



SUMMER 1995

Airborne LOG

THE MAGAZINE OF NAVAL SEA CONTROL AND MARITIME PATROL

Maritime Patrol Aviation Review

RAF Nimrod

International Orion

FGR Atlantique

Interview with

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*Commander Fleet Air Mediterranean
Commander Surveillance and Reconnaissance Forces,
U.S. Sixth Fleet*

Commander Maritime Air Mediterranean

The Worldwide P-3 Community

Australia · Canada · Chile · Japan · The Netherlands · New Zealand



orway · Portugal · Republic Of Korea · Spain · Thailand · United States





AUSTRALIA

No. OF AIRCRAFT	19
In SERVICE	RAAF
TYPE(s)	P-3C UD II.5
No. OF SQUADRONS	2
MISSIONS	ASW; ASUW; SAR; Coastal Patrol; Sea Control; EEZ Protection; Maritime Surveillance; and Intelligence.

Australia's Orion experience began in 1968 with the purchase of ten P-3Bs. These Bravos were supplemented by ten P-3C Update II aircraft in 1978. Later in 1985, ten P-3C Update II.5 were acquired replacing the original number of P-3Bs. Although the second batch of P-3Cs were Update II.5, they differed from the U.S. Navy configuration in the incorporation of the Marconi ASQ-901 (Acoustic) signal processor/display system. (The first group of P-3C UDII were also brought up to this same configuration standard later).

With a coastline that runs more than 12,000 miles and 2,400,000 square miles of territorial waters, the RAAF Orions have always maintained a multi-mission activity that includes providing support to other military services and the government ministries. As a means to provide continued capabilities towards the defense of its territories and promote strategic stability and security throughout the southern pacific region, the RAAF has initiated an upgrade program to increase the operational effectiveness (and

extend the fatigue life) of its fleet of P-3C maritime patrol aircraft, which are a vital component of maintaining that security. The refurbishment programs seeks to optimize the aircraft's radar, and infrared sensors and enhance the ASW acoustics. The program also encompasses new navigation (GPS) and communications (SATCOM) while upgrading the ESM and MAD systems. The ESM upgrade is of significant interest as a result of the institution of new operator position, solely dedicated to ESM Management. The program also addresses the fatigue concerns of the aircraft with refurbishment or replacement of aircraft structures as well as older, heavier, and less capable, insupportable sensors, avionics and equipment, without sacrificing any of the aircraft's mission capabilities. In another related project that addresses the operational causes of fatigue in the P-3C three ex-USN P-3 Bravos have been acquired and are currently undergoing modification (at NADEP Jacksonville, Florida) to convert the aircraft into training – logistics variants. The primary mission of these TAP-3 aircraft is pilot training, decreasing the wear and tear on the P-3Cs. The aircraft will also be equipped with additional floor tracks for cargo and passenger transport support. Roll out of the first aircraft is scheduled for the fall of 1996. The P-3C refurbishment contract was recently awarded to E-Systems of Dallas, Texas with several Australian companies (AeroSpace Technologies of Australia, AWA Defense Industries of Australia and Honeywell of Australia) participating in sub-contracting activities. The program is expected to begin shortly and run through the end of the century. Once completed the enhanced RAAF Orions are to be redesignated AP-3C.



CANADA

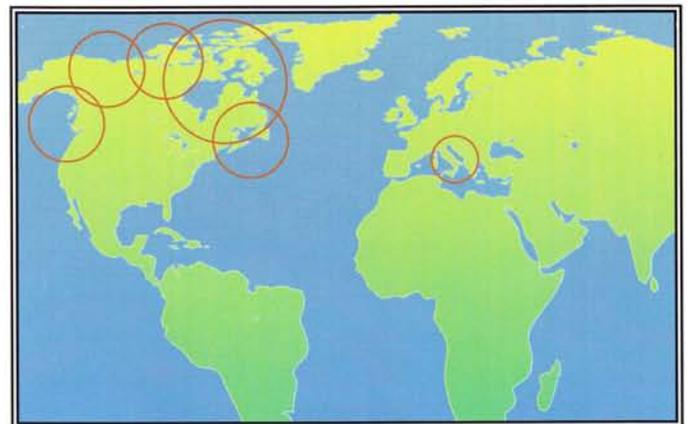
No. OF AIRCRAFT	21
In SERVICE	CAF
TYPE(s)	CP-140 (Aurora), CP-140A (Arcturus)
No. OF SQUADRONS	4
MISSIONS	ASW; ASUW; SAR; Fisheries/EEZ Protection; Law Enforcement (anti-smuggling and counter-narcotics); Pollution/Environmental Surveillance; Sovereignty Patrol (ice reconnaissance); and UN/NATO Embargo Enforcement

The Canadian version of the P-3 Orion, like the vast and varied territories that it patrols, is unique in all the world. The CP-140 Aurora shares the same airframe and engines of the P-3C, but contains avionics of Lockheed's S-3A Viking. The principle difference of the Aurora is the interior crew arrangement – clustered in the center of the aircraft. This design fosters improved crew coordination and mission efficiency among the operators. Although designed primarily as submarine hunter in the 1970s, the aircraft has become a multi-mission platform from which to conduct missions of national interest. These range from environmental monitoring, fisheries protection, sovereignty patrols (of Canada's Arctic regions), Ice reconnaissance and law enforcement support.

Aurora military operations have not been lost. Canadian crews are continually training in ASW and ASUW mission capa-

bilities. The training paid off recently when Aurora crews participated in NATO operations in the Adriatic supporting UN embargoes against the former republics of Yugoslavia.

Canada also operates a variant of the Aurora, the CP-140A Arcturus. The Arcturus lacks the ASW systems and sensors of the Aurora, being equipped with minimal gear necessary to conduct long range Arctic Surveillance – its primary mission. The Arcturus are also utilized for pilot training and doubles as a utility/logistics transport.



