A CP-140 Aurora from Canadian Forces 407 Squadron located in Comox, B.C. flies over Snowy Valley.

CANADA'S MARITIME PATROL FORCE

by David Reade

With the Pacific Ocean on her west, the Atlantic to the east and the Arctic to the north, Canada possesses one of the world’s longest and most unusual coastlines. The coastal zones of the west and east are unique geographically and industrially, considering the east’s St. Lawrence River, massive Gulf, Labrador Sea and the huge Hudson Bay. The Queen Elizabeth Islands of the Northwest Territories compete only with the tip of Greenland on their reach to the North Pole. The Yukon shares with her bordermate, Alaska’s concerns of population, petroleum production and pollution control.

To maintain a constant vigil over this vast and rather inaccessible land requires patrol by aircraft. It is interesting to note that Canada is the second largest country in land size and that her seacoast includes 36,356 miles of mainland and 115,133 miles of islands.

Eighteen years ago, Canada selected an aircraft to fulfill her operational requirements and to replace their old, beloved, glass-nosed Argus. Their choice would be a customized P-3 Orion redesignated the CP-140 and renamed the Aurora.

To some, Aurora conjures up thoughts of Greeks mythology. Aurora was the goddess of the dawn, who was in love with Orion the Hunter, a nice, coincidental match of names. Others envision Canada’s Aurora Borealis or northern lights display, which became their logo.

Built for Canada by Lockheed in the late 1970’s, the CP-140 is a long range maritime surveillance aircraft based on the P-3C Orion. The aircraft shares the same basic airframe and engines as the P3C, but contains advanced avionics of Lockheed’s S-3A VIKING modified for the Aurora. One of the major differences of the Aurora is its unique interior crew arrangement. By careful Canadian design, all the sensor operators are clustered in the center of the aircraft to foster improved crew coordination and mission efficiency.

Like the P-3 Orion at that time, the Aurora was primarily used as a submarine hunter and was a vital link in NATO’s Arctic defense of the North Atlantic during the Cold War. The Auroras also performed multiple sovereignty roles, search and rescue and national interest missions.

Today, the aircraft are concentrating their support to the national interest roles. Besides performing traditional maritime patrol missions, the burly Auroras conduct civilian government...
tasks that include environmental monitoring, fisheries protection, law enforcement support, northern sovereignty patrols and iceberg reconnaissance.

Many of the civilian tasks resulted from the Department of National Defense (DND) signing Memorandums of Understanding with various Canadian government agencies to provide them with aerial support. Now the Aurora's multi-mission capabilities are being fully utilized.

PROTECTING THEIR ENVIRONMENT

Environmental Canada utilizes the Auroras for monitoring of pollution and control of natural resources to include animal population census and aerial mapping. Some of these missions are accomplished through design provisions in the aircraft, with specialized packages mounted in the weapons bay to house sensors and photographic equipment. There is even a provision for a Side-Looking Airborne Radar (SLAR) in the aft section of the aircraft.

DEFENDING FISHING ZONES

In support of the Department of Fisheries and Oceans (DFO) enforcement program, Canadian Auroras monitor shipping traffic in maritime regions to locate and identify violators of Canada’s 200 mile EEZ or Exclusive Economic Zone. Auroras investigate suspect vessels, querying them as to their point of origin, cargo on board and amounts and types of fish collected. Violators are identified and photographic evidence is generated to aid in prosecution.

Canada is also a member of NAFO, the North Atlantic Fisheries Organization and is responsible for policing fishing zones outside of its 200 mile limit.

COUNTERING NARCOTICS INFILTRATION

Through a Memorandum of Understanding between the DND and the Royal Canadian Mounted Police (in association with Canadian Customs) military Auroras provide aerial surveillance to monitor and track surface vessels suspected of smuggling drugs into the maritime provinces. These missions usually include drug liaison officers from the RCMP aboard the aircraft to coordinate operations. The Auroras locate, identify and track these ships until seagoing law enforcement or Coast Guard assets can intercept and board the craft. If contraband is found and arrests are made, photographs and data collected by the Aurora are used as evidence in court. Canadian Auroras have been directly involved in such operations over the years, with several recent captures netting very large quantities of drugs bound for Canadian cities.

PATROLLING THE GREAT NORTHWEST AND ARCTIC

Another important national interest tasking, vital to Canada’s sovereignty is Northern Patrols of its Arctic region. This mission stems from a 1985 government mandate for the military to demonstrate a presence in isolated Arctic and coastal territories, to assert Canada’s sovereignty and protect its natural resources from those who would exploit them. This mandate contributed greatly to the acquisition of the three CP-140A Arcturus variants now in service for Canada.

A Northern Patrol is usually synonymous with the Arctic surveillance mission, but can also include other taskings such as pollution monitoring, animal population census, emergency medical evacuation and Arctic search and rescue.

One important sub-mission of Northern Patrols is Ice Reconnaissance. Icebergs located during “NORPATS” are reported to the Iceberg Central Division of the Canadian Department of Transportation. “Ice Central” uses iceberg location data in its maritime radio reports to mariners, for safer navigation of northern waters.

Most of these missions are now flown by their three new Arcturus aircraft. These were the last three P-3C airframes off of Lockheed’s closing Palmdale production line. Originally, the three planes ordered were intended to be fully equipped Auroras, but when the Cold War defused, their mission was redesigned. Delivered “Green” without any avionics or sensors, the Arcturus were equipped with minimal equipment necessary for Arctic surveillance by Industrial Marine Products (IMP) of Halifax, Nova Scotia. Lacking the Aroruras ASW and associated gear, the Arcturus is lighter and profits with greater range.

The CP-140As use the APS-507 (APS-134) Radar and enhanced long range navigational and communications systems. They regularly carry Survival Kit Air Droppable (SKADS) multipurpose life rafts designed for deployment from the weapons bay. The SKADS provide a significant measure of emergency/survival equipment for any situation.

