

# Keeping watch



## National Air Support's new Coastwatch contract

by Chris Milne

**The world's biggest coastwatch task just got bigger. Not in geographical size – it still covers the huge 15 million square kilometre exclusive economic zone extending 200nm (370km) from the Australian coast – but in the capabilities of the new National Air Support operation for the Australian Customs Service.**

Last year the Adelaide based National Air Support arm of major British aerospace group Cobham Plc won the arduous contest for the \$1 billion, 12 year Customs contract from international rivals, notably shortlisted Raytheon, retaining the manned aircraft Coastwatch operation first snared in 1995 by the then division of locally owned National Jet Systems.

Then, one of the losing bids came from Cobham, which gained the contract by taking over the NJS Group in 2000 and later won extensions, with technology upgrades, to the end of this year. The new service begins officially on January 1 2008, but is being phased in this year, with the first converted Dash 8 starting flights at the beginning of January and a second due into service by the end of March – both minus a new radar which will be fitted later this year.

For its enhanced “all electronic” role in national border protection under the Sentinel civil maritime surveillance project, National Air Support will put 10 Bombardier Dash 8s into the skies over the next 12 months.

The company expects to add radar satellite surveillance and probably unmanned aircraft to the search for illegal fishing boats, illegal immigrants, drug smugglers and quarantine and environmental offences – such as pollution by shipping – as well as missing vessels, over the duration of the new contract.

Peter Nottage, chief executive of Cobham Australia, says the arrangement includes a requirement for regular “technology scans” to check emerging technologies for their potential to upgrade capabilities, or introduce new ones.

The operation will be geared for the introduction of radar satellite surveillance to supplement the real-time data from the manned aircraft operations and, although negotiations are continuing with Customs and no decisions have been taken yet, that could happen within a year.

Optical satellites have limited application, particularly as their vision is restricted at night and in tropical conditions by cloud cover, sea mist and fog, which are common around Australia's northern coasts. But, Nottage says, radar satellites have fewer limitations

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and potentially some significant benefits. Although most of the targets are small ones, such as illegal fishing boats, he says radar satellite images are quite good for identifying targets above 15 metres in length and could help in locating fast moving vessels.

There is a realistic prospect of UAVs being added to the task later.

Although last year's Defence Science and Technology Organisation trials of the General Atomics Predator B Mariner UAV were aimed primarily at potential defence roles, supporting and eventually replacing the AP-3C Orion aircraft based at Edinburgh, the tasking and simulated missions also were typical of Coastwatch operations. (Refer November '06 AA.)

"It was a highly successful trial from our point of view," Nottage says. The Mariner flew missions ranging from six to 22 hours at heights from 1000 to 40,000ft and produced a live data feed to Defence and the Coastwatch National Surveillance Centre in Canberra.

The Mariner UAV could carry the same sensor and communications suites as the Dash 8, he added.

Meanwhile, Northrop Grumman has provided a software demonstration of its Global Hawk and further Australian defence trials of a mid-sized UAV are expected over the next 18 months.

"We see a role for UAVs in the future," Nottage says. With their ability to stay on station for extended periods, they are both cost effective and operationally effective.

Although there has been no detailed consideration of a timeframe or type yet, he expects UAVs to become an integral part of the Coastwatch system during the life of the new contract, as an addition to the \$1 billion contract.

That's for the future but the immediate job is getting the Dash 8 fleet into the air. The first one started operations on January 3 and eight are expected to be in service by the end of the year.

When preparing its submission – on which work began more than four years before Customs issued its final tender request document in mid 2004 – National Air Support looked at a range of different aircraft types, including business jets, which had the advantage of fast response to reach a target quickly but lacked the ability to loiter and carry out covert surveillance. The company even considered hovercraft, airships and tethered balloons for inclusion in its package but they were eliminated as the studies progressed.

The Customs tender documents were specific about the range of sensors, to be linked to a new command and control system,



A Coastwatch Dash 8 overflies a Navy Anzac class frigate. (NAS)

ancillary equipment, size of crew and aircraft facilities – down to a full galley for special extended flights – as well as the inshore and offshore sectors required to be searched on missions and the frequency of flights.

NAS had to consider strength and endurance for "intense" day and night, all-weather operations of up to 2000 hours a year for each aircraft, often at very low altitudes, and whether the selected aircraft could be supported in the region over the 12 years of the new contract.

In balancing high and low wing types, there was the mundane question of vision for the surveillance experts in the cabin. Despite all the advanced electronic sensors to be put aboard the aircraft, Nottage says, "it's essential to have a good view out of the windows" for close visual inspection and identification of target vessels.

The main choices were narrowed to the Dash 8, CASA 212 and Dornier variants, but the two European aircraft, while attractive for inshore surveillance, did not match the Bombardier marque's structural and cabin

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Coastwatch is responsible for surveillance of Australia's 15 million square kilometre exclusive economic zone. (NAS)





The NAS Dash 8s will be fitted with a Raytheon SV2022 search radar. (NAS)

size, to accommodate a crew of two pilots and two surveillance officers and all the necessary equipment, nor its operating efficiency, endurance and short-field capability. The US Customs Service, the Swedish Coastguard and Japanese Coastguard have come to the same conclusion after similar very detailed analyses and, with more than 700 sold around the world including 50 in Australia, continuing support for Dash 8 aircraft in the region seemed assured.

