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Special Purpose Aircraft Design, Development, and Inactive Programs - Archived 1/2006

Aircraft Programs

Lockheed U-2/ER-2. The U-2, a very high-altitude tactical reconnaissance aircraft, was originally sponsored by the Central Intelligence Agency, but responsibility was subsequently transferred to USAF Aeronautical Systems Division, Wright-Patterson AFB, Ohio, USA.

Lockheed Aeronautical Systems Co, Advanced Development Projects, Burbank, California, USA, produced approximately 95 U-2s of all variants through 1989.

U-2A. Original version, some 20 produced initially for the CIA but delivered to the Air Force in 1957.

U-2B. Seven U-2As modified about 1959 to include the J75-P-13 turbojet engine and strengthened structure.

U-2C. U-2A/Bs modified in mid-1960s with larger intakes, J75-P-13B powerplant, extended nose for increased sensor accommodation, and increased fuel capacity. Additional aircraft were newly built; two were delivered to NASA in 1971 for Earth Resources monitoring on behalf of Ames Research Center.

U-2D. Five U-2As modified to accommodate second crew position or specialized sensors. First displayed in 1961.

U-2E. Eighteen U-2A/B aircraft fitted with ECM gear.

U-2F. Four U-2As with aerial refueling capabilities.

U-2G. Two U-2Cs fitted with arrestor hooks, wingtip skids, and modified undercarriage for carrier operations.

U-2R. Originally designated WU-2C, this version was ordered in 1968 to replace previously lost models. This version has a longer nose and a fuselage without a dorsal spine fairing. It also has greater fuel capacity and a larger wingspan than earlier models.

U-2S. Re-engined with GE F118-GE-101 turbofan rated at 19,000 lbst. Total of 37 aircraft re-engined 1992-98.

TR-1. U-2 variant powered by a Pratt & Whitney J75-P-13 turbojet; ceiling and speed in excess of 21,650 kilometers (70,000 ft) and 692 kilometers per hour (373 kt), respectively; and 12-hour endurance. The 31.39 meter (103 ft) span wings have outrigger wheels which drop away on take-off (retrieved for reuse) and wingtip skids to guard against damage during landing. It has interchangeable noses, mission bay hatches, and instrument-carrying wing pods; total payload is about 1,451 kilograms (3,200 lb). It carries a GM Hughes Advanced Synthetic Aperture Radar System (ASARS II), including UPD-X side-looking airborne radar (SLAR) that enables the TR-1 to scan approximately 55 kilometers (30 nm) into enemy territory and supply friendly forces with data on enemy movements.

TR-1B. Two-seat training variant with second cockpit in tandem, above and behind the pilot station.

ER-2 Version. Earth Resources aircraft, different from TR-1 only in mission payload. NASA received one ER-2 in 1981, replacing a U-2C. ER-2 used for water resource tests, land use development, disaster assessment, and atmospheric sampling.

Outlook. Neither funding profiles nor specific project details regarding planned U-2 upgrades are available. Raytheon and the Air Force are reported to be working to improve the resolution of the aircraft's ASARS-2 system, and a planned defensive upgrade is a particularly high-priority program.

USAF is addressing the misconception that the manned U-2s are to be replaced by the unmanned Global Hawk UAV, and is stressing the complementary aspects of the two systems.

As current plans reportedly call for the U-2 to remain in service until 2020-2025, additional upgrades of its avionics and sensors may be expected. The USAF, however, has released no planned funding profile for such work.

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