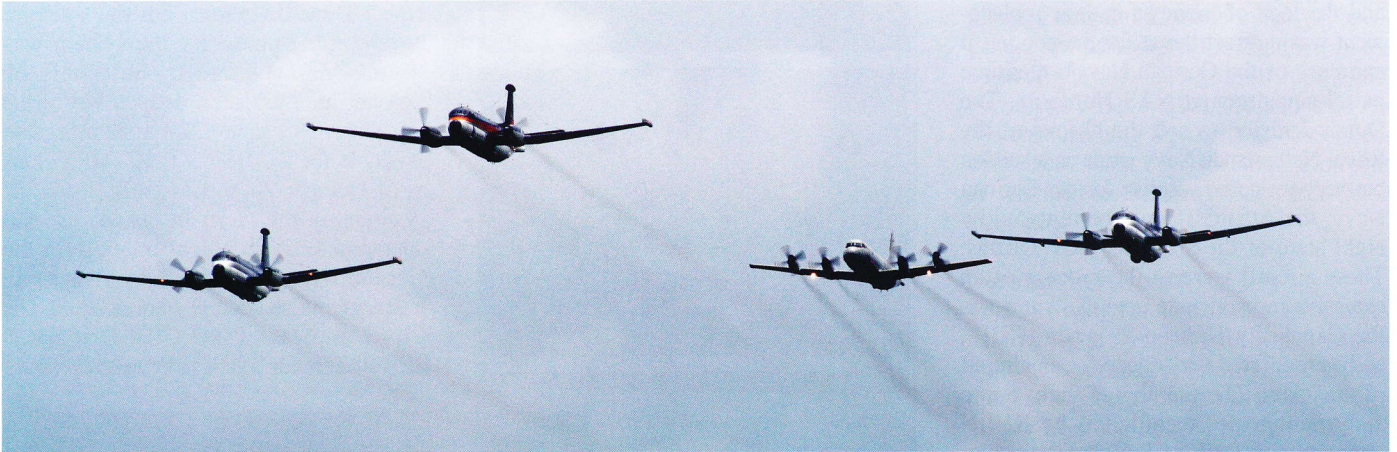


Changing Atlantics for Orions: German Navy Transitions to New Maritime Patrol Aircraft

by Marco P.J. Borst



Flypast of Atlantics and newly aquired P-3 Orions

What made the German government decide to replace a 40-year-old aircraft with an almost 25-year-old aircraft, designed in the late fifties? Will this 25-year-old aircraft be able to fulfil the German and international needs for maritime patrol and surveillance capability? The first steps towards the buy of P-3C CUP Orions of the Royal Netherlands Navy were taken in October 2003, when Germany and The Netherlands signed a Letter of Intent (LoI) for the purchase of ten aircraft. At that moment the decision about the sale of the Dutch Orions had not yet been made by the Dutch parliament. But things went fast after this LoI. After a strong debate between the Dutch MoD and the parliament, the decision to sell the P-3s and to close RNLNAS Valkenburg was taken on the evening of 28 April 2004. Hardly two months later, on 20 July 2004, an agreement was reached about the sale of eight P-3C CUP Orions to Germany. The next month two German Navy officers came to RNLNAS Valkenburg to establish a German detachment. Within two years the first German crews were trained to operate the P-3C CUP and all eight aircraft were delivered to Germany. The last remaining Br1150 Atlantic in the MPA role was phased out in January after completing its last pilot training course missions. Only eighteen months after the decision to buy the ex-RNLN Orions was taken, Marinefliegergeschwader 3 (Naval Air Wing 3 - MFG 3) fully relies on the P-3C CUP Orion as its long range maritime patrol platform.

A bit of history on the Atlantic Replacement

The German MoD had been looking for a new MPA that had to replace the Breguet Br1150 Atlantic for a long time. Solutions that were considered varied from the buy of the Lockheed S-3B Vikings (late 70s),

the proposed brand new Lockheed Martin P-7A (late 80s) and an MPA derivative of the Airbus A-320 commercial jet to modified second hand P-3 Orion airframes (between 1995 and 2003). The last serious program to replace the Atlantic was a joint German/Italian program. Both countries