And Surveillance Australia already had five in its fleet of 15 Coastwatch aircraft, and more based with sister company National Jet Systems (NJS) for passenger operations.

It raided that fleet to send a Dash 8-200 – then VH-JSH and now VH-ZZP in its Customs livery – to Canada for structural modifications for its new maritime role, then brought it back to Adelaide to install and integrate the new systems. A Dash 8-300, previously used for resource industry transport work by NJS, is in the process of being converted as well, together with the existing five 200s in the current fleet and three new 300s from Bombardier.

Systems design and integration has been done in Adelaide, where the radar and satellite communications equipment is being installed, and consoles and screens, internal wiring looms, avionics and racking, and some other items have been manufactured locally.

“We’ve established our own design team of about 30 avionics, electronics and mechanical engineers and we’ve tried to maximise the Australian content,” Surveillance Australia’s director of business development, Anthony Patterson, says. He puts the local content value at about \$15 million.

The planning has been helped by a live mission system integration rig at the Adelaide base, allowing for any technical problems to be fixed quickly, and the workload encompasses the need for incremental equipment upgrades over the next 12 months, particularly the fitting of the new Raytheon radar when it becomes available from the middle of the year.

The major equipment was chosen by NAS for its tender package, although options were put to Customs on new radar and electro-optical systems, but Customs accepted the NAS solutions.

For the primary electronic systems, the Raytheon SV2022 digital surveillance radar and Canada’s Wescam MX15 infrared and optical sensors were chosen.

With the new contract demanding 96 per cent probability of detecting targets, up from 50 per cent in the previous contract, the belly-mounted SV2022 with a 360 degree field of vision demonstrated an ability to find small wooden boats in Sea State 3 at ranges up to 50nm (93km).

“It’s a very demanding requirement,” Nottage admits, but he is confident it can be met, particularly through the increased-capability antenna beneath the aircraft instead of in the nose.

Similarly, the latest electro-optical equipment from Wescam meets the demand for improved performance in close-up identification and recording of targets, including time and location data for analysis and possible legal action. It is mounted in a steerable turret beneath the Dash 8’s nose, and can be aimed manually or automatically, or “slaved” to the aircraft’s radar.

“The day-night, all weather infrared camera is vital equipment, particularly for stand-off, covert surveillance,” Nottage says.

The suitability of UAVs for maritime surveillance was demonstrated by last year’s DSTO North West Shelf Predator B Mariner trial. (Andrew McLaughlin)





The first of National Air Support's bigger, longer ranging Dash 8-300s. (NAS)

Getting this information back to the National Surveillance Centre is already possible via the Inmarsat satellite communications system progressively installed in the existing Coastwatch Dash 8s from 2002 to provide live data and video footage but that, too, is being upgraded for the new contract.

South Africa's Omnipless – a specialist supplier of Inmarsat Satcom products – will provide its latest system, which will process, compress and transmit surveillance data from all the aircraft's sensors via satellite to the National Surveillance Centre in Canberra and other surveillance aircraft and boats.

The system, which Surveillance Australia will be the first to operate, also has been designed to support emerging Australian Defence Force requirements for "cooperation and eventual inter-operability". The Federal Justice and Customs Minister, Senator Chris Ellison, has endorsed a combining of civil and defence maritime surveillance resources through the Border Protection Command (BPC).

And the enhanced satellite link for voice as well as video and data transmission will give air crews instant mission intelligence and tasking from Canberra, in a co-ordinated operation with the Brisbane based Australian Helicopters

surveillance role in the Torres Strait area and Customs patrol boats.

The proposed fleet of six Dash 8-200s and four of the larger Dash 8-300s (50-seat passenger aircraft in the regional airliner version) will progressively replace six BN2 Britten Norman Islanders, three Reims F406s and an AC50 Shrike, most of which are equipped for visual surveillance only, over this year. The new fleet will undertake missions usually lasting six to eight hours each but may have to operate for up to 14 hours, with an additional pilot and observer aboard to share duties, so four internal fuel tanks, each with a capacity of 450kg, will be fitted to the four 300s to increase their range.

As a result, Surveillance Australia can boast its flights will be capable of searching more than 110,000 square kilometres of sea on a single mission, cruising at 185kt.

Technically, the contract covers the entire 36,000km of coastline and 15 million square kilometres of the exclusive economic zone, and Nottage says the company must be flexible enough to meet any request from Customs. He will not divulge how many missions are flown around the southern waters but confirms the Dash 8s will use the present bases at Broome, Darwin, Horn Island in Torres Strait and Cairns,

pointing to continued strong emphasis on Australia's more vulnerable northern coastline and approaches.

The contract will run until the end of 2019 and has provision for extensions.

Meanwhile, Cobham Australia, which also holds a helicopter surveillance contract in the Solomon Islands, is hoping to leverage the Australian contract to new work in the Asia Pacific and Middle East regions.

Anthony Patterson says the company remains engaged in a Malaysian coast-watch project, on which Surveillance Australia has tendered, but which stalled last year.

"It has been a long haul with the Australian contract, but now we can start to focus on overseas opportunities," Patterson says. None of the prospects approaches the size and scope of the Australian operation but, he says, "we see ourselves as a surveillance service provider, not just an aircraft operator, so we can meet whatever requirements may emerge."

And Cobham Plc's chief executive Allan Cook describes the new Australian contract as "a validation of our capability in a highly demanding environment" of intense, low-level maritime operations. That is the premise on which Cobham Australia plans to build its international business. □