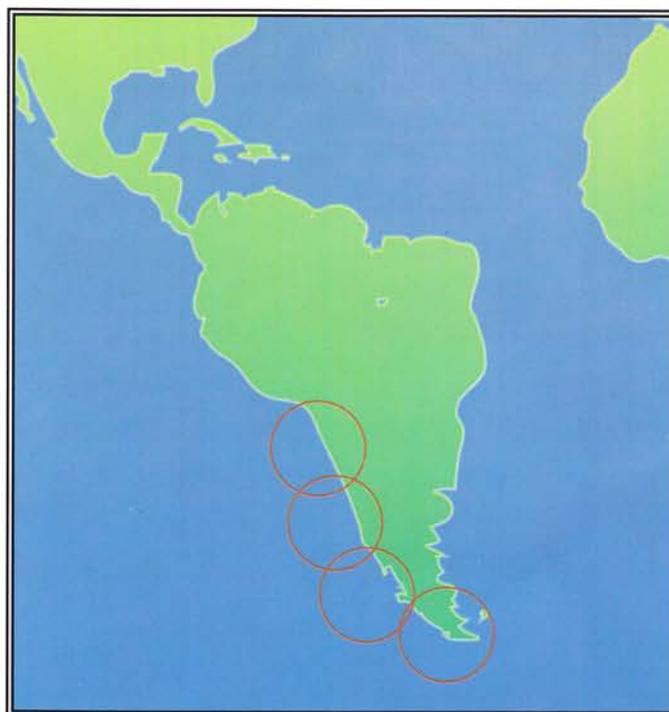


CHILE

No. OF AIRCRAFT	8
In SERVICE	Chilean Navy
TYPE(s)	UP-3A
No. OF SQUADRONS	1
MISSIONS	Coastal Patrol; SAR; Coast Guard Duties; Fisheries Patrols; Counter-Narcotics; Utility Transport.

Chile is the first in a series of foreign operators to acquire P-3 Orions from the U.S. Navy in recent years. The Chilean Navy took delivery of the first of eight UP-3As in early 1993 and accepted the last by the end of 1994. The Orions were taken from AMARC, the desert aircraft storage facility at Davis-Monthan AFB in Tucson, Ariz., to the nearby re-work facility at Western International Aviation, Inc. Western International was contracted by the Chilean Navy to de-cocoon the aircraft from storage, prepare them for ferry flights and fly the Orions to their new home in Chile – the naval air base at Vina del Mar, located 60 km outside of Santiago. Of the eight aircraft delivered to Chile, upwards of six are expected to be operational with the remainder scheduled to be utilized for maintenance training and parts aircraft. Although still early in the program, missions are to consist of coastal patrol and SAR missions with additional tasks like fisheries patrol, coast guard duties and miscellaneous utility transport functions. Since the delivery of the Orions to Chile, a number of other South

American countries are interested in similar ex-USN P-3 for their forces and are currently making inquiries as to aircraft price and availability. They include Argentina, Uruguay, Colombia, Brazil, and Venezuela.



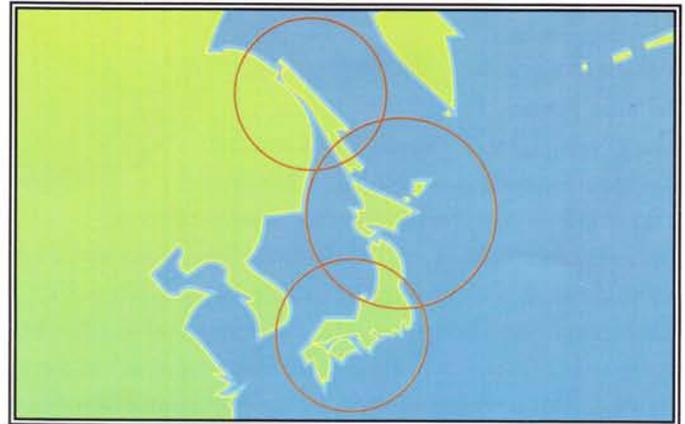


JAPAN

No. OF AIRCRAFT	105
In SERVICE	JMSDF
TYPE(s)	P-3C UD II.5, III, EP-3, UP-3C
No. OF SQUADRONS	10
MISSIONS	ASW; ASUW; SAR; Maritime Surveillance; Sea Control; Intelligence Data Collection.

One of the largest foreign operators of P-3 Orion in the world is Japan. Combined variants produced under license from Lockheed currently total approximately 105 aircraft. After receiving three production P-3C Update II.5 in early 1981, Kawasaki Heavy Industries began to assemble five knockdown airframes during 1983 as it geared up for full scale aircraft production established the following year. Since then, Kawasaki has produced upwards of 98 fleet P-3C II.5 (UDIII versions since 1991) for the Japanese Maritime Self Defense Force, as well as a number of special purpose variants. Japanese Derivative Orions produced by Kawasaki include the “EP-3” data collection aircraft similar in mission to the American EP-3E Elint Orion and a in-flight avionics-electronic systems testbed aircraft designated “UP-3C”. Another KHI variant Orion planned to begin production soon is the UP-3D. This P-3 is being developed as a EW support aircraft providing electronic warfare training to Japanese surface fleet elements. This EW support mission is somewhat similar to the USN EP-3J C

I/CM fleet training aircraft. More recently, the JMSDF have been concerned with bringing all production MPA aircraft up to Update III configuration as they are inducted in to scheduled depot level maintenance. Other JMSDF projects consist of in seeking approval of an avionics upgrade for the Japanese Orions that includes the CP-2044 tactical computer, GPS and SATCOM systems. The JMSDF are also considering additional variant models to meet future emerging mission requirements.





John Rosvine

REPUBLIC OF KOREA

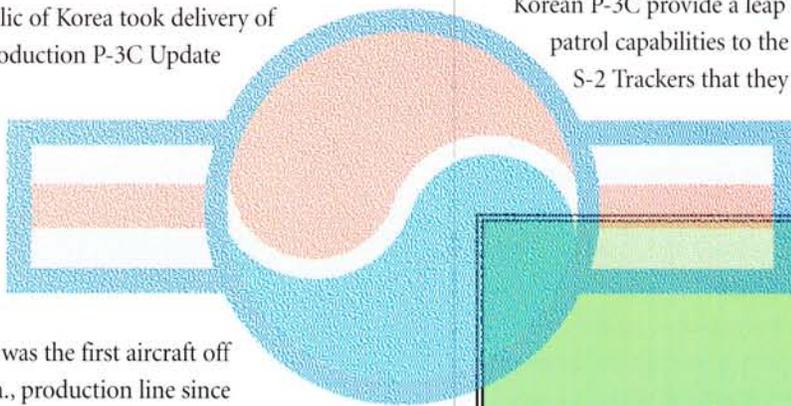
No. OF AIRCRAFT	8
In SERVICE	ROKN
TYPE(s)	P-3C UD III
No. OF SQUADRONS	1
MISSIONS	ASW; ASUW SAR; Maritime Surveillance; Regional Sea Control; Sea Lane Protection; Coastal Defense Support

In 1995, the Republic of Korea took delivery of the first of eight new production P-3C Update III Orions from Lockheed. This event marked another chapter in the long history of Orion, not only because of the establishment of a new operator, but because it was the first aircraft off Lockheed's Marietta, Ga., production line since the company's 1990 re-structuring and subsequent move from Palmdale, Calif.. The P-3C UDIII the Koreans received is the most advanced P-3C produced by Lockheed – not in terms of differences in mission equipment (with the exception of an APS-134 radar and CP-2044 data processor), but how the aircraft was constructed. This version of the P-3C incorporates more modern

manufacturing techniques with emphasis on corrosion prevention and protection as well as alternative component material replacements.