The Arcturus augments the fleet in other ways, especially in pilot training, but they also work as a logistical transport, ferrying spare parts and replacement crews to deployment sites.

SUPPORTING OPERATION SHARP GUARD

Although expanding national interest roles of the Auroras are important in this Post Cold War era, traditional military roles of the Aurora are still in demand as demonstrated during the recent support of NATO operations in the Adriatic.

The Canadian Auroras have been participating in operations to support United Nation’s Resolution 820, enact-
ing an economic embargo against the former republics of Yugoslavia, as part of Canada’s NATO commitment.

Since early September (1993), the Auroras have been flying armed missions over the Adriatic from Naval Air Station Sigonella, Sicily. Sharp Guard support missions include surface surveillance operations to detect, identify and query any merchant ships in the region. Those suspected of carrying prohibited cargos to the former Yugoslavian republics are reported to the fleet aircraft command and control ships. Suspect vessels are then targeted for intercept and boarding for inspection by other NATO surface units. If found to be violating the imposed embargo, the ships are escorted to port for discipline.

Sharp Guard has been one of the first major international deployments for Canadian Aurora squadrons. Crews from 405, 415 and 407 squadrons regularly rotate through Sigonella every 30 days in overlapping schedules. Prior to deploying, each designated crew is assigned to special orientation training consisting of rules of engagement, defensive air combat maneuvering, potential threat identification, local surveillance techniques and regional geopolitical background. Cockpit crews engage in additional flight simulator training emphasizing aircraft handling characteristics with higher gross weights (due to weapons loads).

LOOKING AHEAD

Canada has not been immune from budget cuts and defense downsizing. Yet, as in the United States, her missions and obligations to NATO continue. So to keep their planes updated and in condition for their future requirements and interoperability with other platforms and P-3s around the world, the Aurora Life Extension Project has been initiated. The Project is a series of “supportable” avionics enhancement initiatives for prototype systems. Design studies are currently underway, as required by Project Management-Aurora Office.

Their goals are set on the integration of GPS (Global Positioning System), SATCOM and a new ESM with a stand-alone, self-protection suite, as well as a color weather radar and communications management package.

Eventually, a new acoustic processor, 99 channel sonobuoy receiver set and an imaging “Spotlight SAR” Mod to the radar may see their way into the suite.

Another initiative in progress is the installation of Structural Data Recording Systems (SDRS) on several aircraft to generate information for a structural life extension study. Their objective is to determine the cost and effort to prolong the structural life of the aircraft to the year 2025.

Pirates in Their Fishing Ground by Capt. Tony Keene

The flag on the fishing trawler says it comes from Belize, Or Panama, Or Sierra Leone. But the nationality of its crew says it really hails from more Mediterranean climes. It sits just on the line that limits Canada’s 200-nautical-mile economic zone, on the edge of one of the greatest fishing areas in the world, The Grand Banks off Newfoundland. The captain is preparing to place his trawls in the water. It is a rough day, with two-metre waves, and a low overcast that threatens snow. The foreign skipper is quite confident he can haul in his catch with two-metre waves, and a low overcast that threatens snow. The foreign skipper is quite confident he can haul in his catch and make his way clear without getting caught.

Suddenly, out of the sky, comes a grey shape, its four engines roaring, and as it passes low overhead a camera in its belly begins snapping pictures. This is a CP-140 Aurora aircraft of 415 Squadron, 12 Wing, from Greenwood, Nova Scotia. It and its crew are engaged in what has become known in flying jargon as a “FISHPAT” or fisheries patrol.

Reluctantly, the trawler captain sends his crew below, and puts the helm over. But he’ll probably be back another day, trying his luck with international law.

Most of the violators are what are called “flag-of-convenience” vessels. Sometimes what they’re doing is legal, but only just.

Canada has all but closed its Atlantic fishery in an attempt to allow disastrously-low, stocks of cod, halibut and groundfish to recover. But although other members of the North Atlantic Fisheries Organization, NAFO, have agreed to observe quotas on many species, this only applies to vessels registered in those countries. It is an easy matter to register a ship in Panama and Liberia, with much-lower standards, as operators of cargo ships found out long ago.

Only on board inspection can tell what they’re catching. They mainly haul in various species of groundfish, but they keep everything they catch.

The Canadian cuts in fishing quotas began with northern cod, but then were extended to almost all groundfish. These include such types as red and silver hake, flounder and pollock. This latter has become popular recently under the commercial name Boston Bluefish, and is also dyed red, flavored, and sold as mock crab.

According to fisheries officer Trent Barrett, there are less illegals now due to the constant patrol of the waters and to very high fines.
HAITI

VP-16 P-3 checks out their team player, an Aegis cruiser.

Operation Support Democracy

By David Reade

On September 30, 1991, the duly elected president of the Island nation of Haiti was deposed in a coup by a military Junta. This action initiated a period of unrest in Haiti that continues today. Negotiations to return the ousted president, Jean-Bertrand Aristide and bring stability to Haiti were futile, so in June 1993, the United Nations passed Resolution No. 841 to enact an economic embargo against Haiti. This prompted the ruling military council to let Aristides return in August. The council later reneged and the sanctions were reimposed on October 18, 1993.

The UN embargo, Operation Support Democracy, involves a blockade of Haiti by naval combatants from Britain, France, Canada and the United States including elements of the US Coast Guard. The NATO flotilla is tasked to enforce the sanctions and has the authority to stop and search vessels suspected of violations. Embargoed goods include gasoline, oil, oil by products, arms and ammunition, police or military equipment, vehicles and spare parts.

It was on October 16, 1993, immediately preceding the reinstatement of the U.N. resolution, that Patrol Squadron Sixteen conducted the first intelligence and surveillance missions of the embargo.

