

## NEW DEVELOPMENTS

# Worldwide P-3 Status Report - 1993 Update

By  
David Reade

Defense budget cuts have affected P-3 Orion activities greatly in the past year, since the last P-3 Status Report was presented. The Update IV next-generation MPA aircraft was cancelled by the US Navy, and cuts have reduced USN patrol squadrons by another two active and four reserve units (making a force level structure of 18 and 9).

With the end of the Cold War, and a perceived lack of submarine threats from the former Soviet Union, the ASW mission has waned. Budgets are now more quickly justified, by Navy planners in the US and other operators around the world, by stressing the Orion's Anti-surface Warfare capability, which was successfully demonstrated during the recent Gulf War with Iraq.

Current proposals, and funded programs, for US Navy Orions encompass avionics upgrades to improve the ASUW over-the-horizon targeting and command-control communications and intelligence mission capabilities, service, life-extension modifications to keep the P-3Cs flying towards the year 2015, and future, interim, aircraft-replacement measures.

### AIP

AIP is an improvement program designated to enhance the ASUW mission effectiveness of existing Lockheed P-3C Update III -configured Orions. The program is comprised of new, and upgraded, onboard avionics, integrated to maximize the aircraft's ASUW capability and survivability. AIP adds an improved standoff, Over-The-Horizon Targeting capacity and interoperability with Command, Control, Communications and Intelligence networks, and access to pertinent real-time tactical intelligence data.

AIP will be a commercial contract, based on military specifications, to utilize only non-developmental, off-the-shelf electronic systems that will be selected for rapid employment and mini-

mized size, weight and power/cooling requirements. The program begins with a target configuration that consists of a P-3C Update III production model or Update III retrofit-modified baseline aircraft, that encompasses the installations of the AN/ASQ-212 Data Processing System with the CP-2044 computer, Global Positioning System (GPS) and AN/ALR-66 (v)3 Electronic Support Measures (ESM) system prior to the improvement program. Some 68 P-3C Orions meeting these criteria will be selected.

AIP incorporates the CP-2044 central computer with increased processing to accommodate system interfaces for enhanced sensors and displays. The program includes the addition of a new, high-resolution APS-137 ISAR radar, OASIS III OTH-T/CI system and corresponding color, high-resolution displays and controls at the TACCO, NAVCOM and SENSOR #3 stations. Upgrades include an extensive communications suite, adding new tactical networks without interfering with existing radios. Other improvements add a Pulse Analyzer and a new spinning DF antenna to the aircraft ESM system, and installs a new A-FOCAL lens to the IRDS Infrared Detection Set.

The program also incorporates provisions for a roll on/roll off, long-range, electro-optical surveillance system, and Electronic Counter Measures system. For added survivability, component installations for a new Missile Warning System, and improved counter-measures Chaff, Flare and Jammer dispensers are also included. The AIP Improvement Program could begin as early as 1995.

### Sustained Readiness Program

The Sustained Readiness Program is the US Navy's production program initiated to attack high-corrosion areas, of current fleet P-3Cs, that have significant impact on the operational service life of the aircraft.

The program is designed to replace, upgrade or recondition damaged and corroded components, and requires the disassembling of the aircraft in an effort to return them to original, or better, material condition. The goal of SRP is to restore and improve the Orion's service life, and extend it up to 38 years when the program is complete.

Besides corrosion areas, SRP addresses aircraft systems and components that have become obsolete, degraded or in need of replacement. The program



The USN EP-3J EW Training "JAMMER ORION" aircraft - Kawasaki and Japan's JMSDF are developing their own version, designated "UP-3D," for EW Training of the JMSDF surface fleet. Canada has also expressed interest in the American EP-3J to add an EW Training capability to their CP-140A ARCTURUS.

(Terry Taylor)

also provides for the treatment of predictable corrosion areas, and components, with protective coatings to limit future problems. Target P-3C Orions to be inducted will fall within the 24 to 29 year service life ranges. The program will be carried out under a commercial contract, and could be awarded by early 1994.

