

# Police Aviation News

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Farnborough Special 2006

IPAR

## FARNBOROUGH

## AIR SHOW

## 2006



# FARNBOROUGH INTERNATIONAL AIR SHOW



**F**rom 17th to 23rd July, including public days on Saturday the 22nd and Sunday 23rd July, the birthplace of flight in England was host to an ever larger International Air Show. There were 126 new exhibitors this year, 1,467 altogether making this a show that is difficult to do justice to in a few pages. What follows are the airborne emergency services highlights, after all over the Trade days as many as three different show daily's brought out enough material to fill three 38 page editions. Even though there were giant adverts in them that is a lot of words.

Exhibiting companies at Farnborough 2006 represent 36 countries with Greece, Spain and Mexico appearing for the first time. The Airbus A380, Raytheon Sentinel R1 ASTOR made their UK air show debuts as did the Bell Boeing V-22 Osprey tiltrotor, MIG-290VT jet fighter from the MIG RAC (Russian Aircraft Corporation), and five new business jets that formed part of an expanded corporate aviation presence. Some 140-150 aircraft of all types were on static/flying display.

Unmanned Aerial Vehicle (UAV) aircraft were signed up to display and it was expected that some flying would take place. This development was quietly forgotten about! After having gone to all that trouble to set up Parc Arborporth in remote Wales flying similar craft at a public venue was perhaps expecting too much of the CAA. When I commented to a CAA person prior to Farnborough that the organisers expected to fly small UAV's at the show [and steal a march on Paris 2007] he suggested that they expected wrong. And so it turned out.

There were UAV's on static though. And just to highlight just how many of these future craft the industry has to offer the crop at the show far outnumbered those at the specialist Parc Arborporth event.

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For many years now Farnborough has not been a show for the typical PAN market sector but if present trends continue it is again likely to become more so. After a number of years where a presence was falling back helicopters were back at the show as a significant sector, a renaissance led by the only company group that never actually gave up exhibiting there - AgustaWestland and the Finmeccanica Group. Bell were back with a vengeance. The re-attending rotary winged sector was very busy with the X-Hawk Fancraft from Bell Helicopter and Urban Aeronautics of Israel, the new AgustaWestland AW149 multi-role helicopter and two new variants of the Sikorsky Black Hawk being announced. Eurocopter refrained from attending but even they were there in the background, as ever dragged in by the EADS presence.

## FINMECCANICA

On their large and impressive bright red stand Finmeccanica were showing a wide range of aircraft in a pair of adjacent parks. In the helicopter area the craft included an AW139, a AW109 Grand recently displayed to eleven UK police forces, a A119 Koala and a SAR configured EH101 for the Norwegian Air Force. Other military exhibits included a tank buster and a Swedish 109 Power.



Norwegian EH101 and casualty station

In the other area fixed wing exhibits ranged from an Italian ATR42 patrol craft of the Coast Guard to a number of military projects including the Eurofighter Typhoon and a range of UAV's.

The nature of this business is such that what follows will seem like a massive 'advertorial' for all things Finmeccanica! Fortunately, in ten years, PAN has never had an advert from the group so that one can be scotched straight away! There is a lot simply because they are big, they do a lot and they presented a massive influence at the show.

AgustaWestland made a number of sales announcements during the show, including that the Mexican Government has placed a contract for three A109 Grand and five A119 Koala helicopters for a range of roles including civil protection and EMS. Deliveries of the aircraft will start immediately and will be completed by mid-2007 replacing various Bell helicopters. The aircraft will





be delivered by AgustaWestland Philadelphia in the United States, where the A119 Koala production line is located. Sales of the A119 Koala now exceed 100 as the popularity of this high performance 8-place single engine helicopter grows around the world in the corporate/VIP transport, offshore transport, EMS and law enforcement markets.

Within the company's exhibit hall - much of it set aside for corporate entertaining - lurked some interesting future projects being promoted in that area of the aerospace industry that can be classed as the 'less high profile' sector.

More and more the name of Selex is coming to notice and it looks set to grow even larger. SELEX Sensors and Airborne Systems, a Finmeccanica company, is now one of Europe's leading defence electronics companies and provides world class capabilities in surveillance, protection, tracking, targeting, navigation & control, and imaging systems. It is owned 75% by Finmeccanica and 25% by BAE Systems, and brings together SELEX Sensors and Airborne Systems UK and Italy's Galileo Avionica.