The War Eagle's P-3 Orions were part of the multinational force under the command of Joint Task Force 120. They provided surveillance support to the Task Force and became the aviation backbone of the embargo. "No other U.S. or Allied Aviation Squadron has contributed more to ensure the embargo's success," reported Lt. Dave McKeeley, VP-16's Public Affairs Officer.

The OSD mission encompasses employing the P-3 Orions on 10 hour surface surveillance flights against merchant traffic in and around Haiti. The multi-mission Orions detect; identify and query suspect ships. Information on suspicious vessels is passed to ACU (Aircraft Control Unit) ships; suspects may be targeted for subsequent boarding. The P-3s then track the suspect vessels, and provide intercept vectors to the Navy or Coast Guard units.

Within days of the embargo's initiation, VP-16 Orions located several ships. One was found to contain over 6,000 barrels of motor oil. Another ship tried to run the blockade. Refusing to change course, warning shots were fired across the ship's bow. This caused the vessel to turn back and leave the area.

A secondary mission tasking of OSD is the location and
interception of Haitian refugees fleeing from that island nation. Labelled Able Manor, these flights are flown to the north of Haiti in the straits between Cuba and Haiti. Often found adrift in over loaded rickety fishing boats or afloat on makeshift rafts, these refugees are subject to repatriation to Haiti if found. The task of trying to find these refugees, who are illicitly entering the United States is difficult. Despite the efforts of the US Military personnel to help them, the refugees resist, due to current policies that must return them to Haiti.

The OSD embargo mission tasking of VP-16 was just one part of their normal deployment period to Puerto Rico, Key West (FL), Panama and Honduras, in support of counter narcotic operations. Counter narcotics is an ongoing Navy P-3 mission conducted throughout the Caribbean, eastern Pacific and Atlantic coastal regions. P-3 crews detect, locate and track suspected ships and smaller surface craft that fit a particular drug trafficking profile. The Orions capability for day and night surveillance is well suited for this type of mission.

The P-3 CDU is a specially configured fleet Orion with an air to air intercept capability to detect and monitor suspected drug smuggling aircraft. CDU system components include the APG-66 (F-16) fire control radar, Cluster Ranger standoff, a stabilized high resolution electro-optical device and a dual enhanced communications suite. The communications suite also has an interface to the Cluster Ranger for the timely transmission of airborne intelligence imagery. Several fleet P-3s are currently equipped with proof-of-concept systems that are designed for quick or roll-on/roll-off installation. Provisions for 18 additional CDU Mod Kits are underway and expected to be available starting mid 1995.

By mid-February (1994) Patrol Squadron Sixteen’s six month deployment came to an end. Returning to Naval Air Station Jacksonville, VP-16 turned over the continuing Operation Support Democracy mission to VP-8. To date, no resolution to the unrest in Haiti and easing of the embargo is in sight. The multi-mission capable P-3 Orion continues to be the eyes and ears of the fleet in support of democracy. ★
After a 14 year drought, Australia won the 1993 Fincastle Competition, held at CFB Greenwood in Nova Scotia, Canada. Top honors went to the Royal Australian Air Force's 11 Squadron, Crew 5.

Held annually since 1961, the Fincastle Antisubmarine Warfare Competition pits the best ASW crews from the commonwealth countries of New Zealand, Australia, United Kingdom and Canada against each other in friendly competition for the coveted Fincastle Trophy.

The original competition began as an annual bombing accuracy contest. New Zealand, Australian, United Kingdom and Canadian crews first flew the bombing sorties locally over home waters, with the results sent to an adjudicating committee in the United Kingdom. This framework continued until 1970 when fundamental ASW skills were incorporated into the competition that included the detection and attack of a submerged submarine.

The most significant change took place in 1971 when all four participating nations agreed to convene at a central venue hosted by one of the member countries on a rotating basis. A new format was also initiated with a day sortie to detect, classify, localize and attack a diesel exercise submarine and a night sortie, involving radar-homing and photography of a submarine target.

The competition changed again in 1981, adding a 30 minute CASEX (Combined Antisubmarine Exercise) as a tie breaking flight. The CASEX consists of locating a snorkeling submarine. Once located, the aircraft flies over the sub, heads outbound for eight miles and turns back for the attack while the submarine submerges. Points, or figures of merit are scored by two criteria: (1) the time it takes for re-acquisition of the sub, and (2) the accuracy of the attack.

In 1984 the day sortie submarine was changed to a nuclear boat and the night mission revised to locating and tracking a diesel. The most recent change came in 1989, with the day and night sorties increased from 4.5 to 5 hours.

Fincastle has attained the honor of being the oldest international military competition based on ASW skills. It has established a long tradition of 'esprit de corps' and camaraderie among those participating, leading to its longevity.

There's even an award, the Chris Patrick Fellowship Trophy, sponsored by VP International (VPf) that is presented to the crew that best promotes goodwill during the competition. It was named for CAPT Chris Patrick, who, as International President of VPI, initiated the fellowship award prior to his untimely death in 1979. Australia's Crew 5 was doubly proud to be this year's recipient.

Competition aircraft have varied over the span of 33 years and have included such planes as Shackletons, Sunderland flying boats, P-2 Neptunes and Canadair Arguses. Today, three out of the four participants fly variants of these aircraft.
Lockheed's P-3 Orion. The Orion was first introduced into the competition in 1966, by New Zealand who was the first foreign operator. Australia soon followed with her P-3Bs in 1968 and then their version of the P-3C in 1978. Canada first flew their P-3 variant, the CP-140 Aurora, in competition in 1980. The United Kingdom has flown the only true jet in the competition, the Nimrod, since the early 1970s.

Although all the competition aircraft are similar in capabilities, it is the skill of the aircrrews that most affects the outcome, often with the victor winning on the basis of just a few yards or a few seconds.