### Airframe Conversion Program

The Airframe Conversion Program is a Lockheed-proposed, P-3 Orion program to augment SRP and create an interim, aircraft-replacement measure towards the future, next-generation MPA "VPX Project" airplane. (The VPX Program is the US Navy's proposed next-generation MPA aircraft scheduled for development by 2015-2017 to replace the P-3 Orion).

The proposed plan encompasses replacing old, tired and severely-corroded P-3Cs with newly-built Charlie airframes. All the old aircraft's avionics, sensors, weapon systems, engines and propellers, generators, landing gear and wheels would be transferred into the new Orion airframe. This cuts the cost of a new, fully mission-capable airplane in half. Donor candidates would be identified during the pre-SRP process as beyond repair. The new aircraft would have a service life of 30+ years, taking them to the year 2020. Deliveries could start as early as 1996, pending Navy approval and funding.

### TP-3C Orion

The TP-3C Orion is a Navy proposed Orion modification plan to augment P-3 force levels, providing CONUS replacement aircraft to patrol squadrons when their mission planes are involved in AIP, SRP or ACP programs. The modification encompasses stripping 36 P-3 Bravos (held in CNO INVIOLATE HOLD storage at AMARC, the desert bone-yard) of mission equipment and modifying them with the P-3C update III cockpits, like TP-3As, and floor tracks for logistical seating, like UP-3 Orions. TP-3Cs will be utilized as pilot-training Orions and logistics "Bounce Birds", replacing some of the older TP-3As at VP-30 Fleet Replacement Squadron, while others are pooled at the Wing level, for use by squadrons on an as-needed basis. Though not currently funded, the TP-3C mod plan is expected to be included in Program Objective Memorandum 95.

### International

Internationally, new emphasis has been directed at P-3 capabilities improvement, with many operators seeking enhancement programs to update their Orions. Some nations are acquiring ex-USN Orions, other countries endeavor to exercise their options for P-3s with dwindling budgets. Australia seems the most active, with several programs in the works.

### Australia

The TAP-3 Program is an acquisition and modification project for three ex-USN P-3B Orions, especially selected for an Australian FMS case. The Orions will be stripped of mission equipment, and modified as flight training and utility logistics-transport aircraft, in an effort to extend the fatigue service life of the RAAF's P-3C Orions. The modification, performed by the Naval Aviation Depot, Jacksonville (NADEP JAX), will encompass the installation of the P-3C update III cockpit, floor tracks for additional seating, and Standard Depot Level Maintenance (SDLM) work. There is also a proposed cargo door mod provision to accommodate light, logistic-equipment transport. The RAAF chose three P-3 Bravos at AMARC in June, and the aircraft are scheduled for induction at NADEP JAX by October 1994, with the first delivery as early as May 1995.

The P-3 Refurbishment Program (AP-3C Upgrade) is an avionics upgrade modification program designed to increase the operational mission-effectiveness of Australia's fleet of 19 P-3C Orions.

Similar in goal to that of the American P-3C AIP Improvement program, the RAAF program encompasses replacement of older, heavier and less capable, insupportable sensors, avionics and other aircraft systems, to enhance the aircraft's primary surface-surveillance capability, as well as ASUW and OTH-T capabilities. The program, designated Program Air 5276, will provide for the reduction of 3500 lbs in the aircraft's all up weight, without sacrificing any of the aircraft's current mission capabilities. The weight reduction is an important requirement of the program to increase the aircraft's fatigue life. Air 5276 will optimize the aircraft's radar and infrared sensors, and enhance the ASW acoustics. The program will incorporate ongoing Australian Orion programs that include the RAAF ESM upgrade and new digital MAD program components, prior to Air 5276 initiation. Program Air 5276 will be an open and effective competition within the industry, with the program awarded to the tender that provides the best solution to fulfill the project's functional requirements. The tender will be required to



Norway's P-3N multi-purpose aircraft for pilot training, logistics, Coast Guard patrol and special ops missions. (Terry Taylor)

provide non-development systems, in an as-soon-as-possible concept, fitting program criteria that include initial and extended warranted components, and support for the life of the aircraft. Once the aircraft are completed, the RAAF plans to re-designate them as AP-3C Orions - the "A" for Australia!

