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X-20 DYNA-SOAR

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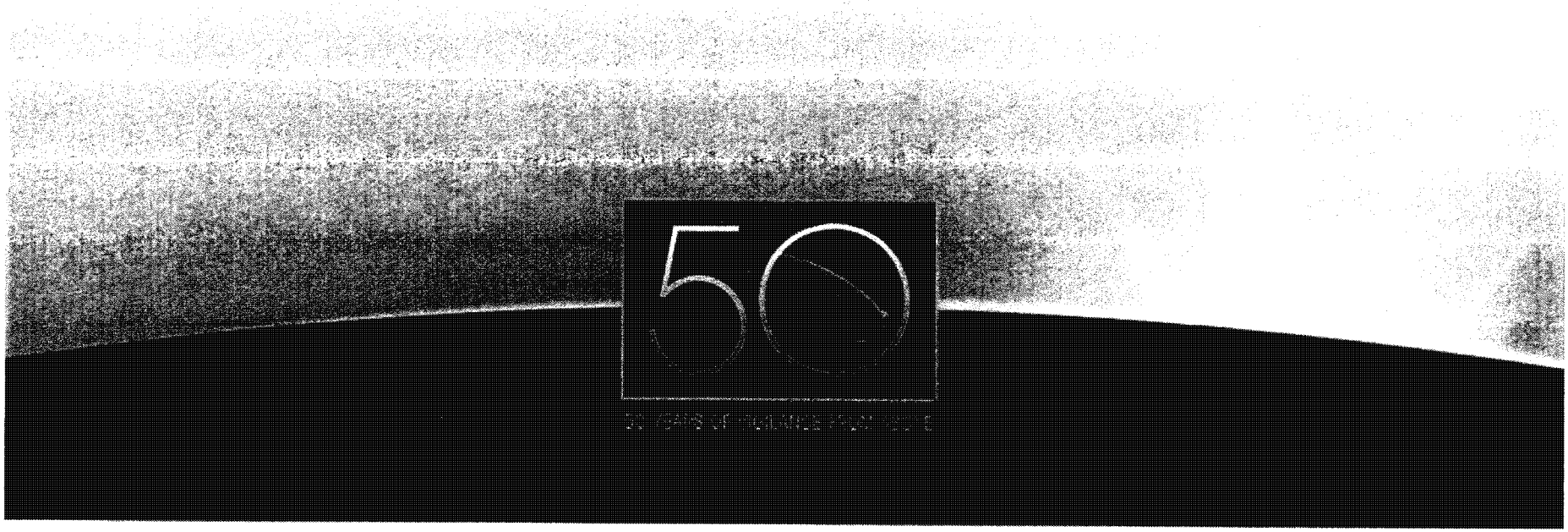
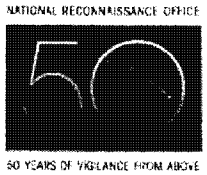
17 Aug 2011





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50 YEARS OF VIGILANCE FROM ABOVE

Overview

- (U) Background
- (U) Major Problems
- (U) Project's End
- (U) Capabilities

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Background

- The development of the USA's first space-plane began in October 1957 and ended in Dec 1963
- Dyna-Soar - Dynamic Soarer
- Spaceplane that could be used for:
  - Reconnaissance
  - Bombing
  - Space Rescue
  - Satellite Maintenance
  - Sabotage of Enemy Satellite
- Program ran from 24 Oct 1957 to 10 Dec 1963
- Cost $660 million ($4.73 billion today)