Many of the crews have worked together for a long time, which increases their skills, but some of the crew composition that occurs at Fincastle can be an interesting factor as well. Due to NATO-exchange practices, finding a multi-national crew is not unusual. This year was no exception. The Canadian team, 405 Squadron’s Crew 5 had a US Navy exchange pilot, LT Tom Reck, serving as their competition Crew Captain. The team, also included an Australian exchange TACCO, Flight Lieutenant Paul Wade.

The British team included an exchange Sensor Operator from New Zealand, SGT Spider Newth, and Australia had an RAF Nimrod pilot, Flt/LT Malcom Ridley. This year’s New Zealand crew had an ex-Canadian Aurora pilot, Flt/Lt Steve Castle, flying for them.

It’s not uncommon for a crewman to participate numerous times wearing uniforms of different nations. “Transplant” crewmen may have retired from service with one nation’s air force, move to another member nation and participated in Fincastle with that country’s air force.

The Fincastle competition is the only contest of its kind stressing traditional ASW tactics. Although the world MPA community has many joint exercises, nothing quite compares to the uniqueness of Fincastle.

What is not readily perceived is that Fincastle serves as a forum for ASW tactics, where shared knowledge reaps dividends in both revising old ASW tactics and developing new ones. The ASW symposium segment of the competition provides an opportunity for members nations to benefit from each others experiences and knowledge of ASW matters.
Updated P-3 Orion Bureau Number List Shows Many Changes

by David Reade

With many changes taking place, it's been an interesting year since the last P-3 Bureau Number List was printed. Most noteworthy is the retiring of P-3B Orions from reserve service. With a number of active squadrons disestablished, the P-3C is transferring into reserve use and the P-3Bs are being retired to desert storage.

Delivery of ex-Navy P-3 Orions to new foreign operators has now commenced with Chile and Thailand receiving aircraft as well as Australia acquiring three as potential training and logistics aircraft. The past year has also seen several Orions designated for display at Naval Air Stations and others donated to museums. Some have been purchased by aircraft parts dealers or by aeronautical systems companies as integration laboratories or prototype mock-up simulators.

Besides the many changes, it is worth mentioning that the response to our first publication of the list was overwhelming. We believe this list is the most comprehensive and accurate in existence. We heard from aircraft enthusiasts and former aircrew personnel and from people who actually work with the numbers in their jobs.

Besides status and title changes, these aircraft are in a constant state of evolution. The EP-3E ARIES II pictured here, for instance, is shown over NAS Patuxent River, MD on a flight test before delivery to VQ-1. It is sporting new grey canoe pods and radomes. They are manufactured of a composite material and replace very old components.
The document contains a table listing various P-3 aircraft with their respective locations, comments, and historical data. The table includes entries such as:

- **148883 as SAR Testbed**
- **148884 as Droop Snoop Testbed**
- **149674 as WP-3A for VW-4**
- **149676 as WP-3A for VW-4**

The table provides details about each aircraft, including their type, location, and comments. For example, one entry states: "148883 as SAR Testbed" and another: "148884 as Droop Snoop Testbed." These entries indicate specific test roles or modifications for the P-3 aircraft listed.
<table>
<thead>
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<th>BUNO</th>
<th>LASC #</th>
<th>TYPE</th>
<th>LOCATION</th>
<th>COMMENTS</th>
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<td>3105</td>
<td>TP-3A</td>
<td>VP-20</td>
<td>Prototype/Bus Trainer</td>
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<td>3106</td>
<td>P-3A</td>
<td>AMARC - REC</td>
<td></td>
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<td>3107</td>
<td>TP-3A</td>
<td>VP-16</td>
<td>Fire Trainer</td>
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<td>3108</td>
<td>P-3A</td>
<td>U.S Customs Service</td>
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<tr>
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<td>3110</td>
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<td>TACNAV/MD</td>
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<tr>
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<td>3111</td>
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<td>AMARC - FMS</td>
<td>CHILE #888</td>
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<tr>
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<td>THAILAND (P-37)</td>
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<td>3115</td>
<td>LP-3A</td>
<td>AMARC - FMS</td>
<td>THAILAND (P-37)</td>
</tr>
</tbody>
</table>

Scheduled for indemnity under U.S.P. 3047 for modification by 021893.

152144 | 3115 | P-3A | STRIKE | (gland collision, Japan, VP-68, 11/66) |
| 152145 | 3116 | P-3A | Airborne Recon | TACNAV/MD |
| 152146 | 3117 | P-3A | AMARC - FMS | TACNAV/MD |
| 152147 | 3118 | P-3A | AMARC - FMS | ex-General Offshore |

Once used for low-altitude Quality Assurance Testing with General Offshore Corporation.

152148 | 3119 | P-3A | AMARC - FMS | TACNAV/MD |
| 152149 | 3120 | P-3A | STRIKE | (Spanish Air Force, Spain 5/77) |
| 152150 | 3121 | UP-3A | AMARC - FMS | Versailles Trooped. Modified the "Glass Bottomed Orion" for use in one of many research projects, the Los Angeles Testbed.

152151 | 3122 | P-3A | STRIKE | (engine failure, Cal P-3, VP-6, 12/71) |
| 152152 | 3123 | P-3A | Provence | NAT Mission of Naval Aviatic |
| 152153 | 3124 | TP-3A | VP-16 | Fire Trainer |
| 152154 | 3125 | P-3A | AMARC - FMS | TACNAV/MD |
| 152155 | 3126 | P-3A | STRIKE | (missile of CA coast, VP-31, 12/72) |
| 152156 | 3127 | P-3A | AMARC - FMS | TACNAV/MD |
| 152157 | 3128 | P-3A | AMARC - FMS | TACNAV/MD |
| 152158 | 3129 | P-3A | AMARC - FMS | (non-flying status) |
| 152159 | 3130 | P-3A | AMARC - FMS | (flight testing, NV) |
| 152160 | 3131 | P-3A | AMARC - FMS | (flight testing, NV) |
| 152161 | 3132 | P-3A | AMARC - FMS | (flight testing, NV) |
| 152162 | 3133 | P-3A | AMARC - FMS | (flight testing, NV) |
| 152163 | 3134 | P-3A | AMARC - FMS | (flight testing, NV) |
| 152164 | 3135 | P-3A | AMARC - FMS | (flight testing, NV) |

Recently shipped to K-TECH for parts.