### **Chile**

Under a US Navy Foreign Military Sale agreement, the Chilean Navy received the first of eight ex-Navy UP-3A Orions. The first aircraft was successfully delivered to Chile on March 3rd 1993 by Western International Aviation Inc, of Tucson, Arizona. Western International was contracted to de-cocoon the Orion from the nearby desert storage facility at Davis-Monthan AFB and prepare it for ferry to the naval air base at Vina del Mar, 60km outside of Santiago. The Chilean P-3 arrived in time to participate in the recent Chilean 70th Naval Anniversary celebration, and represented the remaining seven aircraft to be delivered.

The aircraft are scheduled to be used for Search and Rescue, Drug, Coastal, and Fisheries-Surveillance by Patrol Squadron One. The second and third aircraft are expected to be delivered by fall (1993), and have already been painted with Chilean markings.

This P-3 represents the first Orion FMS case to come to fruition in recent years. Several other nations including Thailand, Greece and Turkey have FMS cases in progress and plan to receive their aircraft soon.

### **Greece**

The United States, in exchange for base rights, has authorized Greece to acquire approximately twelve ex-Navy P-3 Alpha TACNAVMOD Orions: six operational and six spare-parts aircraft. This FMS is proceeding, with a projected delivery in 1996.

In the meantime the US Navy has approved a plan to lease four USN P-3 Bravos to Greece as interim mission-aircraft until the Alpha acquisition program is complete. This Bravo lease program also includes a separate FMS logistics case, and provides for several of

the spare-parts aircraft encompassed in the Alpha acquisition to be delivered early.

### **Japan**

Kawasaki Heavy Industries is currently finishing production of the last P-3C Orions for the JMSDF. There will be eight aircraft delivered in 1993 with two more in 1994, and one each in 1995 and 1996.

The JMSDF's Maritime Staff Office (MSO) is seeking approval for an Orion avionics upgrade program, that would include the advanced CP-2044 tactical processor as a first step towards any future update concept.

Kawasaki has also produced several Electronic Support Measures, Orion-variant aircraft recently. These ESM EP-3, are newly-built KHI Charlie airframes that utilize blister pods to house antennas. Though the aircraft conduct passive collection and reporting of electronic signals intelligence, it is believed that the aircraft have other capabilities remotely similar to that of American EP-3E SIGINT Orions. Currently two EP-3s fly with Air Training Support Squadron 81 (ATSS-81) with two more aircraft under production and another planned for the future.

KHI has recently developed another Orion variant for the JMSDF. The UP-3C is a new production, utility version of the Kawasaki P-3 Charlie airframe. The aircraft will be flown by Air Develop-

ment Squadron VX-51, as an airborne systems test bed for flight testing of new avionics and electronic systems.

Another version of Kawasaki's utility P-3, currently under development for the JMSDF, is designated the UP-3D and will be flown on electronic warfare support missions. The two aircraft planned will provide EW training to Japanese surface fleet elements, similar to the EW counter measures/counter-counter measures missions of the American EP-3J Jammer Orions.

### **Korea**

As of early 1993, initial assembly began on the first of eight Korean P-3 Orions under production at Lockheed's Marietta Georgia facility. These are P-3C update III+ Orions with slight configuration variations in the areas of computer processing, ESM and radar systems. The first aircraft delivery is scheduled for 1995.

### **New Zealand**

New Zealand is currently finalizing a contract with Lockheed for the purchase of five pair of "P-3C Wings" as part of a New Zealand Orion re-winging project.

The RNZAF has been investigating the option of re-winging their five P-3K Orions and recently requested Lockheed to look into all aspects of such a project that would also include replacement of



The US Customs Service third P-3 AEW&C was delivered in 1992. The fourth aircraft was delivered in June of this year. (Terry Taylor)

many components of the horizontal stabilizer. Lockheed conducted a feasibility study and determined that new production heavy-weight P-3C wings (now in production for the Korean P-3 program) could be installed on the New Zealand P-3K Orions, which are essentially light weight P-3 Bravos. The Lockheed installation plan would consist of modifying the lower section of the center wing box to that of a P-3C to facilitate the attachment of the Charlie wings. The upper section of the center box would remain virtually the same.