Selex, the modern name of a group of former electronics giants that included Marconi and Ferranti, have developed 'Ambriel' a new wireless intercom system designed for use as a wire-free means of maintaining contact within the crew of a vehicle. In aerospace terms this means the rear cabin crew and in particular such as SAR winch man. Ambriel is described as 'platform communication' and is thus applicable to all vehicles where inter-communication between crew members is required, it is therefore equally at home in a motor vehicle. No special additional helmets or communications systems are required, it integrates with existing systems.

The relatively low-cost system includes a permanent base unit [the Platform Interface Unit or PIU on the right] in the craft, a single aerial equipped unit that is fixed to the airframe and plugged into the existing intercom system. The PIU is linked wirelessly to an Operator Interface Unit [OIU on the left] typically worn by unseated crew members and frees them from the current task of repeatedly plugging into different intercommunication jacks within the craft. It also provides limited range voice communication outside the craft using the intercom system and can be integrated with a radio to increase range and flexibility whilst maintaining a hands-free flexibility.



In the eyes of the Federal authorities in the US Farnborough is a public event. As such the most stringent export restrictions are in place to protect the more sensitive military material. It may be England but prying foreign eyes are there and they must be guarded against. This



strict regime applies even to equipment fitted out of sight within black boxes and sensor turrets. As a result companies such as Canadian sensor manufacturer L3 Wescam are banned from exhibiting their latest technology sensor turrets on their stand. The same applied at last years Helitech when the company was displaying its new sensor base plate. The baseplate was there but unbeknown to the casual visitor the turret was inert thanks to the US Federal edict. At both events the only Wescam's were those attached to customer airframes or on high poles out of easy viewing. What we are to make of a contrasting lack of problems on the US FLIR Systems exhibit I leave the readers to ponder!

Which is where we return to Selex. The long standing US restrictions on who counts as an acceptable customer for infra-red technology further underlined by the Farnborough restrictions on which events have an acceptable show visitor profile have driven Selex and others to find less restrictive sources for the innards of their sensor turrets. Happily by drawing upon their long history of technology development Selex were able to develop their own solution in-house and that has turned out a cheaper and in many ways more capable system able to offer four axis stabilisation.

Twenty five years ago, as Marconi the company was at the leading edge of sensor technology, the military sourced Heli-Tele flew on the London Metropolitan Police Bell 222s for many years but the company remained loyal to the high cost military sector for its customer base. A decade ago the company were flying a high-tech military sensor on the Royal Ulster Constabulary BN-2T Defender but at that time Ulster was being policed on a near war footing. With the situation improving the same Defender still flies for the now restyled Police Service of Northern Ireland and the sensor has now given way to an-



other company's product because the equivalent from Selex was seen as too expensive.

Now, with the UK military market dwindling, Selex have grasped the nettle of returning to the production of a Homeland Security product at a reasonable price some 10 to 20% cheaper than its rivals and without the restrictions imposed by the US Federal authorities. The current product, Titan, is one element of the Selex ATOS [Airborne Tactical Observation & Surveillance] being test flown on a venerable BN Defender recently repainted and registered G-SELX and on view at Farnborough [see also last years Helitech report]. The ATOS testing programme on the Defender is expected to continue for at least another year.

Finmeccanica released details of the new generation AgustaWestland AW149 7-8 ton multi-role battlefield helicopter at the show. The AW149 is AgustaWestland's answer to growing military and government customer demand for a new generation, affordable, multi-purpose, medium class military helicopter.

The AW149 will widen the AgustaWestland product range offering customers a larger helicopter than the best selling 6.4 ton AW139 helicopter. The AW149 will be optimised for military operations and will be able to carry up to 15 troops in crashworthy seats.

The aircraft features a 5-blade main rotor for low vibration and noise levels and will have a cruise speed of 160 knots. The large cabin for up to 15 troops also features large sliding doors allowing easy access for troops and the loading of large bulky equipment.

