

NATO'S MIRROR IN THE SKY

The panorama of ancient Greek gods that opened the Olympic Games had protected the athletes and spectators millenniums ago. But far above the stadium was the modern equivalent to those legends – in the guise of an AWACS E-3A Sentry.

Created to give warning of a Soviet air attack, the NATO Airborne Early Warning and Control Force (NAEW & CF) dates from October 17, 1980, and is based at Geilenkirchen on the German/ Dutch border and at three Forward Operating Bases at Trapani, Italy, Aktion, Greece and Konya Turkey and a Forward Operating Location at Oerland, Norway.

Overall, the Component consists of 3,000 military and civilian personnel assigned to five wings : Base Support, Logistics, Mission Support, Operational and Training. Three key aspects make the force unique: it is truly multinational, it is available right now and it is the only military asset that NATO actually owns.

Like a giant mirror, a single E-3A at 30,000 ft can “watch” over 312,000 square km with three aircraft in overlapping orbits completely covering Central Europe. The 29 crews that fly the Sentry aircraft come from 12 of NATO’s 19 member nations, and with Alliance enlargement ongoing, the possibility of more joining is very real. Even tiny Luxembourg makes a contribution – all the E3As are registered in the Duchy which also obtains over flying permission. The force has one language (English), one airborne platform (the Boeing 707) and serves one master (the objectives of the North Atlantic Council). As NATO Secretary General Lord Robertson said, the future rapid response force would do well to emulate the NAEW & CF.

Col Jim McNaughton, the Canadian Component commander flew CP-121 Trackers, Cosmopolitans and CC-130s and cannot but help see the E-3A Sentry from the pilot’s point of view.

The airframe is a modified 707 with four Pratt & Whitney TF-33 100A turbo-

fan engines. A former Cold War warrior, it has taken on roles undreamed of in 1980: surveillance, weapons control, air defence, maritime operations support, command and control and search and rescue.

To operate all of this and get to station, the aircraft has a crew of 17: four on the Flight Deck and a mission crew of a tactical director, three technicians for communications, display and radar, a fighter allocator, two weapons controllers, a surveillance control officer and three surveillance operators (“the guys on the scopes”), an ESM operator (called a “passive controller”) and communications operator.

When the surveillance coordinators find the “target,” and “Ground” decides to do something about it, the Tactical Director sends in his “weapons” (fighters) to take them out. Col McNaughton explains: “All the aircraft have call signs: when we go flying, we have two different call signs:



Colonel Jim McNaughton, Canadian Component Commander

PHOTO: COMPONENT PIO



PHOTO: CAPTAIN GARETH CARTER

the flight deck’s call sign is NATO, but the guys in the back are a flying control centre, and their call sign is MAGIC. If we are controlling the air space that our own aircraft is in, you can have the flight deck request MAGIC give them a heading or vector. The aircraft has two call signs and is in effect a flying air traffic control centre, or a Flying North Bay. In contrast with a commercial aircraft where the captain is in command, on board a Sentry, the minimum rank of a Tactical Director is Major while the flight crew could be captains.”

This is no ordinary 707. The bulges on the fuselage sides that house the Electronic Support Measures (ESM) that identify ground-based radars are obvious, but the most conspicuous modification is the 30ft diameter radome and supporting fins. It is so large within that a person could stand up inside. The aircraft’s flight deck is 1960s style and is overdue for an upgrade.

The removal of the aircraft’s thrust reversers is another, though less obvious, modification. A normal 707 has two generators to power the aircraft’s equipment. To operate this aircraft, eight generators are necessary – a pair on each engine. That requires space so the thrust reversers were sacrificed. “This makes landing very challenging,” admits Col. McNaughton. “Putting a huge aircraft like this down on a runway with snow, ice or cross winds, is difficult. It is not so much the drag from the radome disc but its vertical supports – these with the ESM bulges on either side and no thrust reversers make it difficult to land or respond to engine failures.” There are some positive modifications but in the last 23 years most of the money has been spent behind the bulk head in the mission crew area.