Though still under negotiation, the installation of the wings could be conducted at Lockheed's Marietta, GA facility or at its Aeromod company in South Carolina. There is the possibility that the wings would be shipped direct from their assembly point in Korea to New Zealand for installation domestically by a New Zealand based company. The project is expected to start as early as January 1994.

The RNZAF is also proceeding with its long proposed landing gear modification project. This includes upgrading the P-3K's with heavy-weight "Heavy-Soft" landing gear.

Another New Zealand project that is seeing renewed interest is implementation of the second phase of the Rigel Upgrade Program. Designated Rigel II, this phase focuses on updating the P-3K's older acoustic suite to that comparable with current P-3C acoustic capabilities.

### Thailand

In 1992, Thailand took possession of five P-3A Orions, currently stored at AMARC. Of the five, two are slated to be mission aircraft with one utility and two spare parts birds. The operational aircraft are now scheduled to be inducted into NADEP JAX for mod conversion to P-3T and UP-3T Orion variants. Delivery from the desert AMARC to NADEP Jacksonville is planned for late October 1993.

### Turkey

In a program similar to the Greek P-3 Alpha acquisition, Turkey is considering an option for approximately ten P-3A TACNAVMOD Orions to be used as Maritime Patrol aircraft. Although no

particular aircraft have been identified, Turkey is expected to respond soon with its reply to the proposed FMS case.

### Argentina and Brazil

Both Argentina and Brazil have expressed interest in ex-Navy P-3 Orions in the last few years. Argentina inquired about three aircraft, while Brazil was looking for upwards of eight aircraft. As of yet, no official FMS case has been initiated, but with the first deliveries of Orions to Chile, an increase of interest from both is expected.

### Potential Customers

Many other nations are interested in new P-3 Orions as replacement for their current Maritime Patrol aircraft now that the LASC Marietta production line has opened. The United Kingdom, Italy, Saudi Arabia, Taiwan and Germany have made inquiries about the current P-3C update III, or new variant configurations tailored to diminishing budgets. The United Kingdom is in the process of considering the P-3 as a viable Nimrod

replacement. Proposals center around the current Korean configuration in production, to a variant of Lockheed's Orion II concept. This plan encompasses an empty tube with placement of the electrical load center, air conditioning/cooling and other aircraft systems under structurally beefed-up floors. The concept provides the UK versatility in providing its own domestic mission equipment, avionics and systems. Whatever course the UK chooses, it must find a replacement for the Nimrod soon, to comply with a Ministry of Defense mandate to have a complement of 25 fully operational MPA replacement aircraft by 1999.

All preliminary programs for the UK or any other nation seeking new Orion aircraft are developed by Lockheed's international programs office.





