- **Branch:** Marineflieger
- **Role:** Aerial Surveillance, Anti-Submarine and Anti-Surface Warfare

Old-timers with new skills

The German Marineflieger has faced years of severe cost-cutting measures, **Dirk Jan de Ridder** and **Menso van Westrhenen** reveal how it continues to operate old aircraft adapted to face new challenges.

***Left:** Eight P-3C Orions have been in service with the Marineflieger since 2006, when they replaced 14 Atlantics. They were acquired from the Royal Netherlands Air Force after the Dutch Government ended its requirement for a maritime patrol aircraft.*

***Below:** The Sea King has been serving the Marineflieger for over 30 years and is now starting to show its age. It will be replaced by the NH 90 from 2017.* *All photos, Dirk Jan de Ridder unless stated*

THERE HAVE been a great many changes to Germany's Marineflieger (naval air arm) over the past decade or so. Budget cuts coupled with the retirement of old obsolete aircraft have reduced the size of the air arm. Nineteen maritime patrol Breguet Atlantics were replaced by eight Lockheed P-3 Orions, only two of its previous four Dornier Do 228 pollution control aircraft remain active and poor serviceability of the old Sea King and Sea Lynx helicopters is having a negative impact on the pilots' flying time. Until 2005 the German Navy even operated Tornado fighter jets, but they were withdrawn and the role passed on to the air force.

More recently, at the end of 2012, the Sea Kings based at Kiel-Holtenau moved to Nordholz, leaving the Marineflieger with a single air base and just two Marinefliegergeschwaders (MFG - Naval Air Wings). MFG3 operates the fixed-wing Do 228 and P-3C Orion, while MFG5 is equipped with Westland Sea King Mk41 and Westland Sea Lynx Mk88A helicopters. Nordholz has become the only air base in Germany to house two air wings, making it the biggest, both in terms of the number of aircraft and personnel.

Fixed-wing

Eight P-3C Orions were acquired from the Netherlands in 2006. They took over the role of 15 Atlantics to fulfil anti-submarine warfare and anti-surface warfare tasking. Their secondary roles include patrol and reconnaissance, both over water and land, and occasional support during search and rescue (SAR) operations. There were plans to replace the other five signals intelligence (SIGINT) configured Atlantics with the Northrop Grumman RQ-4B Eurohawk unmanned aerial vehicle. When the project was cancelled in 2013, three years after the last SIGINT Atlantic was retired in 2010, it left a capability gap that does not look likely to be filled in the near future.

'They took over the role of 15 Atlantics to fulfil anti-submarine warfare and anti-surface warfare tasking.'