The ROKN Orion mission is one of defense, guarding against hostile attack from potential adversaries in the region. With an operational area that runs from the western Sea of Japan through the eastern Yellow Sea, including the vital Tsushima straits choke point. ROKN Orions are tasked with surface and subsurface surveillance to prevent against disruption of all important sea lanes and potential hostile amphibious assault of coastal territories. The

Korean P-3C provide a leap in technology and new maritime patrol capabilities to the ROKN, over the older Grumman S-2 Trackers that they replace. The ROKN Orions will be based at the naval air station PoHang, South Korea.





THE NETHERLANDS

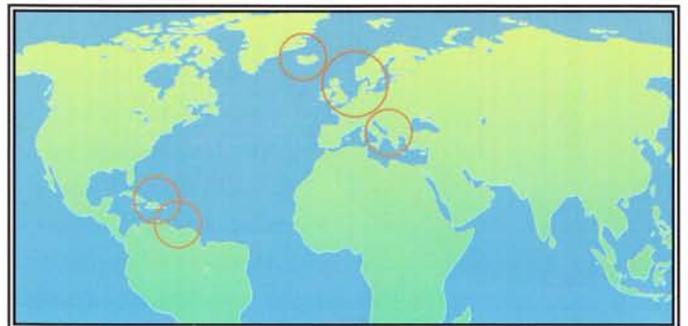
No. OF AIRCRAFT	13
In SERVICE	KON. MARINE
TYPE(s)	P-3C UD II.5
No. OF SQUADRONS	2
MISSION	ASW; ASUW; SAR; Maritime Surveillance and Intelligence Gathering; EEZ Protection; Counter Narcotics; Fisheries Patrol; Pollution Control; UN/NATO Embargo Enforcement.

The Royal Netherlands Navy began receiving the first of its thirteen P-3C Update II.5 in 1981, with deliveries running through 1984. The Dutch P-3 crews monitor one of the most strategic areas of the North Sea, one of which was highly active with Former Soviet Navy surface and sub-surface vessels during the Cold War. The area was also congested with merchant traffic heading for the commercial ports of Great Britain and fishing fleets departing along the English and Scottish coasts. Little has changed in this region in recent years except for the decrease in eastern block activity due to the demise of the former Soviet Union and the Cold War.

In its wake, new mission taskings have arisen to keep the Dutch P-3 busy. They include support to the Dutch Coast Guard flying fisheries, pollution, and environmental patrols. Other similar support missions encompass deployment to Dutch Territories

like Surinam and Curacao in the western Caribbean off the coast of Venezuela. Here, Dutch P-3s have participated in the war on drugs conducting counter-narcotics missions and performing fisheries patrols. NATO commitments have seen Dutch P-3s detached to locations such as Haiti, Iceland and the Adriatic.

Currently, the Royal Netherlands Navy is developing an upgrade program to enhance their P-3s' anti-surface warfare capability. Improvements encompass a new central processor/data management system, a new imaging radar, upgrading the aircraft's ESM system and replacing the existing acoustic processor. Other enhancements include multi-purpose displays, GPS, a new communications suite and a thermal imaging system. The upgrade program could commence as early as next year and run through the turn of the century.





NEW ZEALAND

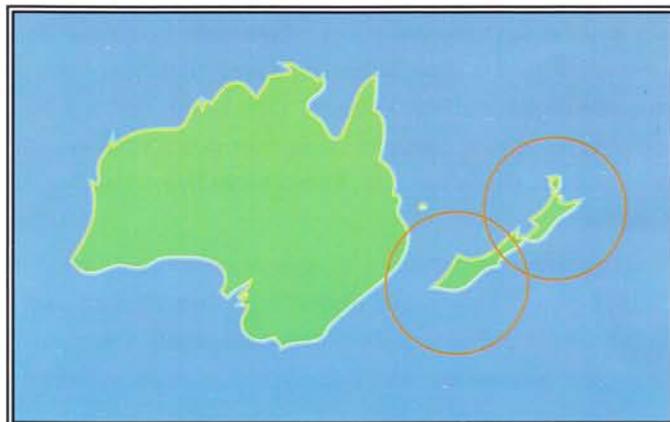
No. OF AIRCRAFT	6
In SERVICE	RNZAF
TYPE(s)	P-3K
No. OF SQUADRONS	1
MISSIONS	ASW; SAR; EEZ Protection; Maritime Surveillance; Anti-Shipping; Coastal Patrol; Emergency Medical Evacuation; Humanitarian Aid.



The Royal New Zealand Air Force has been an Orion operator for more than twenty-seven years, since 1966 when it became the first export customer for five P-3Bs. In 1983, the RNZAF initiated an aircraft modification program to improve the mission effectiveness. New Zealand chose the American company Boeing to conduct the improvement program, that included upgrading the Orions with a new radar, data manage-

ment/ display system and the addition of an infrared sensor. It was at this time that the Kiwi's acquired an additional aircraft (from Australia) and all six planes were redesignated P-3K.

In more recent years, despite the lean economic climate, the RNZAF has been looking at different ways to extend the operational life of their Orions. One such plan calls for the re-winging the aircraft. Based on a Lockheed feasibility study, produced under contract, new production heavy weight P-3C wings can be installed on what is essentially a light weight Bravo (P-3K) center wing box. Only a slight modification of the lower section of the wing box is required to facilitate installation. Additional project work includes replacing structural components of the horizontal stabilizer and refurbishment of engine nacelles. This re-winging program, known as Project Kestrel can add another 20 years to the P-3K's service life.





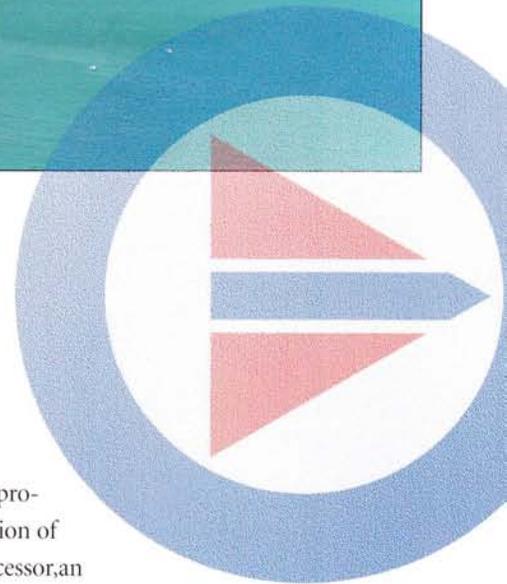
NORWAY

No. OF AIRCRAFT	6
In SERVICE	RNoAF
TYPE(s)	P-3C UDIII, P-3N
No. OF SQUADRONS	1
MISSIONS	ASW; ASUW; SAR; Maritime Surveillance; Intelligence Data Collection; EEZ Protection-Coast Guard Patrol; Pollution/Environmental Control.