152165 | 3135 | P-3A | AMARC - FMS | TACNAV/MD |
| 152166 | 3136 | P-3A | AMARC - FMS | TACNAV/MD |

152167 | 3137 | P-3A | AMARC - FMS | TACNAV/MD |

152168 | 3138 | P-3A | AMARC - FMS | TACNAV/MD |
| 152169 | 3139 | UP-3A | VP-6 | #N1062 |
| 152170 | 3140 | P-3A | U.S Customs Service | "SLICK" #N3295 |
| 152171 | 3141 | P-3A | AMARC - FMS | TACNAV/MD |
| 152172 | 3142 | P-3A | AMARC - FMS | TACNAV/MD |
| 152173 | 3143 | P-3A | AMARC - FMS | TACNAV/MD |
| 152174 | 3144 | P-3A | AMARC - FMS | TACNAV/MD |
| 152175 | 3145 | P-3A | AMARC - FMS | TACNAV/MD |
| 152176 | 3146 | P-3A | AMARC - FMS | TACNAV/MD |
| 152177 | 3147 | P-3A | AMARC - FMS | TACNAV/MD |
| 152178 | 3148 | P-3A | AMARC - FMS | K-TECH Avalon |
| 152179 | 3149 | UP-3A | AMARC - FMS | TACNAV/MD |
| 152180 | 3150 | P-3A | AMARC - FMS | TACNAV/MD |
| 152181 | 3151 | P-3A | AMARC - FMS | TACNAV/MD |
| 152182 | 3152 | P-3A | AMARC - FMS | TACNAV/MD |
| 152183 | 3153 | P-3A | AMARC - FMS | TACNAV/MD |
| 152184 | 3154 | P-3A | AMARC - FMS | TACNAV/MD |
| 152185 | 3155 | P-3A | AMARC - FMS | TACNAV/MD |
| 152186 | 3156 | P-3A | AMARC - FMS | TACNAV/MD |
| 152187 | 3157 | P-3A | AMARC - FMS | TACNAV/MD |

152188 | 3158 | P-3B | AMARC - FLA | "LIGHT WEIGHT" TACNAV/MD |
| 152189 | 3159 | P-3B | AMARC - FLA | "LIGHT WEIGHT" TACNAV/MD |
| 152190 | 3160 | P-3B | AMARC - FLA | "LIGHT WEIGHT" TACNAV/MD |
| 152191 | 3161 | P-3B | AMARC - FLA | "LIGHT WEIGHT" TACNAV/MD |
| 152192 | 3162 | P-3B | AMARC - FLA | "LIGHT WEIGHT" TACNAV/MD |
| 152193 | 3163 | P-3B | AMARC - FLA | "LIGHT WEIGHT" TACNAV/MD |
| 152194 | 3164 | P-3B | AMARC - FLA | "LIGHT WEIGHT" TACNAV/MD |
| 152195 | 3165 | P-3B | AMARC - FLA | "LIGHT WEIGHT" TACNAV/MD |
| 152196 | 3166 | P-3B | AMARC - FLA | "LIGHT WEIGHT" TACNAV/MD |
| 152197 | 3167 | P-3B | AMARC - FLA | "LIGHT WEIGHT" TACNAV/MD |

152198 | 3168 | P-3B | AMARC - FLA | "LIGHT WEIGHT" TACNAV/MD |
| 152199 | 3169 | P-3B | AMARC - FLA | "LIGHT WEIGHT" TACNAV/MD |
| 152200 | 3170 | P-3B | AMARC - FLA | "LIGHT WEIGHT" TACNAV/MD |
| 152201 | 3171 | P-3B | AMARC - FLA | "LIGHT WEIGHT" TACNAV/MD |

150494 EP-3E Aries Orion

150495 MAS Keflavik UP-3A

150499 RP-3A "Billboard"

150500 RP-3A "Arctic Fox"

150510 Ex-Spanish P-3A Now with Hawkins & Powers
The first production Heavy Weight P-3 Bravo, modified as the YP-3C Prototype Orion, is a dual mission RP-3D research aircraft that can conduct both Project Seascan and Birdseye missions.

Once involved in the Myrticerus incident, with the Orion in direct communications with the White House, only reduced by his government.

\[153445 \text{ P-3B - AMARC HOLD} \]

Recently acquired by K-TECH from DMRO, parted out and cut up for scrap on site at 153.1.18.

P-3 BUBEAU LIST

A multi purpose RP-3D Orion for airborne research with a back up capability for the "EW" mission of P-3B/3C.

Primary user for airborne research with a back up capability for the "EW" mission of P-3A/B/C.

A dual mission RP-3D research aircraft that can conduct both Projects Birdseye and Seascan.

As a Norwegian Bravo, this aircraft had a mid air collision with a Soviet interceptor/fighter on 10/13/87.
and P-3C. Several have reportedly been crashed, while others are presumed grounded due to production delays. A few of the P-3F have been crashed, while others are presumed grounded due to production delays.