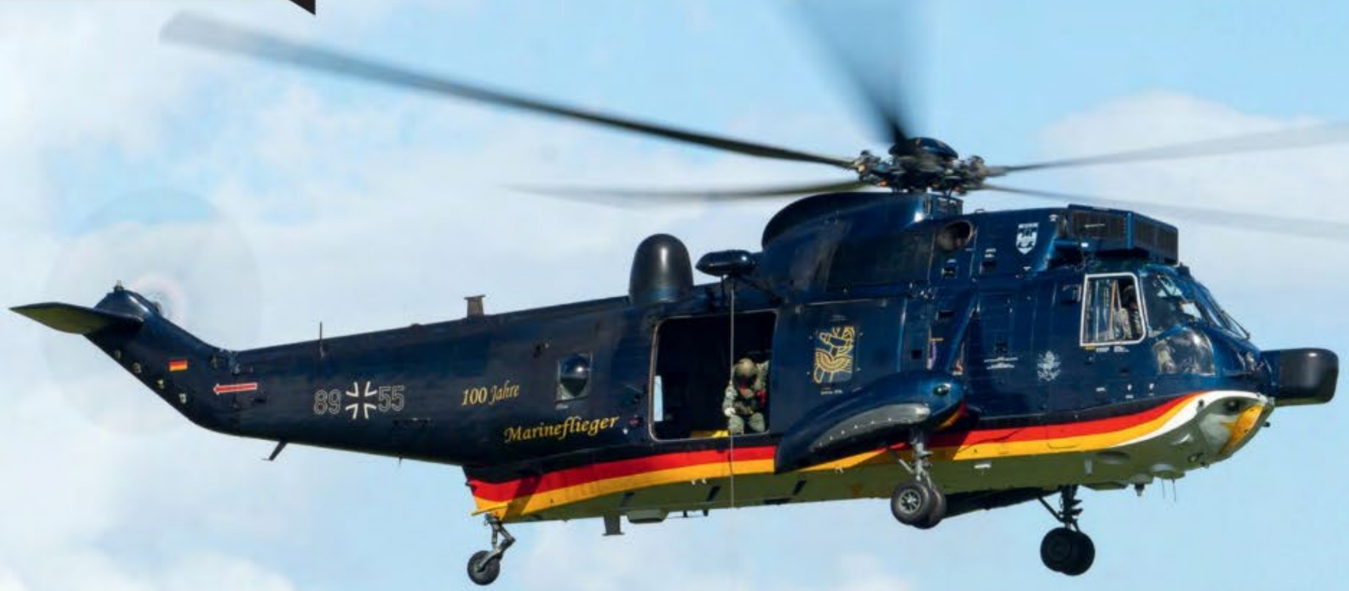
For its primary roles the Orion is equipped with torpedoes, bombs and mines. The aircraft's crew size and composition depends on the mission. The minimum is four: an aircraft commander, pilot, engineer and observer. Tactical missions are flown with a minimum crew of 11, operating the radio, radar, sonar, optical and other equipment. The most senior officer on board is the mission commander, regardless of his role in the aircraft. MFG3's Orions are currently involved in the anti-piracy Operation Atalanta (see later), as well as national missions (usually one or two every month) and providing readiness for the NATO Response Force (with different crews alternating every 12 months).

After delivery from the Netherlands, the Orions needed a lot of attention as overhauls and mid-life upgrades had stopped when the Dutch MOD decided to end the anti-submarine warfare/anti surface warfare role. The aircraft underwent lengthy overhauls and test flights before being certified at Manching - it took about a year before the Marineflieger had any Orions at its disposal from their new Nordholz home.

At present, aircraft availability is good and even though the Marineflieger only operates eight Orions, missions are rarely cancelled due to a lack of aircraft. During the authors' visit, an Orion broke down during start-up for a training flight, but another aircraft was substituted causing only an hour's delay. The next day four different airframes were flying, something that doesn't happen very often. Although the airframes are 30 years old, the Orions should be able to fly until at least 2025.

Whereas MFG3's 1.Staffel (squadron) just operates the P-3C, the 2.Staffel is equipped with both the Do 228 and the P-3C, with crew members dedicated to just one aircraft type. The Do 228s are flown in cooperation ▸