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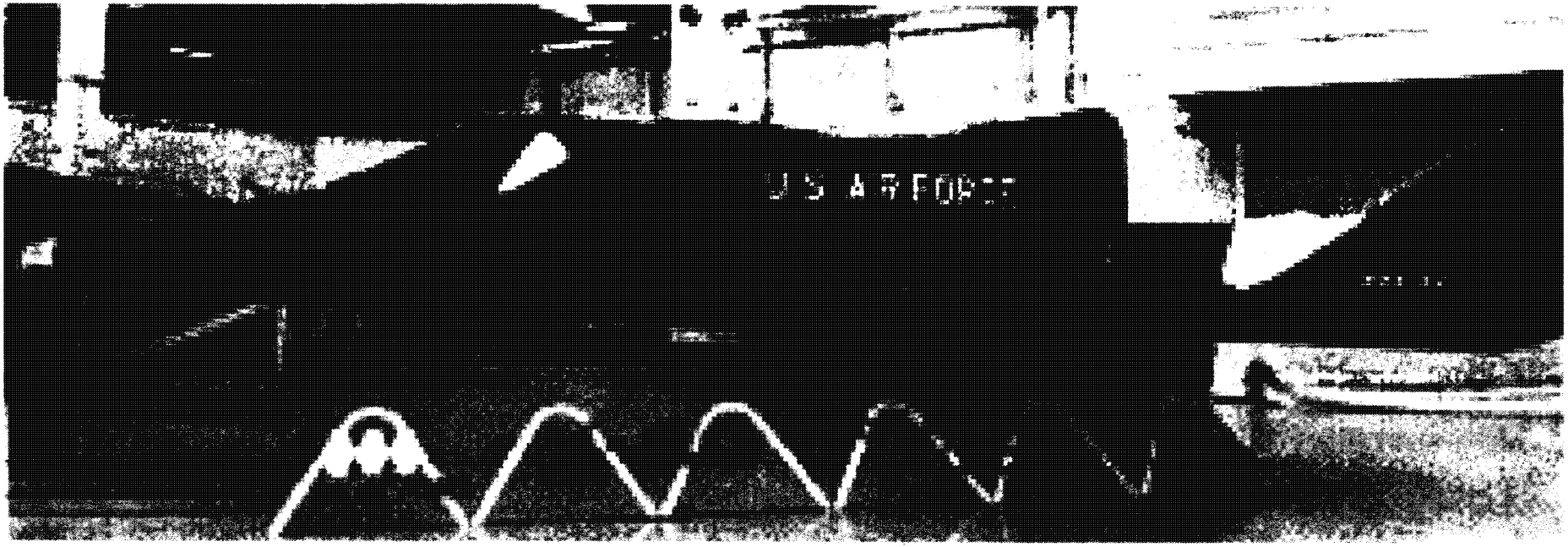
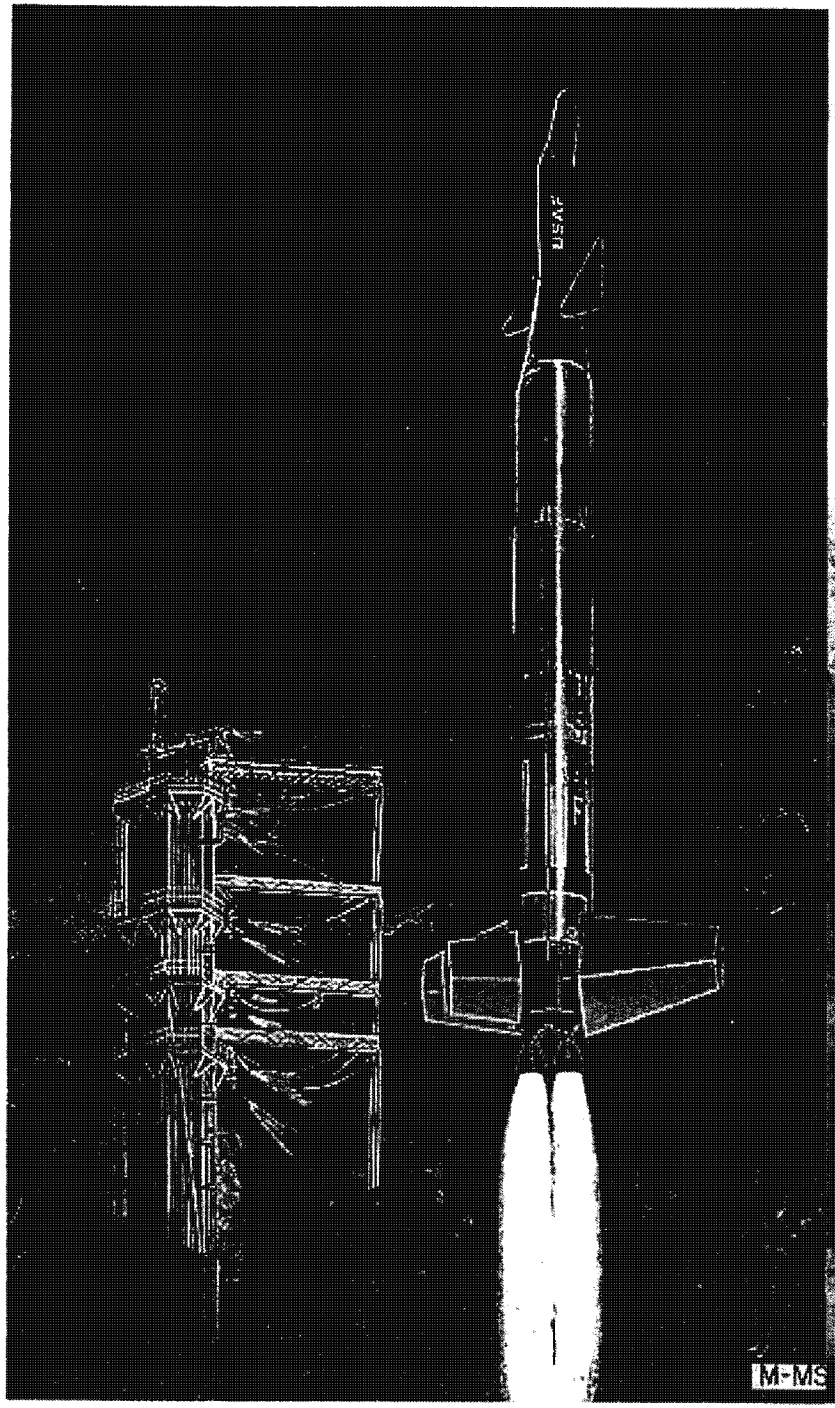
Boeing's Mock Version of Dyna-Soar