### BUNO LASC TYPE LOCATION COMMENTS

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151391 as Allison GMA 2100 Engine Testbed Orion

151354 1st UP-3A Delivered to Chile

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- **BUNO 158222 5567 P-3C VP-5**
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152719 EP-3J with UP-66

**BUNO 159894 5643 P-3C STRIKE**

- **Comments**: [U III MOD](#)
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- **BUNO 159893 5642 P-3C STRIKE**
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152735 NASA’s “EFIS” Bravo

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152739 Special Purpose NP-3B

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### Spanish P-3B

### P-3F with Iran

### 153443 as VP-3C Prototype

### 154576 P-3N with RNoAF

### 154587 The Newest Project Birdseye RP-3D Orion

---

Special project aircraft modified with unique elongated internal sensor pods. Second Update:

### III Prototype

### Canadian CP-140 Aurora

### CANADIAN CP-140 ARCTURUS

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### Canadian CP-140 Aurora

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### 154589 New Dual Mission Research RP-3D with NRL

- Aircraft assigned to the Naval Air Warfare Center, Aircraft Division.
- Location: Pax River, MD, now NAWC-AD Pax River.

### 155295 P-3P with Portugal

- Aircraft assigned to the National Museum of Aviation at Pensacola, FL.
- Location: Pensacola, FL. These aircraft are managed by the museum and are put on static display there or provided to other bases for static display in support of air shows, or for sale or parts removal.

### 165098 First Production P-3C for Korea

- Aircraft assigned to the Foreign Military Sale Dept., for potential sales to foreign military operators.
- Location: Davis-Monthan Air Force Base, AZ. Aircraft kept as "parts birds" to insure a ready supply of spare parts or the remaining aircraft's special equipment.

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**PHOTO CREDIT:** Terry Taylor, Marty Isham (the Isham Collection), Bob Shane, Bruce Stewart, Scott Van Aken, Randy Herp, George Van Bellenhem, Milo Peltzer, Marco Borst, and David Read via P-3 Publications.
VP RESERVE

VP-93 aircraft awaits her crew on a Key West sunrise.

RESERVE PATROL FORCE: Vital to the Fleet by David Reade

As a brilliant sunset fades on the western Caribbean, the calm of the coming twilight is broken by the drone of turboprop engines. The dark outline of a P-3 Orion darts across the fading light.

On board the aircraft, a lawyer, a real estate agent and a high school principal, man the controls while an airline pilot and a NASA technician handle the NAVCOM and TACCO station. The rest of the crew members aboard the Orion include a Coca Cola executive, sales representative, teacher, landscaper, stock broker, banker and policeman.

As you have guessed, this is no ordinary P-3 crew. This is a Reserve VP crew made up of Selected Reservists, men and women from all parts of the country and all walks of life. Reservists serve one weekend a month and two weeks per year, with requirements to complete upwards of seventy-two additional drill periods. These drill periods consist of training in NATOPS safety coordination, weapons, ethics, and sexual harassment. Flight crews are also required to spend additional time in crew trainers and flight simulators.

Reserve VP crews are highly proficient at their military occupation, often having three times more experience than their active forces counterpart. Crew coordination and motivation is highly developed due in part to a reserve crew's longevity which can run five years or more before a crew member change.

Initiated early in the 1970s, Reserve patrol squadrons were established as part of a new Reserve Force Squadron concept. This concept implemented a structure for the naval air reserve forces to provide fully manned and equipped squadrons to the fleet in the event of war or national emergency. For many years, reserve squadrons conducted mobilization and proficiency training, by deploying to distant bases to practice their trade alongside active squadrons and attain higher states of combat readiness. During times of national crisis or if tensions increased, Reserve squadrons could be called up to augment the active forces.

Today, reserve patrol squadrons are more proactive and responsive to the needs of the fleet. They are flexible, supporting ongoing fleet operations worldwide and possessing the capability to respond quickly in a crisis. At least two reserve patrol squadron crews are deployed somewhere in the world each week, fifty-two weeks a year. Reserve VP units provide contributory support to many fleet operations.

Operation Support Democracy

OSD is the Navy's mission in support of the United Nations economic embargo of Haiti. Reserve VP squadrons, flying out of NAS Roosevelt Roads, Puerto Rico, have been conducting surface surveillance flights of merchant traffic in the maritime environment around Haiti. Ships are detected and questioned as to name, nationality, point of origin, destination and contents of cargo. Any vessel deemed suspicious is reported via Datalink to a NATO surface combatant acting as the Aircraft Control Unit. The ACU then directs an available Naval or Coast Guard surface ship to intercept and board the suspect vessel for inspection.

Able Manor

A secondary mission tasking during Operation Support Democracy is Able Manor. With OSD flights conducted towards the south of the Haitian capital of Port-au-Prince, Able Manor missions are flown to the north, in the straits between Haiti and Cuba. The mission's purpose is to detect Haitian refugees adrift, fleeing from their homeland. Once
sighted, their location is transmitted back to the ACU and a Coast Guard vessel is dispatched to pick them up. Under a presidential directive and current US immigration laws, all Haitian refugees are to be repatriated to Haiti.

Counter Narcotics

One standing task for reserve VP units in all U.S. waters is counter narcotics operations. In the Caribbean, Reserve P-3s are based at Naval Air Station, Key West, Florida supporting Commander Joint Task Force Four. Counter narcotics missions incorporate standard MPA surveillance procedures to identify suspect vessels sailing in known transit zones. Photographs are routinely taken to confirm ship identification and configuration.

Although the primary sensors are radar during the day and IRDS at night, reserve Orions are sometimes equipped with a portable electro-optical sensor known as SID-RIT short for Secondary Imaging Dissemination System - Remote Imaging Transceiver. This system includes a digital camera and laptop transmitter to send stabilized visual data back to a command center or ACU asset.

Sharp Guard

The Reserve squadrons were among the first MPA units to participate in operation SHARP GUARD, the NATO enforced embargo against the former Yugoslavian Republics in support of U.N. sanctions aimed to restore peace. Again, they demonstrated the value of maritime surveillance capabilities for blockade support, this time to stem the flow of illegal contraband from entering the warring Adriatic Republics of Bosnia and Herzegovina.