The aircraft will be capable of being equipped with a range of weapons on the external carriers for armed escort and armed suppression roles. A range of role equipment will allow the aircraft to be configured for roles such as search and rescue, command and control, medical evacuation and external load lifting. Certainly the 149 is not likely to feature on the shopping lists of many police services but there will be some, and of course it may be suit-

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able SAR craft of the future.

Designed to meet the latest military and civil certification requirements the AW149 will feature a crashworthy and a damage tolerant airframe and system redundancy to provide high levels of survivability and crashworthiness. A heavy duty wheeled tricycle landing gear will allow operations from unprepared surfaces while providing easy manoeuvrability on the ground. The crashworthy and self sealing fuel tanks are located behind the main cabin allowing a low level cabin floor for easy loading while providing ample ground clearance for operation from rough terrain.

## BELL HELICOPTER

The welcome return of Bell Helicopter to Farnborough was a worthwhile experience in that they [and Boeing] brought to the show the tilt-rotor, and a number of interesting mock-ups. With the 60<sup>th</sup> Anniversary of helicopter law enforcement in the US looming the 417 mock-up in its law enforcement guise is Bell's commitment to the first responder who protect their country. The craft featured a typical US role fit, mainly using Meeker Aviation accessories. Whether the single-engine 417 will ever appeal to 'first responders' in Europe is doubtful but the audience at the show included plenty of operators that might have a use of the exhibited role equipment in other roles including utility patrol let alone first responders from countries less worried about the need for twin-engine power.

In the past eighteen months, Bell Helicopter has taken orders for thirty-seven aircraft from its law enforcement customers. Bell claim to have seen a resurgence in interest in its new helicopters ordered by law enforcement agencies.

Compared to the 407 the Bell 417 offers additional power and useful load in order to meet law



enforcement's requirements for the added technology carried onboard many police helicopters and medical aircraft. Its drawback is that it continues the long standing Model 206 formulae of a narrow cockpit and displays area and a lack of access between the front and rear cabin areas. Resolving that 'problem' will probably have to await the arrival of the 429.



Bell was selected in 2003 by Lockheed Martin to develop and produce the Eagle Eye TR916 Unmanned Aircraft Vehicle system to provide surveillance and reconnaissance as part of the US Coast Guard's Deepwater Program. Bell will deliver 45 Eagle Eye UAV's and 33 ground control stations (GCS) to Lockheed Martin who will integrate the UAV system into Deepwater. Current plans call for first flight of the definitive Air Vehicle system in 2<sup>nd</sup> Qtr 2009.

More at home in the European market is the 429 helicopter. This light twin class helicopter, first introduced last year, was conceived to fill a market void and has accumulated 213 World market orders to date. Bell cite this high order rate as verification of its approach of enlisting the voice of the customer in critical design decisions.

At ceremonies on the opening day of the show Bell promoted its tie up with the Israeli company Urban Aeronautics Limited and their X-Hawk™ Fancraft™. The X-Hawk™ offers the vertical lift performance features of a helicopter, but without exposed rotors.