FORCE REPORT German Marineflieger

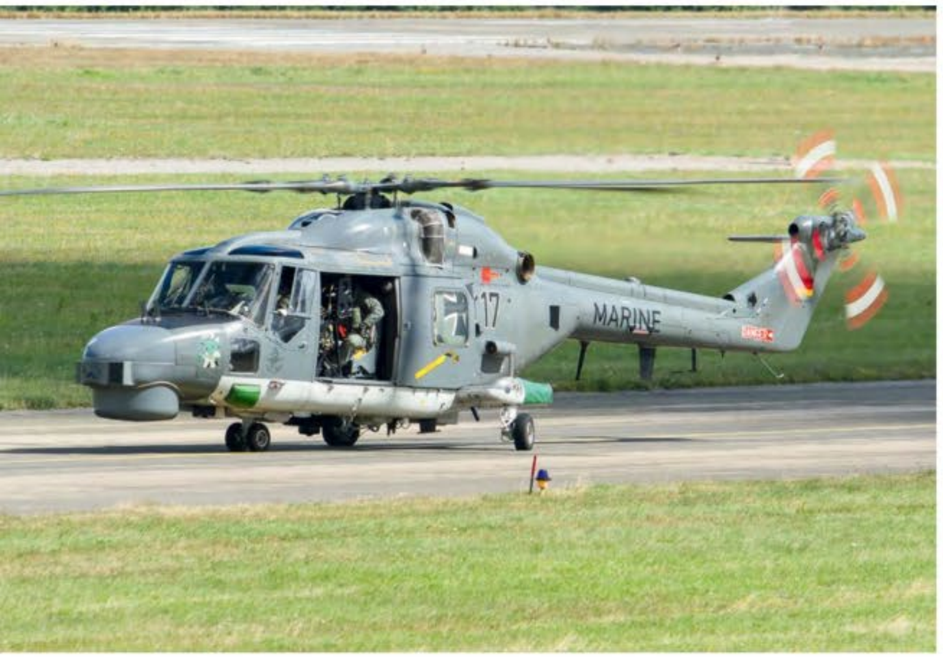


Above: Sea King 89+55 received a brilliant colour scheme in 2013 to celebrate 100th anniversary of German naval aviation.

Below: The Sea Lynx Mk88 has been in service for nearly 35 years, but the Marineflieger is not yet looking for a replacement. Note the 'Yoda' nose art.

Marineflieger Order of Battle

Nordholz Air Base		
MFG3	1.Staffel	P-3C
	2.Staffel	Do228/P-3C
MFG5	1.Staffel	Sea King Mk 41
	3.Staffel	Sea Lynx Mk 88A



with the German Department of Transport, which sets the operational guidelines and pays for the aircraft, infrastructure and personnel. In return the Marineflieger schedules the flights, operates the aircraft and provides aircrew as well as maintenance personnel. Approximately 30% of the missions are so-called 'satellite flights'. Thirty minutes after a satellite passes over, imagery of any potential pollution at sea is released to the air wing. Another half an hour later a Do 228 takes off to investigate the reported pollution. Other flights are also planned around the satellite schedule. These missions take place on a daily basis, making it harder for potential polluters to avoid detection. Do 228 pilots are among the busiest in the German military, with each amassing up to 400 annual flying hours. They are available 365 days a year, both day and night, to patrol for oil pollution and other offences. This has had a remarkable impact in deterring would-be offenders. While more hours are flown every year, the number of detections has steadily decreased. In 2013 the Dorniers reached 35,000 pollution control flight hours, during which 4,500 cases of pollution were detected and 610 polluters tracked down. In 2012 one of the old Do 228s, which had accumulated over 19,500 flying hours since 1991, was replaced by a Do 228NG featuring a glass cockpit with electronic instrument displays and five-bladed propellers. The one Do 228LM that remained was subsequently upgraded by Sweden's SSC with a glass cockpit and new propellers, easily recognizable by the five blades. Mission equipment remains the same in the modified aircraft.

Special emphasis is laid on shipping lanes, oil and gas platforms, fishing areas and the Wadden Sea (a shallow body of water with tidal flats and wetlands off the northwest coast of the Netherlands and the Frisian Isles), which is on UNESCO's World Heritage List. Modern equipment enables the crew, which comprises a commander, co-pilot and systems operator, to detect pollution at a range of 20 miles (32km). Once a suspected violation is identified, the area is inspected with short-range sensors including infra-red and ultraviolet scanners, a microwave radiometer or a laser fluorosensor. The final procedure is to gather photographic evidence enabling law enforcement agencies to take action against the offender. Should the crew receive an emergency call for search and rescue, which is a secondary mission, it will always take priority over pollution control taskings.

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Left: Two Do 228NGs are flown by the Marineflieger on behalf of the German Department of Transport which pays for their use to detect oil spills and track offenders.

Helicopters

Student naval helicopter pilots start their training with the Heeresfliegerwaffenschule (School of Army Aviation) at Buckeburg flying the EC135, plus ten hours on the Bo-105 for autorotation training which the EC135 cannot perform. After receiving their wings they transfer to their future squadron for conversion training on the Sea King or Sea Lynx. Currently there are not enough flying hours available for them to join their squadron immediately. For this reason a civilian EC135 has been leased and based at Nordholz where students can fly enough hours to maintain their skills and their pilot licences. It may take between a year and 18 months for them to join an operational squadron. A shortage of flying hours is having an effect on the flying status of pilots. Sea King pilots, who are fully combat-ready must fly 180 hours to keep their currency, while those with a limited combat-readiness, flying around 120 or 140 hours, tend to stay at that level. As a result though, very few pilots now get the chance to become fully combat-ready.