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# P-3 STATUS REPORT

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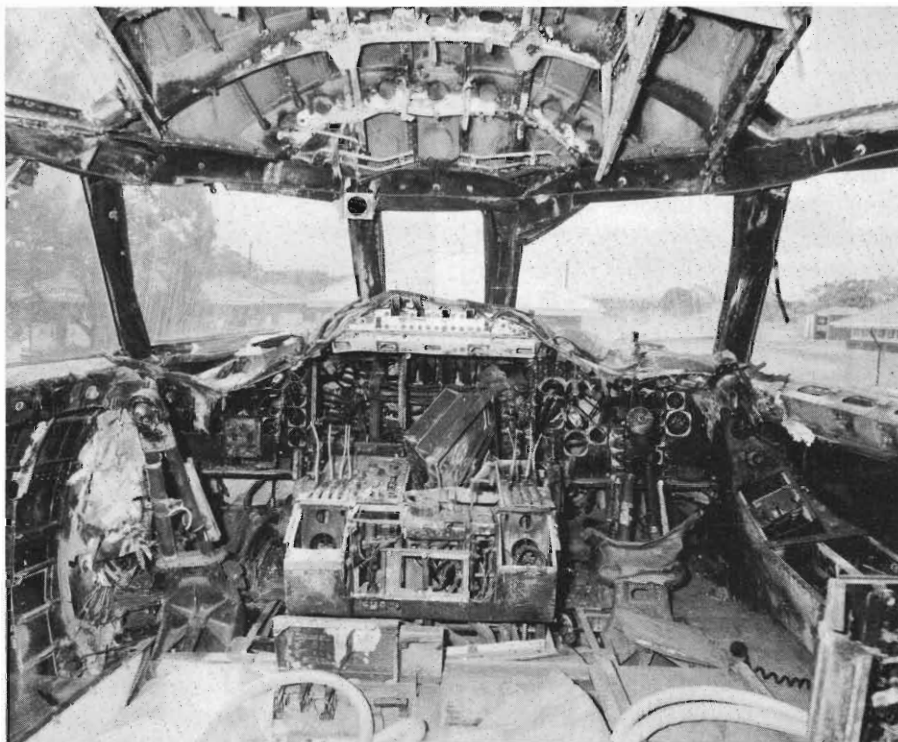
## Some Old P-3s Never Die

By David Reade

Throughout the past thirty years of P-3 Orion Maritime Patrol Aircraft utilization by the USN and over a dozen other nations, certain particular individual P-3s have attained some notoriety. A9-300 is one of these Orions.

“Old 300” is the endearing nickname given to a Royal Australian Air Force P-3B Orion that has recently been refurbished by the air-operations division of the Defence Science and Technology Organisation’s Aeronautical Research Laboratory, Australia’s Aviation Research, Development, Test and Evaluation Facility. The grounded Bravo has now been developed as an advanced-systems mock-up.

Old 300 has quite a unique history. A9-300 (155300) was one of the last of ten P-3Bs built and delivered to Australia by Lockheed in May 1968. It served faithfully until January 27th, 1984, when a liquid-oxygen (system) fire broke out on board during ground-maintenance work at RAAF Base Edinburgh. At that time, Australia was in the process of trading in its P-3 Bravos to Lockheed for



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A 9-300 gained a new lease on life when her wings were removed and flown to the USA to be mated with the fuselage of the USN P-3C (BUNO 157300) that had crash landed at NAS Cecil Field in February 1988. This photo shows the wingless airframe of A9-300 being lifted onto its permanent pad at the Defence Science and Technology Organization facility, RAAF Edinburgh. (DOD DSTO)

an equal number of the more sophisticated P-3C Orions. The aircraft’s forward fuselage/cockpit area was damaged beyond repair and was soon stripped of usable parts. Later, some of these parts found their way to Portugal along with six other RAAF Bravos, sold to that country via Lockheed. Old 300 proceeded to sit at Edinburgh until September 1987, when it was moved to the DSTO Facility located adjacent to the base.

Meanwhile, in the United States, another page of old 300’s history was being written. In February 1988, a P-3C Orion crash landed at NAS Cecil Field, Florida. The Orion was diverted there from the P-3 base at NAS Jacksonville after the aircraft’s landing gear was sheared off during an aborted landing on a runway under construction. The crash damage was extensive, with the port and starboard wings totalled. After some long

discussions between NADEP (Naval Aviation Depot) engineers, it was determined that the aircraft could be repaired and flown again. So a call went out for a pair of wings.

In the end, old 300 back in Australia was selected as the donor, giving up her wings for the stricken Charlie. The wings were soon removed and flown by a USAF C-5 Galaxy transport aircraft to the jet base at NAS Cecil Field. From there, the wings were transported by truck through the streets of Jacksonville to NADEP Jax, where the work was scheduled to be done. After the Australian's wings were attached, the substantial work was completed on the underside of the USN Charlie; the historical roll-out of P-3C (157300) occurred in November 1990. Nicknamed "Phoenix - Pride of NADEP", the Charlie Orion then resumed its naval service - with borrowed wings of a southern friend. (The Phoenix is currently with VP-31).