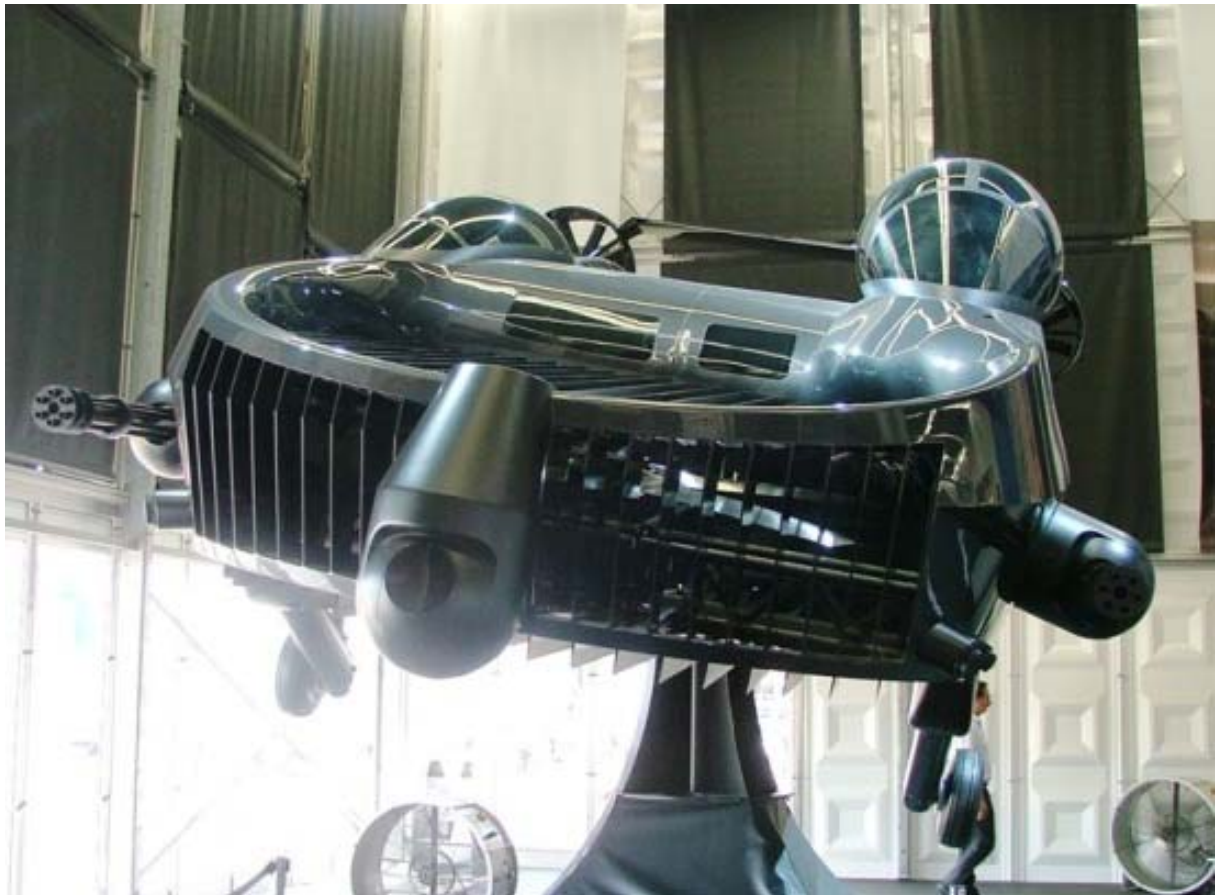
A couple of years ago the project was being promoted by Urban as a rescue system that was able to fly close to burning buildings and rescue people. For such a small craft to offer half a dozen spaces to dozens of people awaiting extraction from burning buildings seemed laudable but doomed to disaster by being overwhelmed.

Industry doubts about that as a primary mission are now displaced as Bell inject a more realistic operational scenario into the project. From a debatable SAR profile this has now altered into a flying Jeep for a military role. It may be expensive to operate but urban extractions of single casualties with a flying car of this type makes more sense in the short term than either helicopter or ground extraction. Compared with any helicopter the smaller target area of the X-Hawk™ makes the shrouded lift fans layout sensible when under fire. The current project has now moved to being a wholly military concept - civil SAR options can be looked at later.

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With a background of the ill-fated US military rescue operation in Mogadishu, Somalia when 18 US Special Forces soldiers died during attempts to rescue the aircrews of two downed Black Hawk helicopters. The incident was immortalised in the Hollywood blockbuster Black Hawk Down and marked a low point in US foreign conflicts. Bell are now seeing the X-Hawk configuration as ideal for vertical lift missions in confined areas in the urban environment.

A revised scenario is where the rescue mission is aided by an ability to insert a rapid assault force using a vertical take-off and landing vehicle unimpeded by large rotor blades and thereby designed to operate in the type of narrow hostile streets which characterised the Somali mission.

As X-Hawk™ develops, it is expected that Urban Aero will lead air vehicle design activities and Bell Helicopter will perform systems integration and production work. In the second phase, Bell XworX will build an X-Hawk™ demonstration vehicle.

