Bio & Chem
- Nuclear
- U-Boats
- Synthetic Fuel
“Monuments Men” for German Technological Treasures

“The scale on which science and engineering have been harnessed to the chariots of destruction in Germany is indeed amazing. There is a tremendous amount to be learnt from Germany at the present time.”

W. S. Farren, Royal Aircraft Establishment

- Operation Overcast / Paperclip (rocketry)
- Special Mission V-2
- Operation Alsos (nuclear program)
- TICOM (cryptography and signals intelligence)
- Operation LUSTY (Luftwaffe Secret Technology)
- Operation Surgeon / Fedden (UK: aircraft)
- T-Force
- No. 30 Commando

- Soviet Alsos (nuclear program)
- Operation Osoaviakhim (rocketry): October 1946
General Patton’s Observations…

“I'll say this; the Third Army alone with very little help and with damned few casualties, could lick what is left of the Russians in six weeks.”

“Someday we will have to fight them and it will take six years and cost us six million lives.”
Containment, Iron Curtain, and Cold War

George F. Kennan, U.S. diplomat in USSR (1946)
• “there can be no peaceful coexistence”
• “impervious to logic of reason, and is highly sensitive to logic of force”
• “long-term, patient but firm and vigilant containment”

Winston Churchill, former British Prime Minister (1946)
• The “Sinews of Peace” speech proposed an Anglo-American coalition to stop the Russians
• “from Stettin in the Baltic to Trieste in the Adriatic, an iron curtain has descended across the continent…”

Bernard Baruch, U.S. financier & presidential advisor (1947)
• “Let us not be deceived—we are today in the midst of a cold war. Our enemies are to be found abroad and at home.”
Official Assessments of Soviet Intentions Were Grim

• Joint Chiefs of Staff #1696 (summer 1946)
  • Predicted total war between Soviet Union and U.S.
  • U.S. had to be prepared for gas, bacteriological, and atomic warfare
  • One of the most vital prerequisites to our future national security is adequate intelligence from inside the USSR… every possibility of obtaining information must be exhausted

• Clifford-Elsey Report (September 1946)
  • Suspicions about the USSR must be replaced by accurate knowledge…
  • Recommended “restraining and confining” the USSR
First Soviet Nuclear Test Was a Major Surprise

3 March 1948

U.S. ATOM SECRETS HELD STILL SECURE
Russia Cannot Catch Up for Many Years, Times Men Say. Deploiring War Talk

Hanson W. Baldwin, military and naval editor of The New York Times, and William L. Laurence, science reporter, agreed yesterday that the United States would have a protracted breathing space before Russia could match it in quantity and quality of atomic bombs.

Mr. Laurence expressed the belief that it would be at least twenty-five years before this would come to pass. Mr. Baldwin said he believed a period of serious tension might arise in less than that span, but he agreed that Russia would not be in a position to take aggressive action against the United States for a considerable time.

6 May 1948

SOVIET ATOM BOMB HELD 20 YEARS OFF
Hancock Tells Spice Parley
Views Are Based on Talks With Russians at U.N.

Business men were assured yesterday by John M. Hancock, partner in Lehman Brothers and former United States delegate to the United Nations Atomic Energy Commission, that the Soviet Union is about twenty years away from completing an atomic bomb.

8 Dec 1948

COMPTON DOUBTS RUSSIA HAS BOMB
But M. I. T. Scientist Admits That Nothing Is Known of Soviet Nuclear Progress

Dr. Karl T. Compton, new chairman of the Research and Development Board of the National Aeronautics Committee, said that the Soviet Union is about twenty years away from completing an atomic bomb.

23 September 1949

TRUMAN SAYS RUSSIA SET OFF ATOM BLAST

New York World-Telegram

Explosion Took Place in Recent Weeks

ATOMIC BLAST IN RUSSIA
Living Through the Cold War

- Survival Under Atomic Attack
- Nevil Shute, On the Beach
- Life Magazine: New Facts You Must Know about Fallout: The Drive for Mass Shelters
- Images of bomb explosions and fallout shelters
U.S. Intelligence Collection Priorities

- ABC weapons (atomic, biological, and chemical)
- Long-range bombers
- Intercontinental ballistic missiles
- Air defense and ABM radars / electronic-order-of-battle (EOB)

- Efforts were global in scope and included:
  - Covert operations
  - Exploitation of open source materials
  - Technical collection systems
  - Peacetime Airborne Reconnaissance Program (PARPRO)
Stringent Soviet Security Measures
RECONNAISSANCE AIRCRAFT

Peacetime Airborne Reconnaissance Program

U-2
The Largest Aerial Camera (1951)

- Manufactured by Boston University for USAF in 1951
- Largest aerial camera ever built
  - 240-inch focal length
  - 18” X 36” negatives (newspaper size)
  - Weighed 6,500 lbs.
- Flown on C-97, which had to be cut in half to install the camera
- Descriptions of its resolution
  - “The aircraft was 72 miles away, and yet we could see people in Central Park”
  - Could resolve a golf ball from 45,000 feet
  - Could see into Czechoslovakia from Berlin air corridor
- Flown from Wiesbaden between 1952 and 1962
October 1952 – First Deep Penetration Flight
RAF Overflight of Kapustin Yar (August 1953)
“Project Homerun”—Massive Overflight of USSR (1956)

- 21 reconnaissance bombers and 28 KC-97 tankers
- 156 overflights of Soviet territory between 21 March and 6 May 1956
- Final mission comprised six RB-47Es flying abreast
- Very few Soviet fighters scrambled, and no successful interceptions
- “Navigational difficulties in the Arctic region may have caused unintentional violations of Soviet airspace…”
The Need for an Alternative Aircraft

