

# Lockheed SR-71A Blackbird

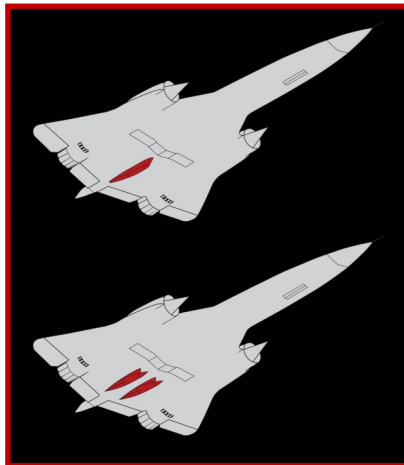
By: Tony R. Landis



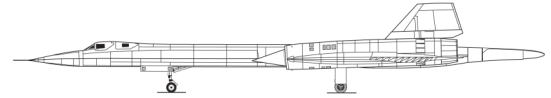
Paths to the Present  
**FLASHBACK**

## Big Tail - One of a Kind Variant

Shortly after the first SR-71's began flying operational missions over North Vietnam the Air Force was looking into ways of expanding the capabilities of the aircraft. With the interchangeable noses, mission planners had to make a choice of flying either optical cameras or side-looking radar, depending upon the mission requirements and the weather over the target area. Unfortunately several missions were rendered useless when weather over the target area prevented the use of the optical camera systems installed. There was also the possibility that future ground defenses had the ability to reach the SR-71 from behind since it carried no aft



Prior to the Air Forces decision to use the extended tail configuration, other designs were considered such as equipment pods and conformal packages.



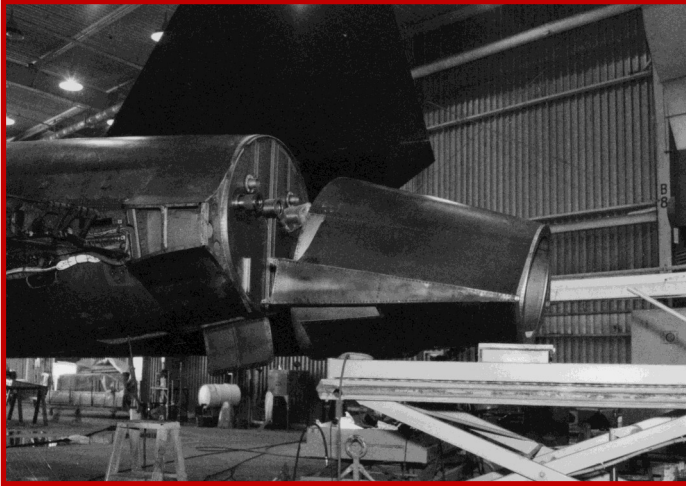
facing countermeasures.

In 1974, the Air Force identified a requirement for aft

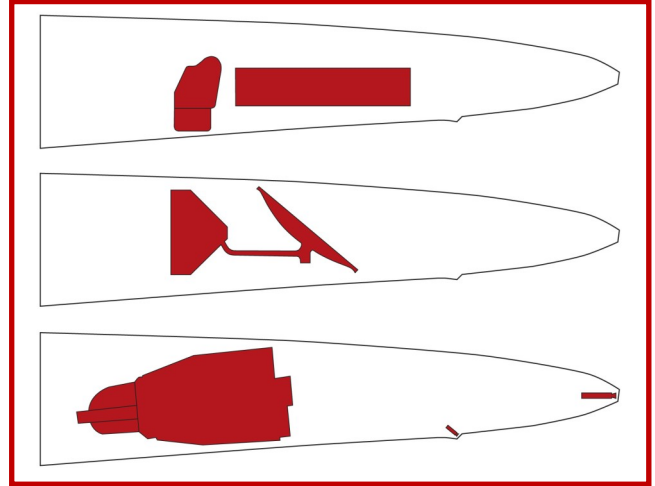
facing ECM requirement on the SR-71. Several proposals examined by the Air Force included conformal packages, belly pods as well as an extended tail fairing. After researching all the possibilities, the extended tail appeared to be the most viable option based on lowest cost, added volume and least aerodynamic drag. The new "Big Tail" assembly is 13 feet 9 inches long and weighs 1,273 lbs. with 49 cubic feet of space to carry 864 lbs. of payload. The primary payload consisted of aft facing ECM as well as the 24 inch Optical Bar Camera. The new assembly needed to articulate 8.5 degrees up and down to clear the runway during take-off and landing.

The tenth SR-71 built (61-7959) was selected to receive the new modification.

SR-71A (61-7959), delivered to Beale AFB in early 1966 to be part of the operational fleet, flew at Beale for 8 years before being transferred to the Flight Test division at Palmdale in 1974. This is '959 flying into a beautiful California sunset on July 29, 1971.



The first step in the modification process was to remove the existing tail assembly so that the 'Big Tail' adapter section could be installed.



The interior space of 'Big Tail' could be utilized for Electro-optical camera systems, satellite uplink systems or a combination of Optical Bar Camera and aft facing ECM equipment.

This aircraft was already being used for flight test duties at Palmdale at the time so there would be no effect on the operational fleet. Between April and November 1975, '959 received the modification with the new tail fairing; necessary modifications included a 51 inch adapter unit for the new tail, air conditioning for cameras and other equipment as well as routing the fuel vent along the upper surface of the tail. In addition to the tail modification, chine bays were modified to accommodate the 24 inch Optical Bar Camera.