What is a typical mission working day for the Contingent? The Colonel runs us through one:

"After 9/11, with *Operation Eagle Assist*, media attention focused on the Combined Air Operations Centres (CAOCs) – especially American CAOCs in Florida, New York and Seattle and the NORAD CAOC in North Bay. There are ten CAOCs in Europe that stretch from Reitan, Norway, to Larissa, Greece, from Mosanto, Portugal to Eskisehir, Turkey. A commander of a CAOC has an air exercise in his area and asks for an AWACs. He'll say: 'we need you on-station, shining down a picture to us from 10 in the morning to 10 at night.'"

The day before the mission, the crew goes into mission planning all day – to meet all the taskings that the CAOC may have, such as weather, frequencies, and call signs to use. The next day, they report for duty three hours before take-off. The pilots confirm the fuel load based on the weather and then do their pre-flight. The mission crew complete their updates and engines are started half an hour before take off. They transit to the orbit area – kick up the radar, do their tests and then get into orbit. The CAOC which becomes their TACON (Tactical Control) is called up, "voice identified," data links established and "joining messages" received. Basically, they are there to support RASP (Recognized Air Surveillance Picture) in the ASA (Air Surveillance Area). As a command and control communications platform, we have to have the ability to "talk"

on the systems that everyone else uses. We get our picture on our screen, link that down to the CAOC so that the general there can see what we can see. When they have our picture they send in their fighters to defend or suppress. Sometimes they ask us to control the fighters which is a complete change from the old Cold war days. We also control the tankers coming up for us and the fighters."

Having got there, for the Sentry, orbit time becomes vital the longer it can remain on station the better. Thus except for the three training and cargo 707s, all the Contingents' E-3As have the capacity for air-to-air refueling on a boom system. The Contingent has a contract with US Air National Guard to provide two tankers for training and air proficiency while at home and on operation, it is the responsibility of the commander they are supporting to get them tankers. These KC-135s can come from the US, Spain and Turkey or KDC-10s from the Dutch. Once on station, the E-3A flies in great big circles or "race tracks" at about 360 knots with a bank about 8 degrees and at a general height of 29,000 ft. Crew meals are ordered the day before and there is a convection oven in the rear of the aircraft. They stay on station for about six hours and return home, the mission usually 8 hours.

In Canada, NORAD gets more of our attention but we are a major player in this NATO initiative. In cost sharing, after the United States (40.40%) and Germany (27.37%) we contribute 9.17% of the



The 29 crews come from 12 NATO countries.

PHOTO: CAPTAIN GARETH CARTER

annual operating budget which in 2003 amounted to \$33.3 million. Canada is also the third highest contributor to the capital budget 8% \$1.5 billion to do the aircraft upgrade and we will pay 8% of that. "What we pay for Geilenkirchen is comparable to a mid size base at home -like Comox," says McNaughton. "In military personnel, after the United States (29.4%), Germany (30.7%) and Italy (8.3%) is Canada with 7.6%. As the 3rd largest contributor we have a position of authority." The Contingent is commanded by either a German or US general with a Dutch Deputy Commander but the Operations Wing is run by a Canadian colonel. The 3 E-3A squadrons and the training squadron all come under the Ops Commander. All deployments like "Eagle Assist," the Iraq war and the Olympics are run by him. Of the 1400 military positions on the base, 650 report to Col. McNaughton and all are aircrew. The Command Post and the Test and Evaluation Centre also come under his control. Finally, he is also responsible for the 114 Canadians on the base. That it is a busy, busy job is an understatement.

What is the future for the NAEW&CF? Definitely more focus outside the normal NATO Ops area, as the Cold War threat has been supplanted by a global terrorist one. Will the 707s be re-engined, re-winged or exchanged for wide-body jets and UAVs that the Alliance Ground Surveillance (AGS) have in store? Whatever the future has in store for the Contingent, it has a proud legacy to build on. **FL**

FrontLine's Air Force Correspondent, Peter Pigott, interviewed Col Jim McNaughton and several of the staff at the NAEW&CF base at Geilenkirchen. His visit could not have been possible without the help of many people both in Germany and Ottawa, but special thanks go to Captains Gareth Carter, Cam Lowdon, and Jerry Carell.

Call sign MAGIC: The flying Control Center in the back of the aircraft.



PHOTO: CAPTAIN GARETH CARTER