Old 300 itself has now found a new life in service once again. In 1991, the DSTO began work on the leftover fuselage. The shell of the Orion was refurbished, replacing the burnt, metal skin and completely refinishing the interior. Modular, wooden, operator-stations, mock-up units with "sun graphics" touch-



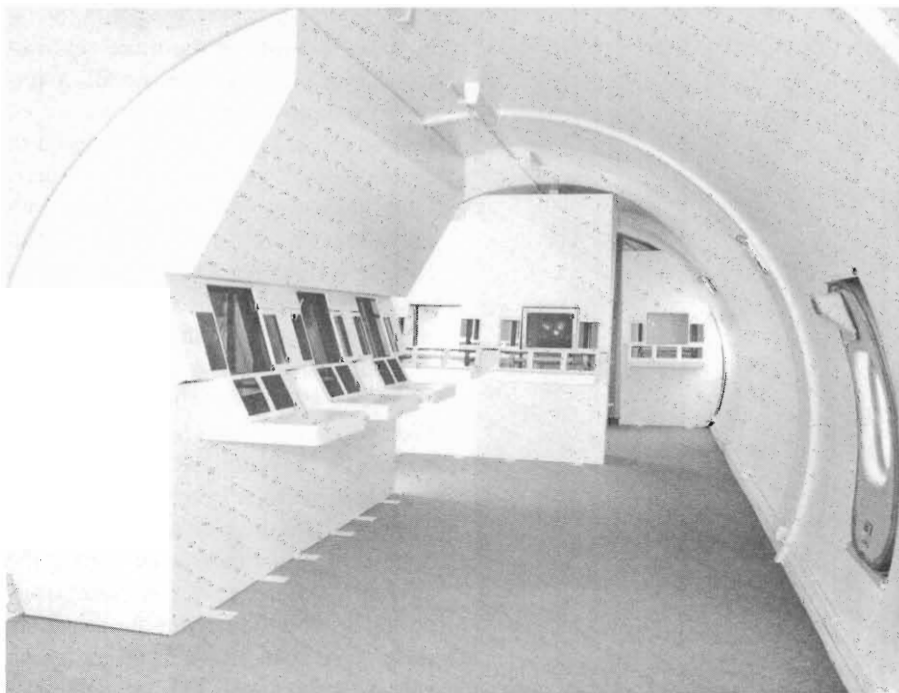
The airframe of A9-300 is now positioned in the open between two laboratory buildings at the Defense Science and Technology Organization facility, RAAF Base Edinburgh, and is the only P-3 in existence with a permanent, ramp-accessible entrance. (DOD DSTO)

sensitive, electro-luminescent-controlled workstations were installed. The airframe is now positioned in the open between two lab buildings at the DSTO facility, and is the only P-3 in existence with a permanent, ramp-accessible entrance. The sensor inputs are cabled into the

fuselage from a nearby DSTO lab building, along with a/c electrical power to run lighting and onboard systems.

Officially known as "ORACL", short for Orion Avionic Concept Laboratory, the P-3 serves as a full-scale, mock-up demonstrator of various cabin layouts. This provides for investigations into alternative, future avionics configurations, including simulation programs of current P-3 baseline and future, advanced, aircraft displays; distribution systems and operations procedures. ORACL Simulations can also demonstrate advanced technologies, such as intelligent displays, sensor data fusion, and artificial intelligence for ergonomic studies. Improved operational, and prototype, sensor-system integration can also be tested and evaluated by ORACL.

The Orion demonstrator is currently simulating "TDS", the P-3C tactical-data-system simulation program, to help define enhancements and improvements for the proposed RAAF Orion upgrade program. Old 300 is now serving Australian military aviation once again by providing for the development of future avionic systems today. →



Officially known as "ORACL" short for Orion Avionic Concept Laboratory, A9-300 now serves as a full-scale mock-up demonstrator of various cabin layouts. (DOD DSTO)