For early taxi and flight tests, calibration stripes were painted on the tail to aid in tracking.

With the stress and vibration testing completed, 'Big Tail' was taken out for the first high-speed taxi test on November 20, 1975 by Lockheed test crew Darrell Greenamyer (pilot) and Steven Belgeau (Reconnaissance Systems Officer-RSO).

Two weeks later, on December 3<sup>rd</sup>, the same crew took Big Tail up on its first flight. Lasting just over one hour, the crew performed basic flight checks as well as tail deflections and fuel dump tests. With each test flight with the same Lockheed crew, Big Tail flew to higher speeds and altitudes achieving Mach 3 at 75,000 ft



Direct side view of '959 with the new tail assembly installed sitting on the ramp at Palmdale.

during the 6<sup>th</sup> flight on January 28, 1976. Prior to turning the aircraft over to Air Force test crews, Greenamyer performed 4 solo flights to prove the system could be run by just a single crewmember.

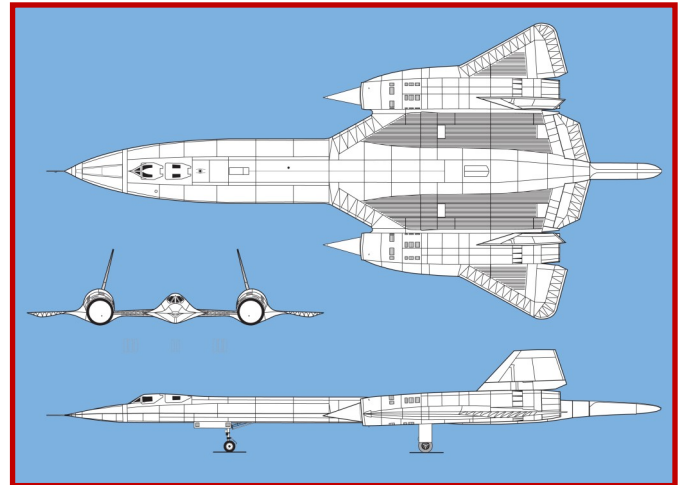


The RSO's seat occupied by a ballast dummy affectionately known as "Sierra Sam".

Once Lockheed crews proved the system worked, the Air Force took over all flight testing. Tom Pugh and Bob Riedenauer became the pilots and RSO duties went to William Frazier and John Carnochan with the first Air Force flight taking place on May 5, 1976. Over the next 6 months these Air Force crews made 23 flights in 'Big Tail', testing various camera systems in the tail and chine bays, as well as new ECM systems such as the DEF I, DEF J and DEF A-2.



Close-up shot of the extended tail assembly on 959 as it taxi's by the camera on its way out for another test mission. The panoramic window for the Optical Bar Camera is visible on the underside of the movable tail.



This 3-view drawing of SR-71A (61-7959) 'Big Tail' shows the modifications required for the additional systems.



'Big Tail' departs Palmdale on another test mission. Early test flights were conducted with white calibration stripes painted on the tail to aid in tracking.





A view from the tanker looking down on 'Big Tail' off of the California coastline. In addition to the extended tail, chine bays were enlarged to house Optical Bar Cameras as an additional optical camera capability.



The 'Big Tail' SR-71A (61-7959) takes on fuel from a KC-135Q tanker out of Beale AFB. All 'Big Tail' test flights were flown out of Palmdale. The extended tail was used to house an Optical Bar camera as well as a variety of aft facing ECM systems.





'Big Tail' on a test flight over the Mojave Desert. The moveable tail was normally set at a two degree downward angle during normal flight and could actually be used to trim the aircraft in flight. From its first flight on January 19, 1966 to its last flight on October 29, 1976 this aircraft only flew a total of 866.1 hours.



'Big Tail' comes in for a landing at Palmdale after a test mission. The tail is lowered 8 degrees to prevent interference with the landing parachute.





The modified tail assembly shows up well in this view as SR-71A 61-7959 'Big Tail' takes on fuel from a KC-135Q tanker aircraft. The extended tail required the fuel dump port to be routed across the top of the new tail assembly.



Barely visible in this view of 'Big Tail' is the optical bar camera window and aft-facing ECM antennae in the modified tail assembly as the aircraft flies in the vicinity of Edwards AFB, CA.



After this Blackbird's last flight on October 29, 1976, it was parked on the ramp at Palmdale and used as source of spare parts for the other flight test Blackbirds. This photo, taken in the summer of 1990, shows all the missing or swapped out parts such as the vertical stabilizer from SR-71B 61-7956.



By mid-1990, all of the surviving Blackbirds had been allocated to various museums across the country. Many of these were disassembled and trucked to their destinations by Worldwide Aircraft Recovery. Note the tail assembly sitting on a trailer next to '959 prior to disassembly. (Photo by Mike Relja)

Although 'Big Tail' proved to be a viable system, the Air Force chose not to pursue the concept any further. After only 36 flights with the extended tail, '959 made its last flight on October 29, 1976, then simply placed in outdoor storage at Palmdale. Though it only had a total of 866 hours of flight time and a total of 304 flights to its credit, '959 became a source of spare parts for other flight test SR-71s until it was finally transferred to the Air Force Armament Museum at Eglin AFB, Florida in the fall of 1991.



SR-71A 'Big Tail' on display at the Air Force Armament Museum at Eglin AFB, Florida



## **AFMC History & Museums Program**

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