Most of these missions include weapons loads usually in the form of torpedoes and rockeye bombs. As in the OSD missions, suspected vessels are reported to Allied surface ships and targeted for interception and inspection. Other mission requirements include stand-off monitoring of Adriatic seaports along the coastline.

The Future

The reserve force is changing right along with the active patrol forces. By the end of FY 1994, both the Atlantic and Pacific fleets will be forced to retire several patrol squadrons, reducing the total number from thirteen to nine. VP-60, VP-67, VP-90 in the Pacific and VP-93 in the Atlantic will disestablish, dispersing some personnel to remaining squadrons and some to non-aviation reserve units. Some will opt for early retirement or drop out rather than transit greater distances required to report for duty.

In the mean time, transition training from the P-3 to the P-3C continues. When completed, reserve VP will be an all P-3C fleet with two squadrons utilizing P-3C Update IIs and the remaining units operating P-3C NUD, Update II and II.5 Orions. The ultimate plan for reserve VP is to upgrade all its aircraft to the P-3C Update III configuration. Conversion of the existing P-3C variants could begin as early as 1996, culminating in a completely integrated P-3C force.

With the continued disestablishment of active patrol forces, reserve VP will play an ever increasing role providing a ready and effective force to augment active elements in equal support to the fleet. This concept has already been tested during a trial nine month program enacted to augment active patrol squadrons with reserve VP elements. Crews from VP-62 co-located with VP-49 on deployment and operated jointly sharing crewmembers as well as maintenance requirements. Since then, reserve VP units have continued the side-by-side concept throughout operations Sharp Guard and Support Democracy.

In months to come reserve squadrons will strive to maintain the fifty-two week coverage it has established, while going above and beyond providing crews for counter narcotics, UNITAS and crisis response missions. Reserve VP will continue to be an effective force multiplier for fleet operations now and in the future.

RESERVE PATROL SQUADRONS

VP-60* COBRAS RESPATWINGSPAC NAS Chicago Il.
VP-62 BROADARROWS RESPATWINGSLANT NAS JAX Florida
VP-64 CONDORS RESPATWINGSLANT NAS Point Mugu Ca.
VP-65 TRIDENTS RESPATWINGSLANT NAS Willow Grove Pa.
VP-66 LIBERTY BELLS RESPATWINGSLANT NAS Willow Grove Pa.
VP-67* GOLDEN HAWKS RESPATWINGSLANT NAS Willow Grove Pa.
VP-68 BLACK HAWKS RESPATWINGSLANT NAS Willow Grove Pa.
VP-69 TOTEMS RESPATWINGSLANT NAS Willow Grove Pa.
VP-70* LIONS RESPATWINGSLANT NAS Willow Grove Pa.
VP-91 STINGERS RESPATWINGSLANT NAS Whidbey Island Wa.
VP-92 MINUTEMEN RESPATWINGSLANT NAS Whidbey Island Wa.
VP-93* EXECUTIONERS RESPATWINGSLANT NAS Whidbey Island Wa.
VP-94 CRAWFISHERS RESPATWINGSLANT NAS Whidbey Island Wa.
*Pending disestablishment 1994

East coast squadrons line up: from front to back VP-62, 64, 66, 68, 92, 93 and 94. VP-93 has disestablished, VP-94 is now a west coast squadron.
The Department of Energy is sponsoring Research, Development, Test and Evaluation of several new technology sensor systems that can monitor areas of interest vital to our national security and our environmental concerns. The program involves the use of a Lockheed RP-3A Orion as a testbed research aircraft for proof-of-concept sensor development. Named the “Airborne Multi-Sensor Pod System” (AMPS) program, the project is under DOE sponsorship with the National Laboratories. Their purpose is to develop a series of pods with state-of-the-art electronics to support data collection which could be used ultimately in treaty verification and in environmental monitoring applications.

Under the program, the DOE National Labs are tasked to design and develop sensor pods in order to test multisensor data research concepts. There are currently three different pods being designed for AMPS that are based on US-3A Viking Carrier Onboard Delivery cargo pods modified as electronic sensor instrument bays. Each pod, 200 inches long and 42 inches in diameter, has a 90-inch wide door well suited for access to installed avionics.

Pod 1, developed by the Sandia National Laboratory, contains a digital imaging Synthetic Aperture Radar (SAR), positioned in a side-looking configuration for all weather, day and night radar imagery. Pod 1 information processed through Data Fusion compliments and enhances the optical sensor data from Pod 2.

Pod 2, designed by EG&G-Remote Sensing Laboratory, is a multi-sensor pod, housing six different off-the-shelf optical and thermal imaging sensors. These range from high-resolution mapping cameras and video units, to three multispectral infrared sensors. The units are placed in a downward looking vertical position within the pod.

On their own, each sensor cannot generate the degree of information that can be derived from the combination of all sensor data. It’s this synergistic concept of combining sensor data, that is at the heart of AMPS research.

Pod 3, still under development, is a proposed Effluent Species Identification pod, to be equipped with several air particle scanners. These systems will be capable of detecting airborne radioactive particles escaping from nuclear facilities, which could be associated with nuclear weapons production. Environmentally, chemical pollutants and chemical warfare agents leaking from manufacturing plants or storage facilities can be detected. Lawrence Livermore National Laboratory in collaboration with Savannah River Technology Center and Pacific Northwest Laboratory have been selected for development of this portion of the program.

DOE has selected Infotec Development Inc. (INFOTEC) of Camarillo, California as the program coordinator. INFOTEC provides project development support to the National Labs and is the liaison with the US Navy. The company directs all flight operations for the program and had coordinated the arrangement with the Naval Air Warfare Center-Weapons Division, Point Mugu, California to utilize a range control RP-3A Orion as the AMPS testbed aircraft. (DOE had investigated purchasing a used Navy Orion to conduct RDT&E projects several years ago, but settled on the less costly agreement to utilize one of the NAWC-WD Point Mugu Orions on an “as need” basis.)