Norway is one of a few nations in the international maritime patrol community to be equipped with modern P-3C Update III Orions. The Royal Norwegian Air Force was the first to receive the export version of the Update III from Lockheed in 1989. The RNoAF had originally operated P-3B (acquired in 1968) which it sold to Spain to off-set the cost of four new P-3C UDIII. Of the seven Bravos it possessed, Norway sold five to Spain and retained two aircraft to be refurbished for Coast Guard duties and special missions.

The aircraft, re-designated P-3N (the "N" for Norwegian), were modified by the Naval Aviation Depot Jacksonville in Jacksonville, Fla.. Most of the ASW sensors and associated equipment were removed and the aircraft re-equipped with minimal gear to perform Coast Guard surveillance duties and civil taskings including pollution monitoring and environmental research. The P-3N are also equipped with airline seats, capable for utility trans-

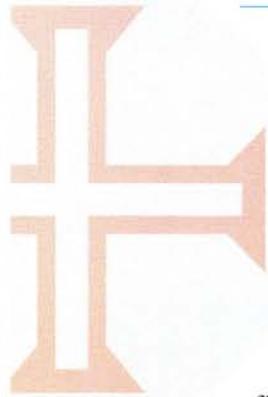
port and can be used for pilot training. The RNoAF is currently involved in a developing a P-3 MOD Program to enhance the ASUW capability of its Update III Orions. The project includes the installation of the CP-2044 tactical processor, an imaging radar, GPS, SATCOM, and integrated displays. The program also seeks to add a new ESM system and establish a dedicated operator position solely for ESM management. These improvements are consistent with those being made by the U.S. Navy and other Orion operators.





PORTUGAL

No. OF AIRCRAFT	6
In SERVICE	PoAF
TYPE(s)	P-3P
No. OF SQUADRONS	1
MISSIONS	ASW; ASUW; SAR; EEZ Protection; Maritime Surveillance; Coastal Patrol.



The Portuguese Air Force began operations with P-3 Orions in 1988 with the acceptance of a prototype P-3P from Lockheed. This was the first of six specially configured Orions, based on a standard heavy weight P-3B airframe modified with a digitally enhanced TACNAVMOD configuration comprised of state-of-the-art sensors and avionics – some common to a Update II.5 P-3C. The aircraft is somewhat unique in the P-3 community.

Besides the hybrid nature of its configuration, the aircraft possesses an unusual three-tone “orca” paint scheme while the airframe sprouts an unique ventral radome (just aft of the wings) housing specialized DF antennas for the aircraft’s ESM system.

During the Cold War, Portugal’s Orions (along with Spain’s) were responsible for guarding NATO’s southern flank in the Eastern Atlantic and the approaches to Gibraltar’s strategic passage to the Mediterranean.

Today, that area has been reduced to a maritime triangle running from the coastal mainland, out 800 kilometers to the territorial archipelagos of Madeira and the Azores, back to the home shores of the Iberian peninsula. The P-3P missions mostly encompass national interest taskings like search and rescue, EEZ protection, fisheries patrols, pollution monitoring and coastal patrols to maintain sovereignty over Portuguese territory. Portugal also regards its NATO commitments seriously and recently dispatched P-3P to support UN sanctions in the Adriatic.

To effectively meet these national and NATO operational requirements, the PoAF is developing a series of low-cost system upgrades for the P-3P that comprise modifying the existing radar to an imaging configuration, improving the ESM system, acquiring a new MAD and adding GPS. Other improvements include the incorporation of self-protection devices and sensors and new defensive weapon systems. There is also the possibility of an additional ELINT capability added to the plane.





SPAIN

No. OF AIRCRAFT	7
In SERVICE	SAF
TYPE(s)	P-3B, P-3A
No. OF SQUADRONS	1
MISSIONS	ASW; SAR; EEZ Protection; Coastal Patrol; Anti- Shipping and Maritime Surveillance; UN/NATO Embargo Enforcement

The Spanish Air Force has operated P-3 Orions since the 1973, when several ex-U.S. Navy P-3A Orions were acquired. Two more were leased from the Navy in 1979 and were utilized until the SAF purchased five P-3B aircraft from Norway in 1988-89. The SAF Orions were a vital link in the protection of NATO's southern flank during the Cold War.

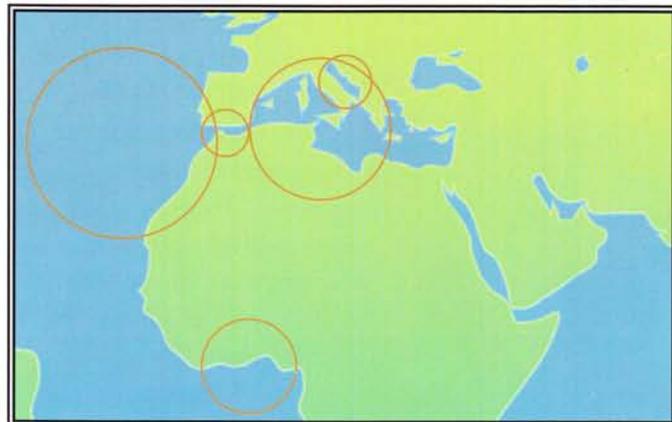
The P-3 guarded the natural choke point between the Atlantic and Mediterranean at Gibraltar while other missions patrolled the vast open ocean of the Atlantic to monitor former Soviet naval activity transiting south towards points along the African Ivory Coast.

Since the end of the Cold War, SAF Orions have continued to play an important role in NATO's Maritime Patrol community. Recent taskings include participating in the UN imposed embargo against the former Yugoslavian republics of Bosnia-Herzegovina. The Spanish P-3 are also regular participants in NATO exercises

both in the Atlantic and Mediterranean.

Currently, the SAF is seeking upgrade funding for their small fleet of P-3A/B aircraft as a means to be more compatible with its NATO partners. Areas of improvement encompass a new radar, enhanced tactical processor, an upgraded ESM system, and the addition of an infrared sensor. Although a program to install all desired avionics at the same time is preferred, it seems that a smaller system-by-system approach (as funding becomes available) is more practical given the current economic environment.

Once completed, the enhanced Spanish P-3 will provide the SAF the means to continue its support of both national and international missions requirements.