P-3 and two Atlantics prior to take-off



Newly aquired P-3 Orion shows her colours

Maritime Patrol Aviation

were flying the first generation Breguet Atlantics and were facing major problems in maintaining their fleets in the air. This German/Italian program was terminated in July 2003 because the two countries could not agree on the type of aircraft to be purchased. The aging Atlantics continued to fly the German maritime patrol operations and the lack of money for their replacement was a direct threat for the continued existence of the German Navy's maritime patrol squadrons at NAS Nordholz. The Dutch decision to sell the Orions of the Royal Netherlands Navy came as a sudden but very welcome surprise for the German Navy: the Atlantics could be replaced by eight state-of-the-art P-3C CUP Orions. These aircraft were in the process of an extensive mission suite upgrade, known as the Capability Upkeep Program (CUP), and were offered very cheap for an aircraft of this class. The training of flight crews and maintenance technicians by RNLN instructors at RNLNAS Valkenburg was part of the deal. Germany did not have an alternative as the earlier plans for the replacement of the Breguet Atlantic were cancelled in 2003. And there would be not enough money available to purchase new factory-fresh MPAs. The P-3C CUP program was very promising to give the German Navy a good and modern platform, at least from the mission equipment point of view. That the airframe was an older design was accepted. The only alternative would have been to dismantle the German Navy's MPA squadrons. But where the Dutch government decided to give up this capability, the German government recognized that there would be a continued international need for Maritime Patrol Aircraft in a variety of roles. These include the traditional ASW role, but also peace keeping operations and overland surveillance and communications missions.

The Aircraft

The Orions of the Royal Netherlands Navy were originally ordered from Lockheed in 1978 and delivered between November 1981 and September 1984 in the P-3C-II $\frac{1}{2}$ configuration. The P-3C-II $\frac{1}{2}$ was not very different from the P-3C-II which was introduced in 1977. Its mission equipment was designed in the early seventies. The RNLN aircraft were not upgraded before the first aircraft entered the Capability Upkeep Program (CUP) program in July 2002, except for some self-defence modifications and infrared sensor updates to a limited number of three aircraft in 1998/1999, with regard to their new overland surveillance missions over Kosovo. The CUP focused on the



The new P-3s are introduced to the public at Nordholz Air Day, August 2006.

replacement of almost all mission equipment, including the central computer system and the work stations onboard the aircraft. This enables the crew to produce a complete situation picture involving all the aircraft's sensors, at every individual work station. They even have the option to send this and other data to land based command centres or to commanders in the field. Only ten of the thirteen Dutch Orions went through the CUP, three of which received the wiring for all systems but were fitted with a limited equipment suite and were meant to conduct mainly coast guard missions. One of these three aircraft was sold to Germany and the other two ended up in Portugal. During the CUP, the original AN/APS-115 radar was replaced by the more modern AN/APS-137B(V)5 radar with Synthetic Aperture and imaging capability (SAR/ISAR). Radar systems like this can not only provide a location for a target, but it can also give the radar operator a good picture of the target's profile. Other important improvements were the installation of a completely new acoustic processor and sonobuoy receiver (AN/ASQ-78B), and a new Internal Communication System (AN/AIC-34). Furthermore, all aircraft

received the same self-defence equipment as three aircraft received in an earlier phase (AN/ALE-47 chaff/flare dispensers and AAR-47 Missile Warning Receivers). A brand new AN/ALR-95(V)2 ESM system replaced the Update II $\frac{1}{2}$'s ESM system. Most of the hardware for this new ESM was installed onboard the aircraft during the CUP modifications, but the software development phase for the system was slightly delayed and it could only be exported after the sale was approved by the US Navy. This same ESM system became available for the USN's P-3C AIP Orions as of October 2006. Currently, the ESM systems on the German Orions are not operational. ESM system training for the German Navy operators by American instructors is planned to start in April. The first completed P-3C CUP Orion was delivered to the Dutch navy at Valkenburg



Operators ponder the details....

on 23 May 2004, almost a month after the Dutch parliament decided on disbanding the Maritime Patrol Group and the proposed sale of the thirteen aircraft.

German Training Squadron

The German Navy established the Naval Air Systems Training Squadron on 1 July 2004. Under the command of CDR Björn Malmus, a TACCO who already gained P-3 experience during a Personnel Exchange Program with VP-30 at NAS Jacksonville,