Out of the 22 Sea King Mk41s delivered from 1972, 21 are still flying today. The helicopter's main roles include search and rescue (SAR) over the North and Baltic Seas, as well as special operations with KSK (Kommando Spezialkräfte – Special Forces Command) soldiers. For self-protection the Sea King Mk 41 is equipped with chaff and flare as well as an M3M machine gun. The staffel has a permanent SAR readiness state, covering the North Sea from Helgoland (an island 37 miles [60km] off the ▸

Atalanta

Operation Atalanta, the first maritime operation initiated by the European Union, began in December 2008. It is currently the Marineflieger's main tasking involving three of its four different types of aircraft regularly committed to it. Sea King, Sea Lynx and Orion crews often deploy to the Horn of Africa to combat piracy. While the helicopters fly off ships, the Orions operate from a French military base in Djibouti. Their mission is to detect pirates preferably before a ship is attacked.

An Orion pilot, who preferred to remain anonymous for security reasons told the authors: "The most efficient way to perform our job was to work with French AWACS. They pinpoint targets of interest and tell us where they are located. We head inbound with our own radar and use a camera and optical means, down to a handheld camera, if necessary. The altitudes we fly depend on the weather and visibility. During 'our' [European] wintertime, you have great visibility so we fly high altitude, but in summertime, especially during Djibouti's monsoon season, we have visibility down to zero and we are not even able to find them optically."

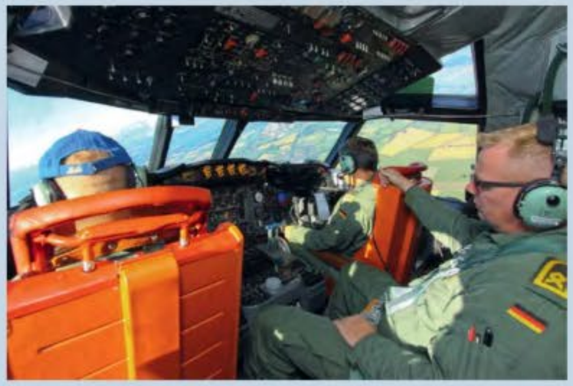
A P-3 sortie often lasts between eight and ten hours, with an early start because of the temperature and humidity in Djibouti. There is a 15-hour working day from the first briefing to the end of the debriefing. One pilot logged 270 flying hours while being deployed to Djibouti for two months, which is an average of nine hours every two days.

At least one P-3 is continuously deployed, with crews alternating every two or three months. During 2013 they had a six-month break to maintain the aircraft and train new crews, the latter hadn't happened in four to five years. In accordance with the UN mandate, missions are flown along the Internationally Recommended Transit Corridor (IRTC) between Somalia and Yemen, as well as over Somalian territorial waters and the Indian Ocean. German parliament also approved missions over the coastline up to 6,561ft (2,000m) into the Somali mainland. Lynxes tend to deploy in pairs on board Bremen-class frigates, taking along around 17 technicians and six crew members (two complete flight crews). Two pilots are assisted by a single HOM (Helikopter-Ortungsmeister) in the back, who operates the machine gun and the camera during reconnaissance flights. The majority of Lynx missions comprise patrol and reconnaissance, but another important tasking is protecting World Food Program ships from pirates, on their way to East Africa. These are being protected from the air as they enter Mogadishu Harbour.

The results of the whole operation are clear. Over the past three years, the number of successful hijackings has decreased from 47 in 2010 to 25 in 2011, five in 2012 and zero in 2013. Sadly 2014 started off badly with a successful hijack in January. Operation Atalanta was supposed to end in 2012, but has now been extended to the end of 2016.