THAILAND

No. OF AIRCRAFT	5
In SERVICE	RTN
TYPE(s)	P-3T, UP-3T
No. OF SQUADRONS	1
MISSIONS	ASW; ASUW; Coastal Patrol; Maritime Surveillance

Thailand is among the newest members of the P-3 Orion fraternity with the acquisition of five P-3A in 1993.

The aircraft have been undergoing modification at the Naval Aviation Depot in Jacksonville, Fla.. The MOD program consisted of bringing three of the aircraft up to an operational mission capable status. Two of the aircraft, redesignated "P-3T", are basically TACNAVMOD ASW configured P-3As, but with a number of equipment and systems upgrades. These improvements encompass enhanced navigation, communication, avionics systems and radar displays as well as provisions for an infrared sensor and Harpoon missile system. A third aircraft is, designated

"UP-3T" is a utility transport aircraft with floor tracks installed to accommodate cargo and passenger seats. The aircraft also retains a limited surveillance mission capability through the incorporation of a "SENTAC" station. The unique operator station encompasses elements from both a sensor #3 and TACCO positions. Both the P-3T and the UP-3T Orions are also equipped with commercial color weather radar. The two remaining baseline P-3As, previously flown to Thailand at the start of the MOD program, are to be utilized as ground maintenance trainers and as future spare parts aircraft. Roll out of the first P-3T out of the NADEP Jax MOD shop was held on 6 February 1994. The second quickly followed and both departed for Thailand on 16 February, bound for the Royal Thai Navy AIR Base at Utaepao. The UP-3T is expected to be delivered sometime this summer.





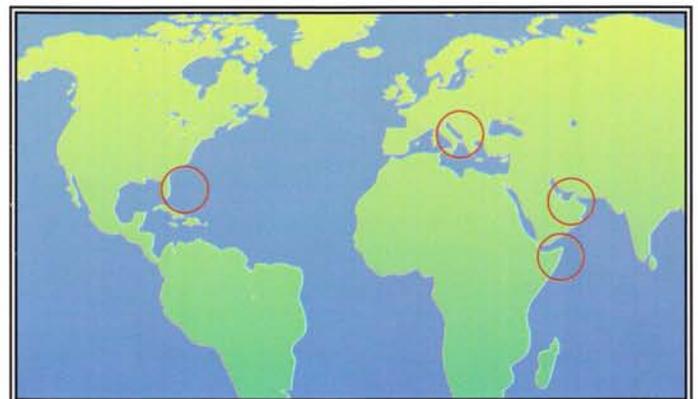
UNITED STATES

No. OF AIRCRAFT	247
In SERVICE	USN
TYPE(s)	P-3C UD I, II, II.5 and III
No. OF SQUADRONS	13 Active EP-3E, EP-3J, NP-3D, TP-3A 9 Reserve P-3A, UP-3A, UP-3A/B
MISSIONS	ASW; ASUW; SAR; OTH-T; Maritime Surveillance and /Intelligence; Overland Surveillance; UN/ NATO Embargo Enforcement; Fleet C I-CM Training; Humanitarian Aid; Sea Control; Crisis Response Counter-Narcotics; Intelligence Data Collection (special operations);VIP/Utility Transport; Science/Oceanographic Research

Since its introduction in 1962, the P-3 Orion has been the backbone of the U.S. Navy's antisubmarine warfare campaign against the former Soviet Union's subsurface fleet during the Cold War, contributing to its demise. Over the years, the multimission P-3 has maintained its lead as the U.S. Navy's primary maritime patrol aircraft, performing a myriad of tasks inherent to the aircraft. The Orion is equipped with sophisticated electronics and sensors well suited for post-Cold War missions like maritime surveillance and intelligence gathering, counter-narcotics, and sea control. Recent world crisis has seen the Orion performing new

tasks such as UN/NATO Embargo enforcement, Humanitarian Aid and Overland surveillance missions from Somalia to the former republics of Yugoslavia. The war fighting capability of the P-3 has also been proven – in combat during the Gulf War with IRAQ. Navy P-3 provided Over-The-Horizon Targeting of hostile surface combatants threatening the security of Persian Gulf based battle groups.

Currently, the U.S. Navy has initiated several Orion improvement programs to extend the service life of the aircraft and improve the ASUW capability. Other Navy modifications projects include systems provisions for counter-narcotics operations and intelligence gathering missions as well as adding new weapons systems to the aircraft's arsenal. The USN P-3C Update III (+) is currently the most multi-missioned capable Orion to date and is a primary component to the U.S.Navy's future operational plan “..From The Sea”.





Australian Orions In For A New Look

RAAF P-3 ORION ESM SYSTEM UPGRADE



Tail radome is an easy visual reference to the modification.



Each wing tip is extended approximately six inches, excluding the protrusion.



Detailed view of one section of the "antenna farm" created on the aircraft belly.

The past year has been a busy one for the Royal Australian Air Force with three P-3 Orion programs. Recently, the RAAF awarded a contract for the refurbishment of its P-3C fleet to E-Systems, Inc. of Dallas, Tex.. In a second program, the conversion of three former US Navy P-3

Bravos into training/logistics aircraft has begun at the Naval Aviation Depot in Jacksonville, Fla..

A third, and equally important Australian Orion project that has come to fruition in the past year is an ESM or Electronic Support Measures system

upgrade. The modification is extensive enough to give a new appearance to the aircraft, particularly in the wing tip and underside areas

The electronic support measures system upgrade consists of the incorporation of the AIR 2001 Odyssey ESM into the fleet of

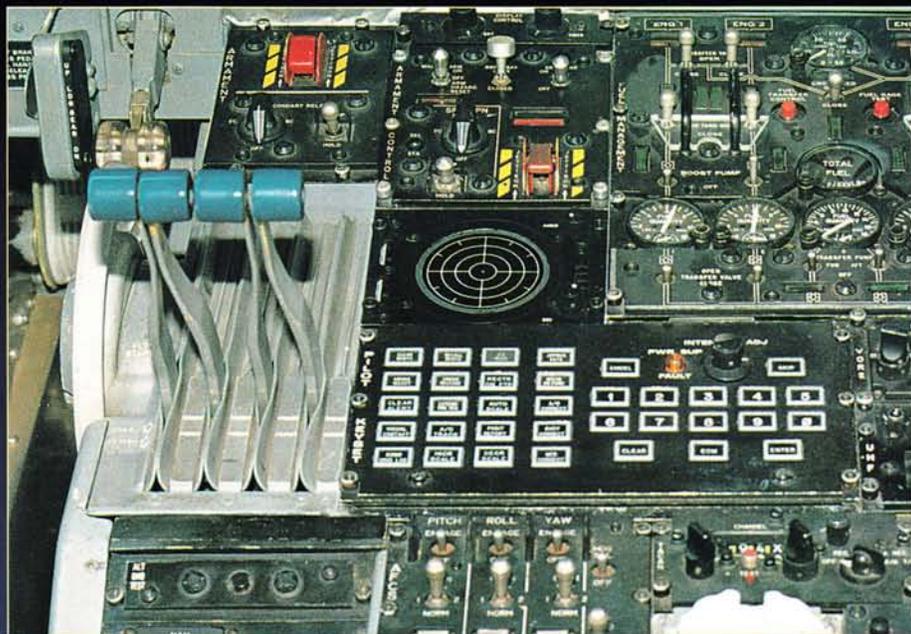
Australian P-3C Orions. The Odyssey 2001 ESM system is a joint Australian/Israeli venture through AWA Defense Industries Pty. Ltd., and includes new ESM avionics designed and manufactured by Elta Electronics Industries Ltd. of Israel. A significant airframe modification to accommodate the system will be completed by Hawker De Havilland Victoria Ltd. The new system will greatly improve the capability of the RAAF Orions to detect and analyze electronic emissions.