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Problems

- Designed to:
  - Travel at the speed of an ICBM
  - Glide to earth like an airplane under control of the pilot
  - Land at an airfield
  - Reach orbit

- Suffered two major problems:
  - Uncertainty over the booster to be used to send the craft into orbit
  - Lack of a clear goal

- Jan 1963 Secretary of Defense, Robert McNamara directed the Air Force to determine whether Dyna-Soar or Gemini was a more feasible approach to a space-based weapon system

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Capabilities

- Drawings showed the spacecraft dipping down into the atmosphere, skimming the surface, to change its orbital inclination
- It would then fire its rocket and resume orbit
- Unlike the later Space Shuttle, Dyna-Soar did not have wheels on the undercarriage (thought the rubber would burn up on re-entry)
  - Goodyear developed retractable wire-brush skids
- Two astronauts and 454 kg of payload were to be carried on the space-plane

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The End of Project

- In November 1963 a "satellite-interceptor" design was proposed that could be used in both low and high orbits
  - Capable of remaining in the air for fourteen 24-hour days with a crew of two men and of intercepting satellites at altitudes of up to 1,850 km
- The first flight of the interceptor was planned for September 1967
- Program was cancelled just after spacecraft construction began
- A permanently operating military space station for servicing "Gemini" modified space ships would be much more effective than the X-20
- Defense Secretary McNamara ended financing for the "Dyna-Soar" program in favor of the program to create the MOL (Manned Orbiting Laboratory) orbiting station

- , just a week after the launch of the first Soviet satellite. The device was given the name "Dyna-Soar" (from Dyna-Soar - Dynamic Soaring). The same "Boeing" firm in cooperation with the "Vought" firm did all the work on the "Dyna-Soar". The dimensions of the X-20 "Dyna-Soar" rocket-plane in its final version were: length - 10.77 meters; housing diameter - 1.6 meters; wingspan - 6.22 meters; and the maximum weight of the device without a payload was 5.165 kg.
- Two astronauts and 454 kg of payload were to be carried on the space-plane. As we see, the weight and dimensions of the "Dyna-Soar" were close to those of the X-37B. The X-20 was to be placed in orbit by the "Titan-ShS" missile. The primary mission of the X-20 was to conduct reconnaissance.
- In November 1963 a "satellite-interceptor" design was proposed that could be used in both low and high orbits and was capable of remaining in the air for fourteen 24-hour days with a crew of two men and of intercepting satellites at altitudes of up to 1,850 km. The first flight of the interceptor was planned for September 1967.
- However, in the mid 1960s the USA Department of Defense was dominated by the opinion that a permanently operating military space station for servicing "Gemini" modified space ships would be much more effective than the X-20. On 10 October 1963 Defense Secretary McNamara ended financing for the "Dyna-Soar" program in favor of the program to create the MOL (Manned Orbiting Laboratory) orbiting station. Some $410 million US was spent on the "Dyna-Soar" program

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Questions?