German P-3 Program Milestones

July 2003	German Italian MPA replacement program cancelled
31 October 2003	LoI between German and Dutch MoD about the purchase of the ten CUP aircraft
January 2004	Start of negotiations for the sales and training contracts
2004	Decision on MoD level (trilateral) that Portugal will get five P-3s (two CUP and three non CUP) and Germany will accept eight Orions instead of ten
28 April 2004	Decision by Dutch parliament to sell the P-3s and to close RNLNAS Valkenburg
July 2004	Training contract I signed, negotiation for sales contract completed
01 August 2004	First German officer in Valkenburg
11 August 2004	Third party transfer agreement approved by US Government
23 August 2003	Training begins
11 November 2004	German parliament approves sales contract
22 November 2004	Sales contract between The Netherlands and Germany signed
28 November 2004	Temporary German Navy training squadron commissioned at Valkenburg
January 2005	Training starts for all branches
August 2005	Training contract II signed
15 February 2006	First flight in RNLN P-3 with full German flight deck crew
28 February 2006	First aircraft handed over to Germany (303)
17 March 2006	First flight of German registered P-3 (98+01)
5 April 2006	First training mission with dummy weapons load at the wing stations
18 May 2006	Official handover of the P-3C from Dutch MoD to German MoD at the ILA in Berlin
22 June 2006	Eighth and final aircraft ferried to Germany
11 July 2006	German airworthiness certification for the P-3C CUP Orion received
17 July 2006	First flight out of NAS Nordholz with final German registration (60+07)
27 August 2006	Public presentation of the P-3C CUP Orion during Nordholz Airday

this training squadron formed the German part of the training organization. It reported to Naval Air Wing 3 at NAS Nordholz. The Dutch part of the training organization was formed by "PUMA" (a Dutch abbreviation for MARPAT Disbanding Project). PUMA delivered a team of instructors, an airfield (Valkenburg) with all its facilities and an organization that was able to accept and receive completed P-3C CUP Orions from the modification line at Lockheed Martin's Greenville, SC facility. In August 2004, when the training of German personnel started, the RNLN only had one P-3C CUP Orion available; the remaining aircraft were in various stages of the CUP modernization program or even had to enter the program yet. Probably one of the biggest challenges was the fact that the RNLN instructors had to be trained for the P-3C CUP themselves before they could train the Germans.

The Training

For the German crews the transition from the Br1150 Atlantic to the P-3C CUP Orion was a very big step. Especially for the cockpit crew; compared to the Orion, the Atlantic is a very easy to fly aircraft, often compared to flying a Cessna 172 by its crews. Another problem was the speed of the program: only seven months after the first talks about the possible purchase of RNLN Orions, the German training detachment at Valkenburg was formed. The German Navy hardly had time to pre-

pare for it because the Dutch MoD wanted to get rid of the aircraft fast. Where the normal selection and preparation procedures for a new MPA would have lasted seven to ten years, the German Navy had to do this in only ten months. For the RNLN instructors it was not an easy process too: they saw their squadrons being disbanded, their Orions being sold and their future being greatly changed, while at the same time they were tasked with the training of German crews. For the Dutch this was a period with significant frustration and emotion, but the job was done with the same high standard of professionalism the RNLN was known for in the world of maritime patrol.

The training of the first German P-3C CUP

crews (two instruction crews and two operational crews) as well as the training of maintenance personnel at Valkenburg, was completed in June 2006. After that all Orions were flown from Valkenburg to Germany. The last Orion departed from Valkenburg on 22 June. After its last take off from RNLNAS Valkenburg, the Dutch pilots of aircraft 312 made some very spectacular low passes over the flight line of the base. Eight days later, on 30 June 2006, Naval Air Wing 3 disbanded its Naval Air Systems Training Squadron at NAS Nordholz. That same day No.1 Squadron was re-activated as Germany's first P-3 Orion squadron.

Not Just the Aircraft

Together with the eight Orions and the initial training program, Germany also bought a lot of spare parts, tooling, equipment, mission support systems and the flight simulators from the RNLN. In May 2006 the German Navy started to move spare parts from Valkenburg to Nordholz, followed by tooling and ground equipment in June. The majority of spares will be moved to Dornier Flugzeug Werft (DFW) in Manching/Ingolstadt. DFW is appointed as the company being responsible for heavy maintenance work on the German Navy Orions.

Germany has contracted CAE, the original manufacturer of the RNLN P-3C Operational Flight Trainer (OFT), for the dismantling of the OFT at Valkenburg. It was moved to CAE's German facility in Stolberg first, where the power was put on early September. In Stolberg the OFT will be upgraded to the latest P-3C CUP configuration. CAE technicians will be working on the OFT at night, so during this modification program, it will be available for use by German Navy crews in day time. OFT training in Stolberg is planned to start mid

German P-3C CUP Aircraft

Lockheed c/n	USN BuNo	RNLN Serial	GN Serial	Type
5737	161369	301	60+01	P-3C CUP
5741	161370	302	60+02	P-3C CUP
5745	161371	303	60+03	P-3C CUP
5754	161373	305	60+04	P-3C CUP
5765	161376	308	60+05	P-3C CUP
5769	161377	309	60+06	P-3C CUP
5774	161379	311	60+07	P-3C CUP
5776	161380	312	60+08	P-3C CUP

Note: 60+03 was initially registered 98+01



P-3 and Atlantic flypast on an overcast day at Nordholz Air Days.