An electromagnetic surveillance plot created by the system, will also support passive intelligence, threat warning, antisubmarine warfare, and antisurface warfare mission capabilities of the aircraft.

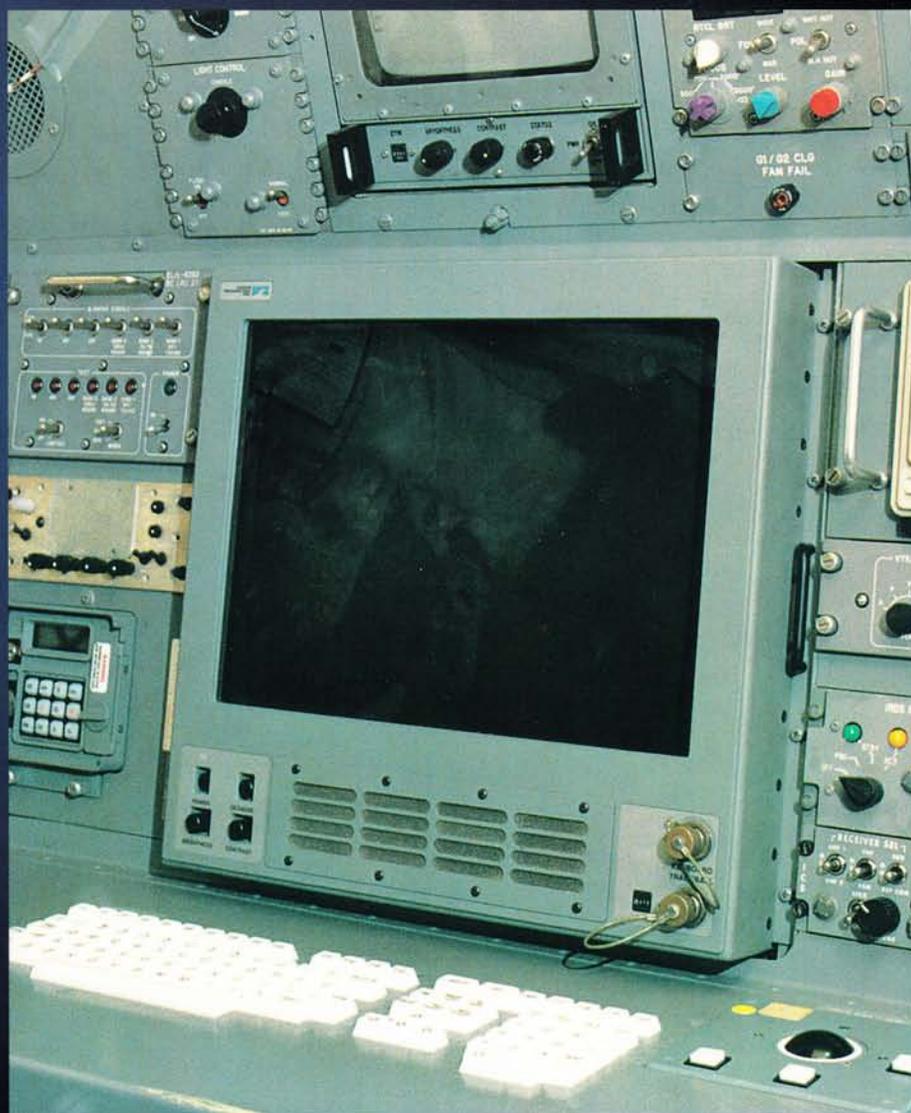
The system can detect and analyze signals from surface ships, submarines, aircraft, and land-based emitters while scanning for hostile weapon systems in targeting modes. The system also supports the aircraft's passive over-the-horizon reporting and targeting capability for the Harpoon anti-ship missile.

Components of the Odyssey ESM system include a new operator display control subsystem, interior avionics racks, a threat warning display in the cockpit, and numerous antenna arrays housed in the forward radome, aft and wing tip mounted pods and on the underside of the aircraft. The program deletes the existing ALQ-78 ESM pod.

The most unique feature of the program is the incorporation of the new sensor operator position. Sensor Station No. 4, located across from the existing Sensor Station No. 3, is



Cockpit mounted threat warning display, located to the right of the power levers.



The dedicated ESM operator's Sensor Station 4. IRDS (Infrared Detection System) management system is installed above.



ESM system electronics rack.

equipped with a 19-inch color telegraphic display, utilizing multi-window software and standard trackball/keyboard controls. The new operator station also contains the aircraft's infrared detection display and controls, allowing the Sensor Station No.3 operator to concentrate on radar and MAD systems management.

The use of a dedicated ESM manager is a growing trend in maritime patrol aviation. Portuguese Orions and Canadian Auroras have had dual, non-acoustic sensor stations for years,

with one operator responsible solely for ESM.

The British Nimrod also has a dedicated ESM operator. Future Royal Air Force replacement maritime patrol aircraft will include the station in their plans. Other Orion operators, including the U.S. Navy, are considering the dedicated ESM management configuration, due primarily to the technology growth substantially enhancing mission systems.

The RAAF program began with the award of a \$90 million Australian dollar contract to

AWADI in 1989. The modification and installation of the Odyssey ESM system into a prototype Australian P-3C began in 1992. (The system concept was originally tested on Elta's Boeing 707 test-bed aircraft in Israel.)

Delivery of the ESM prototype came in July 1994, and it began operational testing immediately.

The aircraft participated in a major Australian air defense exercise with positive results. In more than 300 hundred hours of operational testing, there have been only three minor hardware failures.

The next phase of the program has already begun with the first of nine aircraft installations completed and undergoing operational testing. The RAAF recently exercised a contract option to have all 19 of their P-3 Orions modified.

