The Planes

179 operational S-3 aircraft were built, entering service in 1975 with a mission of "Sea Control" around aircraft carriers. The missions included Anti-submarine warfare against Soviet submarines. {Editor's note: This S3 aircraft photo is from a Navy Museum, taken in 2015}.

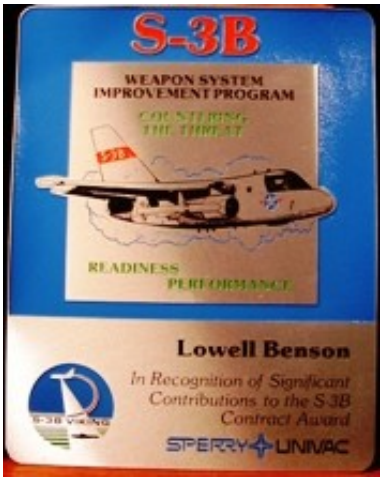
Operational sites were initially on the East coast at Cecil Field (Naval Air Station in Jacksonville, Florida) then NAS JAX (Naval Air Station in Jacksonville), and the West coast at NAS North Island in San Diego.

18 Squadrons initially.

The Systems Hardware

AN/AYK-10 computer [Sperry type 1832] on the initial S-3 Aircraft developed and built by Univac St. Paul. Several Sperry management personnel were on-hand when the first S-3A with a St. Paul built processor was rolled out at the Lockheed factory,

- Jim Rapinac, General Manager, Special Programs, Salt Lake City
- Bill McGowan, Marketing Rep, LA office
- Ernie Hams, VP Program Management
- Dick Gehring, VP and General Manager in St. Paul
- Ken Oehlers, S-3A Engineering Director
- Dan Brophy, S-3A Program Manager
- Dewaine Osman, VP Marketing
- John Spearing, DSD Valencia Site Manager
- Norbert Kielbach, Marketing Rep, LA office



S-3B Weapon System Improvement Program (WSIP) modified 119 S-3s from 1987 to 1994. The WSIP was developed to counter the quieter Soviet submarines. WSIP added Harpoon, APS-137 radar, upgraded acoustics processing, and upgraded ESM (Electronic Surveillance Measures) along with mission software upgrades. {Editor's note 1: The harpoon addition was proposed from and then designed by engineers in St. Paul. Lowell Benson led the teams, Gerry Shaw and Gary Bosworth did the technical proposal, then Ken Graber and Mark Nelson did the hardware design. The design put two new Printed Circuit (PC) cards into each of the dual Input/Output chassis. One of the PC cards provided the targeting/guidance data from the computer to the missile(s). The other provided the control mechanism for launching the missiles from under the wings.}

{Editor's note 2: The WSIP update to make the S-3B also included double density semi-conductor memory chassis to replace the original mated-film memories that had reached end of life. This design was done in St. Paul and the manufacturing in the Sperry plant in Winnipeg. Again, Lowell Benson managed the program and Ken Graber was the lead engineer. The Canadian government funded the development, the initial memory chassis were installed into the AN/AYK-502 computers (the Canadian nomenclature for the type 1832 computers) aboard the Canadian CP-140 Aurora aircraft.}

Effort was led by Lockheed Martin Burbank, Ca with Univac TSD (Technical Support Division) software support out of Valencia office. (Merger with Burroughs brought the S-3 support activity in Valencia and the P-3 support at Warminster, Pennsylvania under one company).

An AYK-10 computer replacement contract awarded to Unisys in 1995. S-3 funded a commonality task force in the early 1990s to produce a common ASW software library between the S-3 & P-3, but was unable to convince the P-3 community to support it. The AYK-23 was initially developed by Unisys Canada in Winnipeg. Production was moved to Kanata, Canada with engineering support at Eagan. Initially 124 aircraft were to be modified. With the announcement of the S-3 Sundown plan the contract was modified to produce 64 shipsets.

With the AYK-23 upgrade came the re-write of the mission software in Ada. During the mission software upgrade there were two significant changes to the S-3. One was the replacement of the Navigation system with the system in which there was a single interface from the mission computer to the various navigation subsystems, replacing the traditional method where the mission computer communicated directly with each navigation subsystem. This upgrade included the addition of GPS to the aircraft. The second major upgrade was the redefinition of the S-3 role from 'outer zone ASW' to 'sea control'. With the reduced threat from the Soviet Union the ASW (Anti-submarine Warfare) emphasis was significantly reduced and the S-3 lost its ASW capability (along with one operator, console, training program, etc.).

There was one prototype 'Surveillance System Upgrade (SSU)' aircraft that was modified to include Link-16, enhanced APS-137 radar, imagery transmission (TCDL – Tactical Common Data Link) and enhanced ESM capabilities. Though in high demand by the carriers, the SSU was not able to secure funding or mission role for the S-3, and these capabilities were later incorporated into the P-3.

The Sundown plan announced in 2004 was fully implemented in 2007. The S-3 ASW mission was accomplished with Frigates and LAMPS (Light Airborne Multi-Purpose System) helicopters. The S-3 was used to top off the F-18 aircraft once airborne from the carrier, but with the introduction of the F-18E/F variant - the newest F-18s could provide the same tanker re-fueling service.

Epilogue

With no other country flying the S-3 it has been difficult to sell the S-3 airframe to any other international user. There are a few more details at http://vipclubmn.org/cp32bit.html#AYK10 and section 3 of http://vipclubmn.org/sysairborne.html.