The following example of a mission from January 2013 illustrates the level of co-operation between different nations and air/sea assets. Pirates had attacked a cargo vessel with a whaler (mother ship) and a skiff (speedboat). Security personnel managed to fend off the attacks and reported the incident. A Spanish P-3 was airborne, but it was low on fuel and had to return to Djibouti. The decision was taken to launch a German Orion the next day but just three hours later the aircraft arrived at the spot in complete darkness. Despite bad weather and poor visibility it managed to trace the two pirate boats and forward their location to the Atalanta task force. An American and a French frigate pursued the pirates and captured them at dawn. Weapons and evidence were secured and the skiff was sunk.

***Below: These mission markings were applied while P-3C 60+04 was based in Djibouti for Operation Atalanta.** Menso van Westrhenen*



Above: On board a P-3C during a local training flight. Menso van Westrhenen
Below: The Sea King Mk41 and the Sea Lynx Mk88A are operated by MFG5.

mainland) and the Baltic Sea from Warnemünde (near Rostock).

Captain Lieutenant Jahr, a Sea King pilot explains: "We have one helicopter and one crew at each location. They stay there for a week from Monday morning to Monday morning, after which we fly a new aircraft there or arrange a shuttle aircraft. There are more tourists, surfers, sailors, swimmers and divers at Warnemünde during the summer, which increases the likelihood of people getting into trouble. In the North Sea we have more islands without any easy access to the mainland, which means that in autumn and winter, when the weather is worse and the civilian rescue helicopters can't fly there because of visibility, we get a call. Civilian rescue helicopters need 3 miles [5km] flight visibility and we only need 2,624ft [800m] or 2 miles [3km] at night. In general, we have three to four missions per week, but you can have weeks when we come back with 30 hours of flying and then there are weeks when nothing happens."

The Sea King also still performs ship-based operations. While the armed Lynx helicopters tend to get more media coverage when they deploy on ops abroad, the Sea King still ventures overseas as it did in June 2014 for four months. The old helicopter can land on several German Navy ships and foreign frigates, but they can only be parked inside a Berlin-class Einsatzgruppenversorger (replenishment ship) of which there are three in service, so whenever they deploy it will be on this type of ship. Service life for the versatile Sea King has now been extended to 2021. The NH90 'Sea Lion', as the German Navy has named the helicopter, is now expected to enter service at the end of 2017, with 18 examples being transferred from an air force order to the navy. Similar to the NH90 NFH version operated by other countries, it will feature some German mission-specific equipment, such as communications systems.

Sea Lynxes have served the navy since 1981, but in 1996, seven brand new Sea Lynx Mk88As were ordered and the 15 remaining Mk88 models were upgraded to Mk88A standard. The Mk88A's new Selex Seaspray 3000 radar offers an extra 100 miles (180km) of range and 360-degree visibility due to its position under the nose. When MFG5's Sea Kings moved from Kiel to Nordholz, the Lynxes became part of the third staffel of MFG5 (the second staffel doesn't exist).

In recent years anti-submarine warfare, once the Sea Lynx squadron's primary role, has become less important and when deployed more emphasis is now given to anti-surface warfare, reconnaissance and maritime patrol. An undisclosed number of Titan 385ES-HD electro-optical/infrared sensors has been ordered by the German Navy for its Sea Lynx helicopters. The Titan turret installed on the helicopter's nose will provide pilots with a forward-looking infra-red capability, considerably improving visibility at night and in poor weather. Like the Sea King, the Lynx is equipped with an M3M 12.7mm door gun, but it can also fire the Sea Skua missile at surface targets up to 9 miles (15km) away.

Up to three deployments can be manned simultaneously by 3.Staffel. Recent operations have included Active Endeavour and Enduring Freedom (focusing on anti-terrorism), UNIFIL (protecting the maritime borders of Lebanon from illegal weapons transports) and Atalanta. Although two-third of the Lynxes have been in service for 30 years, there are no plans to replace them in the near future as the NH90 will only replace the Sea King.

Although the air assets of the Marineflieger are getting older and its current missions are slightly moving away from high threat level operations, it is still a very potent air arm with a wide range of capabilities. afm

'For self-protection the Sea King Mk 41 is equipped with chaff and flare as well as an M3M machine gun.'