*Meanwhile the full-scale model as shown at Farnborough is approximately 27ft (8.2m) long and 14ft (4.3m) wide at its widest point. Current estimates are that the X-Hawk would have a useful load of about 3,000lb (1,362kg), an endurance of 2h with a full fuel load and would be capable of flying at 240kt (440km/h). It is predicted that the basic craft is fully scalable, raising the possibility of a wider family of Fancraft. The chain gun is more for effect than an intention to carry such a weighty item.*



Bell Helicopter has selected FLIR's BRITE Star II(R) airborne stabilised multi-sensor system as the Target Acquisition Sensor Suite (TASS) for the US Army's recently flown Armed Reconnaissance Helicopter (ARH-70A) Program. FLIR was selected following a Dual Path Development Program designed to reduce program risk.

The BRITE Star II is a commercially developed, military-qualified multi-sensor system that incorporates an advanced third-generation thermal imager, a CCD-TV camera, a laser designator and a laser rangefinder.

### BOMBARDIER



Bombardier maintained its high profile in Europe with a significant presence at Farnborough, including showcasing four aircraft at its static display, none of the display airframes were emergency services configured, the nearest being the hi-tech ASTOR airframe, but presentations of its ongoing Special Missions airframes, including the forthcoming Q200 for the US Immigration Service, were given. The first image of the US Coast Guard Challenger was released.

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## QINETIQ

QinetiQ were displaying a number of systems including UAV's. They announced that have now sold a second runway debris detection radar system – Tarsier - to Dubai International airport. The system is expected to become operational by the end of the year. Vancouver was the first customer for the system in 2005 that received its greatest level of public interest in the wake of the Paris Concorde crash six years ago.

## OCTEC

The full range of Octec image processing and video tracking products with supporting application videos were on display in Octec's customary location in the outside equipment area, directly outside of Hall 1.

British based Octec is one of those company's that produces image enhancement products everyone uses without being aware of the source. If you have ever viewed a shake free sensor image in your vibrating helicopter there is a good chance that it was conjured up by Octec so they are a company to take note of to see where technology is taking us.



As well as the live demonstrations of ground to air tracking and ground based, 360° moving target detection [above] they were showing an image enhancement system that greatly enhances the capabilities of video systems to find people in the dark.



#### **OCTEC**

*Displaying a composite image from a standard daylight camera [top left] and a FLIR camera [bottom left] as a single image produces a higher contrast image [right] with greater detail but without the customary 'flare' associated with a straight FLIR image.*

The latter greatly enhances image quality and blends available images to a degree that vastly improves the detail available to the human eye.

## **SIMPLEX**

Simplex Manufacturing had a very show negative first day. They [probably like a number of others] arrived at Farnborough to find that they were there but their press releases and booth visuals were somewhere out there. They thus started off presenting a very bare grey aura to potential customers. That is the negative joy of regular exhibiting that bites most exhibitors from time to time.

Once the glitches in the marketing deliveries were ironed out Simplex were able to announce that it has delivered the first of its new-generation DC electric hover pumps for the Simplex Fire Attack® helicopter fire fighting systems. The system is installed on a San Diego Sheriff's Department Bell 205A1 helicopter. Two more deliveries will follow to the Sheriff's Department.

The new pump will slash fill times by nearly 50 percent, significantly enhancing operator efficiency, effectiveness, and responsiveness.

The new pump has demonstrated performance of more than 2,600 litres (700 US gallons) per minute while using only 100 amps of power. This has decreased the fill time on Simplex's most popular model of fire fighting tanks for the Bell 212/412 from 75 seconds to 40 seconds.

Smaller tanks for aircraft such as the Agusta 119 Koala, Bell 407, Eurocopter AS350, and AS365, and the Kazan Ansat will fill significantly faster, at speeds ranging from 23 to 30 seconds.

This new pump will be interchangeable with the existing Simplex DC electric pump.

## PRATT & WHITNEY

Pratt & Whitney Canada Corp. (P&WC) is the engine supplier of choice for modern turboprops. Its PW100 family powers market leaders ATR 42 and 72 aircraft and Bombardier Q Series regional aircraft that have a significant presence on the coastal patrol market. PWC claim that their PW100 is a very reliable, robust engine with a long life on the wing and well suited to the regional market. More than 80 percent of modern turboprop aircraft carry the PWC badge.

P&WC has seen PW100 turboprop engine deliveries jump nearly three-fold in the past two years amid soaring airline orders for turboprop aircraft and a healthy interest in special mission airframes using the engines.