The NAWC-WD Orion was modified by the Naval Aviation Depot, Alameda to provide power, control and data-signal support for the AMPS pods. The Mod includes a twin sensor operator workstation in the back of the aircraft to operate the SAR pod and controls. Sensor data is collected and stored by digital tape and film/video units installed on the aircraft for later analysis.

Although the Orion is only the testbed aircraft for the AMPS program and is not scheduled to be an operational platform for the pods, which were originally conceived for use with various aircraft, it is possible that P-3 Orion operators could utilize the AMPS sensor pods, custom-tailored for their own operational needs.

The AMPS concept lends itself to future applications, exploiting advance technologies to develop low cost derivative sensor pods with capabilities for law enforcement, search and rescue, border and counter-drug surveillance, environmental and fisheries patrols. Military applications may include electronic warfare, non-acoustic ASW and weapons test monitoring.
The Synthetic Aperture Radar Pod, a component of the Department of Energy’s Airborne Multi-sensor Pod System Program provides high resolution airborne radar imagery, resulting in photographic like images under adverse weather conditions. The SAR pod may prove invaluable in airborne surveillance, navigation and treaty verification as well as environmental and scientific aerial mapping.

This Multi-Sensor Imaging Pod, collects and integrates imaging data from various on-board high-resolution mapping cameras, video units, infrared and thermal sensors. Combined with SAR data from its sister pod, a new form of synergistic imaging result is created that is far superior to that generated by each individual sensor.

The proposed Effluent Species Identification Pod is planned to house air particle scanning spectrometers and air samplers. The pod’s capabilities include detection of chemical pollutants and chemical warfare agents, as well as radioactive particles escaping from nuclear production or storage facilities. This is an important new tool in an era of arms control, nuclear proliferation and environmental concerns.

The AMPS pods are attached to the P-3 hardpoints using a customized pylon and wiring. For other MPA aircraft, a universal adapter can be made available. The pods are 200” long X 42” in diameter and have a 90” wide access door.

The DOE AMPS pods are flight tested on an NAWC-AD Pt. Mugu range test RP-3A (No. 150425). The Synthetic Aperture Radar pod has the black radome used during flight test (clear Lexan will replace it). The multi-sensor pod is installed on the port wing.

Avionics racks inside the multi-sensor pod can be seen as maintenance personnel service the Orion.
S-3, P-3 to Star on WINGS Program

In recent months, a camera crew from the Discovery Channel’s aviation series “WINGS” visited Naval Air Stations Jacksonville and Cecil Field, to conduct live interviews for upcoming episodes on the P-3 Orion and S-3 Viking.

Network Projects, the production company that produces WINGS for the Discovery Channel, is developing the P-3 and S-3 segments for a 13 part series on Naval Aviation. Entitled “Sea Wings”, the series documents different naval aircraft including the Orion and Viking. The episodes will be telecast sometime this Fall.

Moffett Memento

Naval Air Station Moffett Field commuters were surprised to see a new addition to their base last summer. Adjacent to base operations building a freshly painted P-3 had been mounted permanently for display. On the other side of the building a P-2 Neptune had been previously placed and together they aptly framed Moffett’s tower.

The Orion, bureau number 150509, was originally delivered to VX-1 Air Test Development Squadron in 1964. It was transferred to the Naval Air Development Center, Warminster, PA in 1971. In 1973, it began Naval Reserve duty, serving with VP-68, VP-65, VP-69, VP-94 and VP-67 until it was retired from flying in 1981. The aircraft continued to serve as a ground maintenance trainer, assigned to VP-31’s Fleet Readiness Aviation Maintenance Personnel division. When the Navy base was scheduled to close, the “FRAMP” Orion became the logical choice for the previously planned display.

"PROJECT KESTREL”
New Wings For New Zealand’s P-3s

The Royal New Zealand Air Force is currently finalizing a contract with Lockheed for the purchase of five to six pairs of P-3 wings as part of a New Zealand re-winging program, called Project Kestrel. The RNZAF has been investigating the option of re-winging their P-3K Orions for several years now and only recently requested Lockheed to look into all aspects of such a project that would also include replacement of the horizontal stabilizers and refurbishment of engine nacelles.

After 27 years of continuous service, the New Zealand aircraft are showing their age. The Kiwis were the first foreign operator of the P-3, receiving five light-weight P-3s in 1966. Since then, corrosion and stress corrosion cracks in the wing spar web, upper caps, horizontal stabilizers and engine nacelle areas have begun to appear. Replacing critical fatigue items on the existing aircraft became the best alternative to solve the problem.

Several Service life Assessment Program-like studies were initiated to identify and determine the remaining fatigue life of the aircraft, which included the installation of stress and strain load recorders and flight parameter instruments aboard the Orions to generate fatigue data during normal operations.

The SLAP data indicated that the P-3Ks had less than ten years of service left and identified which areas needed replacement.

Lockheed was then asked to conduct a feasibility study to determine if new production heavy weight P-3C wings, currently in production for the Korean P-3 Orion program, could be installed on the older New Zealand P-3K Orions. Lockheed’s response was a proposed installation plan that consisted 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. The horizontal stabilizer would encompass a straight forward replacement with the engine nacelles needing only refurbishing. The project does include a non-fatigue related modification to the #5 fuel tank, accommodating a fuel dumping capability.

The RNZAF is considering where the re-winging installations will take place. Proposals include Lockheed’s Marietta plant and/or its Aeronod facility located in South Carolina. There is also a possibility that the wings could be shipped directly from their assembly point in Korea to New Zealand for installation. The project is expected to start in early 1995 and take approximately four years to be completed.

In this era of austerity, Project Kestrel is perceived to be the most cost effective means for the RNZAF to keep its Orions flying. Project Kestrel will add another 20 years to the P-3Ks service life. — by David Reade