October 2006. The OFT is planned to be ready in the summer of 2007. A year later it will be moved again: to Nordholz this time.

The RNLN's Operational Tactical Trainer (OTT) had not been upgraded to P-3C CUP standard. In December 2006 Germany contracted CAE (teamed up with Lockheed Martin and EADS) to design, manufacture and maintain a new OTT to train the mission crew in the Orion.. When the OTT is modified it can be coupled to the OFT in order to be able to simulate a complete P-3C CUP Orion mission. The OTT is scheduled for delivery to MFG 3 at NAS Nordholz in the fall of 2008.

To an Operational Status

Forty-eight RNLN personnel (11 flight crew and the rest technical staff) will assist the German Navy at NAS Nordholz until the summer of 2007. More German crews will get their training at Nordholz. And No.1 Squadron is looking forward to taking part in Exercise Noble Manta '07 at NAS Sigonella in April with a P-3C CUP. Also, the squadron is planning on doing a



Three Atlantics and a new P-3.

number of overland mission trials over Germany. Gaining the Initial Operational Capability was intended for the summer of 2007, when the German Navy expected to re-establish an MPA deployment with one P-3C CUP Orion and one crew in one of the current operations i.e. Operation Enduring Freedom (out of Djibouti) or Operation Active Endeavour (out of NAS Sigonella). Full Operational Capability might be reached by 2009.

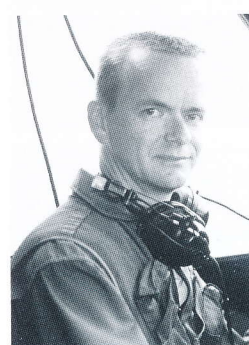
Having a fleet of fewer MPA than the number of Breguet Atlantics MFG 3 used to have does not mean that they cannot meet the same required number of missions and flight hours. About 20 years ago, the 20 Atlantics of MFG 3 were flying between 4000 and 4500 hour per year. The number of hours were reduced to 3200 when the wing was reduced to 12 aircraft. All maintenance for the Br1150 Atlantic was based on flight hours, while maintenance for the Orion is based on calendar inspections. This will result in a higher aircraft availability rate, which enables MFG 3 to increase the number of flight hours with the P-3C CUP from a planned 2000 hours this year to 3500 hours in 2009. The plan is to have five of the eight Orions available for operational duties at all times.

Although the financial figures are not released by the German Navy, once the wing has reached the operational status, the annual operating costs of MFG 3's Orion fleet might be slightly lower than it used to be with the Atlantics as the eight Orions are planned to log more hours than the twelve Atlantics used to log. From a logis-

tic perspective it will be easier and less expensive to maintain the P-3C CUP because more than 440 aircraft are still in operational service in 15 nations. This means better access to spare parts and technical support if compared to the situation where the German Navy was flying the first generation of Atlantics that was only in use in very small numbers in three nations (Germany, Italy and Pakistan).

Not only will aircraft availability will improve, the operational capabilities of MFG 3 will increase with the Orion. With a state-of-the-art mission equipment suite, these will extend beyond the traditional maritime patrol frame, long-range reconnaissance over water and over land and joint operations including communication support and direct support are to be exploited. Despite the age of the aircraft, the P-3C CUP Orion is planned to remain in German service until at least 2025 but with a number of service life extension programs, which could go as far as replacing the wings and vertical and horizontal stabilizers, being developed by Lockheed Martin and others, technical lifetime could be added to the aircraft for an additional service period of up to 20 years.

About the author



Marco P.J. Borst makes it his hobby to describe the history of the Lockheed Martin P-3 Orion. As a freelance journalist, he has visited several P-3 operating squadrons, and has written several articles on the P-3 Orion. He co-operates with Jaap Dubbeldam in the P-3 Orion Research Group. In 1997, they published a booklet about the Orion in Dutch with a P-3 location list in English. This booklet was followed by a second one ("P-3 Orion Volume 2") in 2001. This time it was published in cooperation with the Dutch Aviation Society as a special English edition of "Scramble" magazine.

Marco also established, and maintains, an informative home page about the P-3 Orion on the Internet. This page, which is frequently updated, can be found at: <http://home.planet.nl/~p3orion>. Besides an extensive news section, and other P-3 information sections about the P-3 Orion, the home page also provides several links to other P-3 related home pages. Marco can be reached via e-mail at p3orion@planet.nl