*PW207 making ever greater inroads in the helicopter business.*

## POWERVAMP

Not so many years ago Powervamp was 'just' a small West Country British company selling its battery packs to truck and bus operators across Britain. Then about a decade ago they moved into aircraft and thereby police air support. From there they solved some of the problem that air units were finding in that mere batteries could not run an aircraft's systems for more than a few minutes and therefore it was difficult to undertake ground instructional or remedial work on such as sensor systems. The solutions – mains power and mechanical generators – vastly changed the products they and their competitors were offering and allowed aircraft to sit on the ground with systems activated for training for extended periods.



Once the company was comfortable with small aircraft it looked up to ever larger airframes and then to supporting a few aircraft at air shows. More and more the Powervamp logo could be seen on a range of ground support equipment tucked under anything from a helicopter to an airliner. From small shows the company moved to large. Suffice to say that it is now extremely difficult to find any aircraft at a major show that is not receiving power from a box marked Powervamp. They have the air show market pretty much tied up and Farnborough was no different.

## EUROCOPTER

Eurocopter may not have been at the show displaying its products in the conventional sense but they had a chalet for entertaining VIP's and their message was there in the background. The company now claims to be accounting for 71% of the existing UK and Ireland police surveillance market. Top favourite with Police Air Support units is the EC135 with a 52% share in this market. With its modern product line, Eurocopter has responded to the increasing security requirements in the British Isles and around the world by adapting its light twin-engine helicopter family, notably the EC135 and EC145, very specifically to meet the demands of homeland security operators. The presence of these helicopters was restricted to images and models on a whole range of stands in the halls of the show. Nonetheless the fact that the company claims to be the world's leading helicopter supplier in this field showed in other ways. The Atlas helicopters Emergency helicopter [providing stand-by EMS and fire cover for the show] was inevitably an ex-police AS355F2.

Worldwide, EC claims to have captured a 52% share of the public services market which includes border patrol, coast guard, law enforcement, emergency medical services, fire-fighting and Para-military operations.

*Ed: So, for a company currently in a position of dominance in the helicopter sector, the question appears to have been - did it need to be at a show it would only ever be a bit player at? In 2006 the answer is no. Next time it may be different.*



*Not at Farnborough, but not many miles away the new fleet of EC145's for the Metropolitan Police London are being completed for deliveries commencing from September 2006*

In a new climate of extra vigilance against terrorism a requirement has arisen for a larger medium-lift utility capability and Eurocopter has successfully offered the EC145/BK117C2 to the London Metropolitan Police Authority. The type is already operated by the Sécurité Civile and Gendarmerie in France and Hesse State Police in Germany. Three EC145s for London will start delivery this year. On the eve of Farnborough EC145 was selected by the US Army for its Light Utility Helicopter (LUH) requirement. There were no examples of these aircraft at Farnborough, their only representation was in the form of models.

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## JAPAN

And just to underline that Eurocopter did not produce the EC145 alone, Kawasaki Heavy Industries were showing a model of the BK117C2 on the Japanese industry stand that also encompassed presentations on the Shin Meiwa flying boats intended to see service in both the Search and Rescue and fire-fighting roles.

Shin Meiwa built the PS-1 Antisubmarine Flying Boat, of which two were built as prototypes and 21 in regular production, and today is building the US-1A STOL SAR amphibian. Efforts are under way to develop the new model of the US-1A STOL SAR for the early 21st century.



I was witness to an interesting [if suspiciously loud] conversation between a prospective western origin customer for the Shin Meiwa fire fighter and a somewhat beleaguered salesman. The customer claimed that he wanted to buy a fleet of the flying boats to fight fires but the Japanese company were taking so long to develop and certify it that he had long lost any real interest in putting his money where his mouth was. Even if he did have a valid point I looked around for a Candid Camera crew because people do not normally say such things – even if they are true!





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## FINAL

When the 2006 Farnborough International Air show closed on the Sunday (July 23) some \$38 billion of business had been announced together with major new product and programme launches. Some 75 defence delegations from 43 countries attended, along with 40 civil aerospace delegations from 15 countries.



In the back -  
Italian Coast Guard ATR