The ESM program also includes an operational mission simulator for training, and a complete software support facility. The support facility comprises an extensive software development area, pre- and post-mission analysis sections, as well as a rack-mounted Odyssey ESM system connected to an RF simulator (built by Elta) to fully exercise the system under laboratory conditions.

System operator training is currently underway and maintenance support training is to begin soon.

The Odyssey ESM system is part of the target configuration of Project 5276, the Australian P-3C refurbishment program.



EP-3E ARIES II Production

P-3 Intelligence Aircraft Getting Smarter

BY DAVID READE



The U.S. Navy's EP-3E Aries II conversion-in-lieu-of-procurement (CILOP) program is back on track with the recent delivery of the first aircraft out of the Naval Aviation Depot Alameda's (Calif.) mod shop. CILOP is the on-going modification project to convert 12 low-hour, non-updated P-3C airframes into electronic intelligence configured Orions.

The delivery of this EP-3E Aries II re-establishes the CILOP program since the re-institution of the mod line at NADEP Alameda in early 1992. Lockheed Martin's Aircraft Services' facility in South Carolina converted five EP-3E Aries II aircraft before a program reorganization split the mod line in 1991.

But soon after it was announced that NADEP Alameda would be taking over conversion of the aircraft, the government's Base Realignment And Closure Commission (BRAC) slated Alameda to close. With the BRAC induced mandate to close NADEP

Alameda and the impending transfer of P-3 depot maintenance oversight to the East Coast, a work force instability threatened continuation of the CILOP program at NADEP Alameda.

After more debate, a prudent decision was made by the Navy to split the mod line again and transfer conversion of the remaining three EP-3E Aries II baseline aircraft to NADEP Jacksonville, Fla.. NADEP Alameda will continue to work on its aircraft with deliveries scheduled through December 1996.

NADEP Jax had been conducting depot maintenance (SDLM) on its three aircraft prior to induction into the mod shop. Project schedules for the Jacksonville CILOP EP-3E Aries II include induction during 1995 with deliveries running through 1997.

The EP-3E Aries II CILOP incorporates the best signals intelligence (SIGINT) electronic systems into the P-3C airframe, adding

increased integration and processing capabilities. The CILOP program also adds provisions for global positioning system and satellite communications into the aircraft

As the CILOP program continues, a follow-on systems upgrade to Aries II has already been developed and is about to be implemented.

The Sensor System Improvement Program (SSIP) includes a series of sensor modifications that will significantly enhance the joint interoperability and communications connectivity capabilities of the Aries II EP-3E. SSIP equates to heightened situational awareness for the mission commander through auto-correlation of organic tactical information (information the aircraft is sensing) with non-organic data (data received from new tactical link and communication networks).

The SSIP design philosophy is based on state-of-the-art non-developmental items (NDI) hard-

ware, commercial off-the-shelf (COTS) and government off-the-shelf (GOTS) software system requirements, with an open architecture and built-in growth and reprogrammability

SSIP will add a ULQ-16 pulse analyzer upgrade for greater real-time on-board signal analysis capability, as well as the "Story" series of system upgrades to greatly improve the interoperability of the aircraft with other airborne reconnaissance/surveillance aircraft, satellites and ground-based command and control centers. This upgrade is the result of lessons learned from the Gulf War.

The Story series includes: *Story Teller* for automatic organic/non-organic all-source data fusion and enhanced communications connectivity via introduction of communication link networks; *Story Book* adds the means to exploit old and new digital data links and data fuse them into the aircraft's organic mission system; *Story Classic*, which upgrades common cryptologic workstations, incorporating increased signal detection capability across the board and greater system reliability.

Optimally, SSIP will be introduced into the last two aircraft at NADEP Jacksonville with modification of the remaining aircraft to occur over the next three years. The addition of SSIP into the Aries II enhances the mission capabilities of the advanced EP-3E against emerging threats.

It should be noted that SSIP technology has a broader base

application to other Navy airborne reconnaissance/surveillance platforms including other P-3 variants and S-3 based special ops aircraft like ES-3A, Outlaw Viking and Gray Wolf.

One of the unique aspects of the EP-3E Aries II program has been the aircraft's paint scheme. There has been some question whether the original CILOP specifications stipulated a particular paint scheme other than the traditional EP-3E gray and white with black radomes and canoe pods.

The first four EP-3E Aries II out of Lockheed Martin's Aircraft Services facility were delivered this way. But the fifth aircraft was rolled out with grey radome and canoe pods that were made of new composite materials. (The first aircraft off the line were delivered

with the pods and radomes from older EP-3E donor aircraft and were to be replaced with the newer ones in the field.)

Two of the first Lockheed EP-3E have since gone through phased depot maintenance at NADEP Jax and were returned to the fleet with all-gray tactical schemes with gray radomes and canoe pods. There is a suggestion that this scheme is as the specifications intended and that the new radomes and pods were gray for that reason.

In any case, the Alameda EP-3E Aries II aircraft are being delivered all gray, and gray is now the tentative paint scheme for all future CILOP aircraft. The four original Aries II EP-3E that are currently gray and white will subsequently be repainted during future PDM.



EP-3E ARIES II Production

BuNo	Location	Projected Delivery
156507	VQ-1	✓ Delivered
156511	VQ-1	✓ Delivered
156514	NADEP Jax	July 96
156517	VQ-1	✓ Delivered
156519	NADEP Alameda	March 96
156528	NADEP Jax	January 97
156529	NADEP Jax	October 96
157316	NADEP Alameda	December 96
157318	VQ-1	✓ Delivered
157320	VQ-2	✓ Delivered
157325	VQ-2	✓ Delivered
157326	NADEP Alameda	July 95

GERONIMO

P-3 SUPPORTS SPECIAL OPERATIONS FORCES



As the U.S. Navy downsizes in the wake of defense budget cut-backs, innovation and adaptability will be some of the keys to future mission success. One Navy asset demonstrating an inordinate amount of flexibility recently is the Maritime Patrol P-3C Orion. The versatile P-3 has yet another mission to add to its growing list of capabilities – Special Forces jump training support.

US Special Operations Forces (SOF) are made up of elite unconventional warfare units that include the Navy's SEALs (Sea, Air, Land), the Army's Rangers and Green Berets, Marine Corps Force Recon units, and such US Air Force units as Combat Air Controllers. This special mission capability also extends to the Navy's Explosive Ordnance Disposal (EOD) units, mobile

teams which fall outside the SOF umbrella.

The nature of Special Ops is often crisis response or quick reaction to situations in locations around the globe.

The P-3, forward deployed close to trouble spots and throughout the world, offers a stable jump platform as an alternate means of insertion for SOF and EOD units in current crisis operations and potential littoral conflicts.