- At least 252 American crewmen were lost to Soviet fighters
- Soviet air defenses were improving
- The U.S. needed a reconnaissance aircraft that could fly above 70,000 feet
- USAF looked at three alternative designs
- Lockheed Aircraft submitted CL-282 “unsolicited proposal”
- USAF rejected Lockheed’s design
  - “too unusual and only one engine…”
- President Eisenhower’s science advisers recommended the Lockheed design and that it be managed by CIA rather than the USAF
Loading A-2 Camera System
U-2 Pilot’s View at 70,000 ft.
U-2 Operational Summary

- Between 1956 and 1960, U-2 aircraft flew 23 successful deep-penetration missions over USSR plus additional missions over Eastern Europe, Middle East, and China. Two of the USSR overflights were flown by Brits.
- On 24th USSR overflight, a salvo of three SA-2 missiles shot down the U-2 piloted by Gary Powers. The U-2 was at 70,500 ft. near Sverdlovsk.
- CIA’s U-2 operations ceased in 1974. Aircraft transferred to USAF.
- USAF 9th Reconnaissance Wing stills operates the U-2.
U-2 Intelligence Findings

• No “bomber gap”

• No “missile gap”

• Detected previously unknown Baikonur Cosmodrome near Tyuratam

• Detected Soviet nuclear test site at Semipalatinsk

• Detected previously unknown ABM radar at Sary Shagan missile test site
The Bomber & Missile Gaps

• On Soviet Aviation Day in 1955, ten Mya-4 “Bison” bombers passed the reviewing stand.

• Nine of the ten made both a second and third pass creating the impression that there were at least 28 aircraft.

• From 1955 – 1957 USAF projected that USSR would have 700 – 800 heavy bombers.

• Only 93 “Bison” bombers were built

• U.S. built about 3,000 long-range bombers in response
Long-Range Aviation Base

Heavy Bombers
INTELLIGENCE SATELLITES
The Advent of Satellite Reconnaissance

- Dr. Von Braun described German views on potential of satellites in May 1945
- Project RAND proposed artificial space satellites in 1946
  - “Preliminary Design Of An Experimental World-Circling Spaceship”
- In 1954, RAND proposed Project “Feed Back”
- USAF project Weapon System-117L started in 1956 with goal of having a reconnaissance satellite by 1963
  - WS-117L impeded by funding limitations and a “peaceful uses of space” mindset
- Launch of Sputnik on 4 October 1957 created impetus to accelerate reconnaissance satellite program
- Several senior USAF officers on WS-117L had prior successful experience with CIA on U-2 program and proposed similar approach
- President Eisenhower’s principal scientific advisers concurred.
## Principal Contractors on Corona Program

<table>
<thead>
<tr>
<th>Contractor</th>
<th>Role</th>
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<tbody>
<tr>
<td>Lockheed Missiles &amp; Space Company</td>
<td>Satellite Control System, Agena Spacecraft</td>
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<tr>
<td>Eastman Kodak</td>
<td>Film</td>
</tr>
<tr>
<td>Itek</td>
<td>Cameras</td>
</tr>
<tr>
<td>General Electric</td>
<td>Film Recovery Capsules</td>
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[http://www.nro.gov/history/csnr/articles/docs/journal-03.pdf](http://www.nro.gov/history/csnr/articles/docs/journal-03.pdf)
Corona (KH-4) Improved Resolution
Hexagon (KH-9) at LMSC Sunnyvale, CA
The Need for More Timely Information

• Delays between taking a photo and seeing the developed film could be weeks or perhaps months

• Treaty verification and Indications & Warning required realtime imagery.

• With strong support for Edward Land, the CEO of Polaroid, President Nixon authorized the CIA to develop the KH-11 imaging satellite

• The KH-11 has an electronic sensor to capture images

• The images are transmitted in realtime via data relay satellites to a ground station in the U.S.
Indications & Warning—Some Metrics

SS-25
Mobile ICBM
In storage or deployed?

Typhoon
Ballistic Missile Submarine
In port or at sea?
# US – USSR Arms Control Agreements

<table>
<thead>
<tr>
<th>Date</th>
<th>Treaty</th>
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<tbody>
<tr>
<td>1972</td>
<td>SALT 1 (Strategic Arms Limitation Treaty)</td>
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<tr>
<td>1979</td>
<td>SALT II</td>
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<tr>
<td>1987</td>
<td>INF (Intermediate Nuclear Forces)</td>
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<tr>
<td>1991</td>
<td>START I (Strategic Arms Reduction Treaty)</td>
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<tr>
<td>1993</td>
<td>START II</td>
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<tr>
<td>N/A</td>
<td>START III</td>
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<tr>
<td>2003</td>
<td>SORT (Strategic Offensive Reductions Treaty)</td>
</tr>
<tr>
<td>2011</td>
<td>New START</td>
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Not one of these treaties would have been possible without satellite-based reconnaissance
"...If we had no justification (for the space program) other than photography, it would be worth 10 times more. "Before we had the photography, our guesses were way off. We were doing things we didn’t need to do. "Because of satellites, I know how many missiles the enemy has."
“Photoreconnaissance satellites have become an important stabilizing factor in world affairs. In the monitoring of arms control agreements, they make an immense contribution to the security of all nations. We shall continue to develop them.”

President Jimmy Carter, 1 October 1978
QUESTIONS?