Although primarily a resource to facilitate SOF/EOD jump training, the P-3 is a potential operational platform as well. The joint operation exchanges now regularly taking place between the special warfare and Maritime Patrol communities is a two-way-street. The exercises provide familiarization with the aircraft for SOF assets and

the VP crews gain operational knowledge on how to best prepare and plan for such missions.

Technically a SOF/EOD support mission is based on a P-3 search and rescue (SAR) profile. Once the drop zone has been located, the aircraft's airspeed is reduced to 130-140 knots with the port inboard engine shut down. Often the flaps are lowered as well to facilitate the slower air speeds. Jumpers bail out the main cabin door and drop away clear of the horizontal stabilizers.

Jumps can be performed at both high and low altitudes. Test parachute drops have explored the parameters of static line and free-fall jumps, High-Altitude/Low-Opening (HALO) jumps with and without full combat gear, and low altitude bailouts.

From May through August 1993, the Navy conducted a series of parachute jump operations in conjunction with Special Operations Command's Airborne and Special Operations Test Board Directorate. The goal was to certify the P-3 as special operations jump platform for all special operations forces.

One focus of the certification process was to standardize procedures for the static line's a 6,000 lb tensile strength nylon strap wrapped around sensor station three's seat pedestal by a four-inch clevis. The anchor line then runs down the tube for 29 feet and attaches to another strap threaded through four tie down rings in the aft section of the aircraft to facilitate attachment of the static line.

A mechanical winch is incorporated into the setup as an emergency retrieval system of a hung jumper. (This differs from the SEALs/EOD setup that encompasses an anchor line tied directly to the aircraft's starboard side observer seat pedestal with no retrieval mechanism. This setup can accommodate six jumpers.

After eight test flights, the P-3 Orion was certified as suitable free-fall platform for airborne egress scenarios. Although the aircraft continues to be utilized for static line jumps by Navy units, static line suitability certification is pending the incorporation of a more reliable emergency retrieval system.

Patrol Squadron Forty-Nine (the Woodpeckers) pioneered the more recent joint operations and participated in the certification trials. Since initial special forces tacti-



cal training on P-3s three years ago, VP-24, VP-10, VP-40, and the VP-45 have provided support to SOF jump training exercises. These include drops over Maine, North Carolina, Florida, along the California/Mexico border, and off the Hawaiian Islands. Outside the US, jumps have been made from P-3 over Panama, Colombia, and other Latin American countries as part of UNITAS, as well as Bermuda, Puerto Rico, and Africa.

These recent joint operations are by no means the first use of the P-3 as a jump platform for special warfare units. The first jumps go back to the mid 1970s when EOD units tested airborne egress capabilities at NAWC China Lake, Calif.. Later (1978) in Hawaii, P-3s were utilized for maritime insertion training by SEAL/EOD units when support from US Air Force and US Coast Guard C-130s were not available. Through the late 1970s and into the '80s SEALs continued to jump from P-3s in Hawaii and Scotland. There were even instances when six-man inflatable small boats (with nine-horsepower engines) were deployed from Orions, to be followed by parachutists.

In addition to providing a stable jump platform, P-3s have demonstrated other valuable SOF/EOD support capabilities. These include utilizing its sophisticated suite for communications relay, radar and infrared sensors for stand-off beach reconnoitering, and as a surveillance platform for directing small craft of amphibious operations.



Fincastle Competition 1994

RAAF Victorious Again in Commonwealth Antisubmarine Warfare Competition

Royal Air Force Crew Wins Coveted Fellowship Trophy



For the second year in a row, a crew from the Royal Australian Air Force's Number 11 Squadron has captured the Fincastle Silver Tray Trophy. The 34th annual Fincastle competition was held this year in Australia, at RAAF Base Edinburgh, close to Adelaide, South Australia. The host country changes each year within the commonwealth countries of Canada, New Zealand, the United Kingdom and Australia; 1993's contest was held at CAB Greenwood, Nova Scotia, Canada, where RAAF No.11 Squadron was also the victor. The 1995 competition will be hosted by the Royal Air Force at RAF Kinloss, in the north of Scotland.

The best maritime patrol aircraft crews from each country are pitted against one another in the contest that tests ASW skill, crew experience and aircraft mission systems. Competition results are frequently so close that winners have only a narrow margin, so, a tie breaking procedure is in place. This competition resulted in all four crews having the maximum number of points available for all sorties, day and night.

The tie breaker, a CASEX, or Combined Antisubmarine Exercise to locate and attack a submarine, failed to break the tie in "attack accuracy" judgment or in all areas but the last item, "timing" – quickness of the attack – was figured in, it gave the Aussies the narrow advantage needed for victory.

The target submarine in the exercise was an Australian Oberon class SSK, the HMAS Onslow. She operated in a square 70 nm area.

The United Kingdom won the top honors in fellowship and hosting for the first time, and was presented the award amid cheers from all participants. Competition for the VP International Fellowship Trophy is just as intense as for the Fincastle Trophy. VPI plays a key supportive role in the Fincastle competition. The Edinburgh VPI Wing, christened their newly opened VPI Center on base at the initial "Meet and Greet" function, setting the tone for another topnotch event. ☆

RAAF No. 11 Squadron, Crew 6 captain, Flt LT Jon Rose, his crew and aircraft, are winners of the 1994 Fincastle competition.

NEWS LOG

THE HUNTER IS STAR OF WINGS SERIES

The Discovery Channel's aviation series, "Sea Wings" was rated highest of all cable TV programs, the night it aired "The Hunter." The episode was a feature story about the multi-mission P-3 Orion.

Over two million people throughout the United States watched the program, earning it a 1.2 Nielsen rating share. "The Hunter" also became the highest rated program of the quarter. The film was taken at NAS Jacksonville, Fla. during the summer of 1994, and aired 18 November. The "Wings" crew flew regular missions with VP-24. ☆



VP-30 HANGAR UNDER CONSTRUCTION



Ground was broken for a new training squadron hangar at NAS Jacksonville last October. The \$23.5 million, 177,000 square foot Hangar 30 will provide maintenance area for five P-3 aircraft and 35 offices and training spaces. Hangar 30 is a result of the Navy's decision to close NAS Moffett Field, Calif. and consolidate VP-31 with VP-30, establishing VP-30 as the Navy's only fleet replacement squadron. Completion is scheduled for April 1996.

Pictured from left, Larry Blackburn, base construction; CAPT Mike Griffin, C.O. VP-30; RADM Frank Dirren, COM-NAVBASEJAX; CAPT Roy Resavage, NAS C.O.; C. Perry, W. McCall, contract construction; Jim O'Kon, architect; Adam Hollingsworth, of the Mayor's office. ☆