NATO OTAN

# Fact Sheet

NATO Airborne Early Warning & Control Force Headquarters
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## NATO Airborne Early Warning & Control Force

**History**

In the early 1970s, various NATO studies indicated that an airborne early warning (AEW) system would greatly enhance the Alliance's existing airspace defence system. In December 1978 the members of NATO's defence Planning Committee (DPC) signed a Memorandum of Understanding (MOU) for the procurement and operational use of an AEW system. This decision by the member nations launched NATO's largest procurement programme of that time.
The NATO Airborne Early Warning & Control Force (NAEW&CF) was established in January 1980.
The Headquarters of the NAEW&CF is situated in Geilenkirchen, Germany.

**Organization**

The NAEW&CF has two units with operational capability: The NATO E-3A Component in Geilenkirchen, Germany, with 15 E-3A aircraft, and the E-3D Component of the Royal Air Force (RAF) in Waddington, UK, with six E-3D aircraft crewed solely by RAF personnel. At the end of 1988 the E 3A Component was declared fully operational.
The E-3D Component achieved fully operational status on 1 July 1992. Next to these two operational units, the Mission Systems Engineering Centre (MSEC) constitutes a separate entity which is located at Geilenkirchen, Germany.
The Mission Systems Engineering Centre (MSEC) provides engineering services for the E-3A aircraft on-board mission systems, the mission sensor systems and E-3A ground support systems. Moreover, the MSEC maintains one of a kind engineering and laboratory facilities on base. The organization is thus fully dedicated to the development of E-3A mission systems.
The NAEW&CF is commanded on a rotational basis by either a US Air Force or a German Air Force major general. The deputy commander is an RAF Air Commodore. Force Command reports directly to the Supreme Allied Commander Europe (SACEUR).


17 NATO member nations participate in the NAEW&CF programme: Belgium, the Czech Republic, Denmark, Germany, Greece, Hungary, Italy, Luxembourg, the Netherlands, Norway, Poland, Portugal, Romania, Spain, Turkey, the United Kingdom and the United States of America. Fifteen of these nations provide military personnel to the E-3A Component (the UK flies its own E-3D aircraft, and Luxembourg does not provide military personnel).

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# The E-3A Component

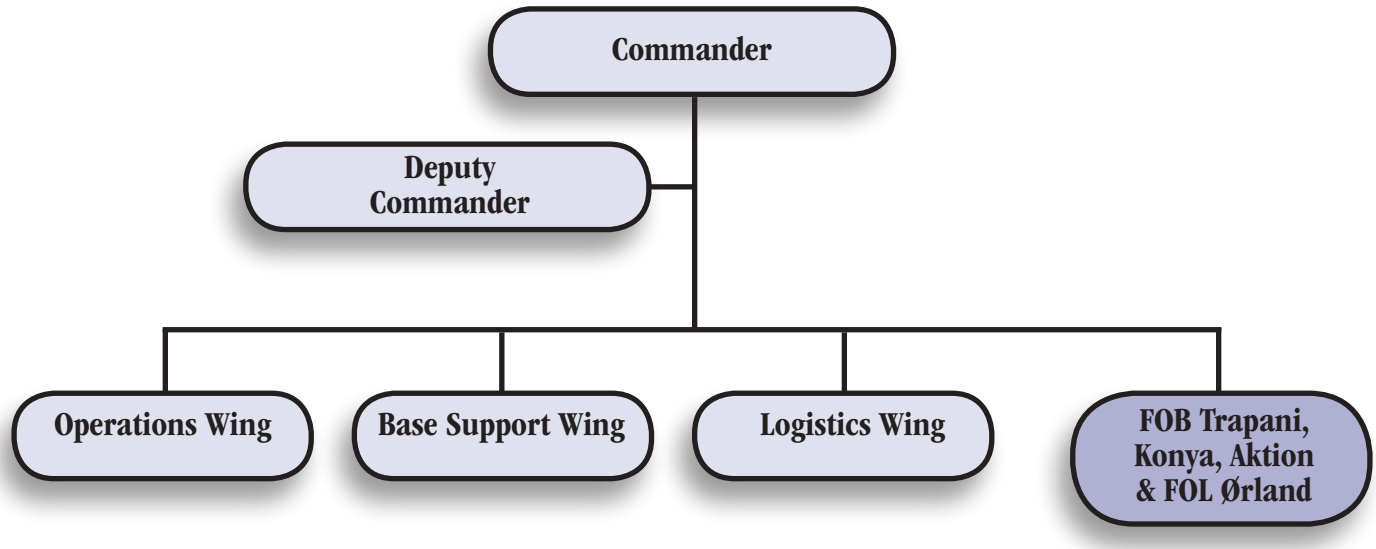
**History**

The build-up of the E-3A Component began in January 1980. In October 1980 the Component was granted the status of an international military headquarters by decision of the NATO Defence Planning Committee (DPC). Flying operations began in February 1982 after delivery of the first E-3A-aircraft. The Component was officially activated on 28 June 1982 and achieved full operational capability at the end of 1988.

The E-3A Component is one of the two operational units of the NATO Airborne Early Warning & Control Force (NAEW&CF). It holds a unique place in military history because it was the first multinational flying unit established by the Alliance. Its mission is to perform all surveillance and battle management tasks ordered by the NAEW&C Force Commander on behalf of the SACEUR.

**Organization**

The post of E-3A Component Commander in the rank of brigadier general is held alternately by the US Air Force and the German Air Force. The deputy commander is always a colonel of the Netherlands Air Force. The structure of the E-3A Component comprises three wings: Operations, Logistics and Base Support, as well as the Forward Operating Bases and one Forward Operating Location. Each wing is headed by a colonel from a specific nation participating in the NAEW&CF programme. Around thirty multinational crews from 15 of the 28 NATO member nations are assigned to the E-3A Component's two operational squadrons. The E-3A Component has a multinational workforce of around 1400 military and civilian personnel.




Only a certain number of the E-3A aircraft are normally present at Geilenkirchen Air Base. Others are deployed to the forward operating bases (FOBs) in Aktion (Greece), Trapani (Italy), and Konya (Turkey) or the forward operating location (FOL) in Ørland (Norway). The FOBs and FOL are each located at a national air base. Around 15 NATO personnel from the respective host nations work for the Component at the FOBs/FOL.

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**Air assets**

The E-3A Component has fifteen E-3A aircraft. These modified Boeing 707s are easily identifiable from the distinctive radar dome mounted on the fuselage. The E-3A usually operates at an altitude of around 10 km. From this altitude a single E-3A can constantly monitor the airspace within a radius of more than 400 km and can exchange information – via digital data links – with ground-based, sea-based and airborne commanders. By using pulse Doppler radar, an E-3A flying within NATO airspace can distinguish between targets and ground reflections and is therefore able to give early warning of low- or high-flying aircraft operating over the territory of a potential aggressor.

From 1985 until 2011 the E-3A Component also operated three Trainer Cargo Aircraft (TCAs), a modified version of the Boeing 707-320C, for transporting cargo and passengers. The last TCA was taken out of service at the Component in December 2011. From the start of 2012, a commercial company took over the cargo and passenger transport tasks formerly accomplished by the TCAs.

**Mission**

*Deliver ready, responsive Airborne Early Warning, Battle Management and Command & Control in support of NAC taskings.*

**Roles**

***Airborne Early Warning & Control***

Airspace surveillance and early detection of airborne threats.

***Command & control***

Command and control of military air units during operations and exercises.

***Fighter control***

Control of combat aircraft during operations and exercises.

***SAR support***

Coordination of Search and Rescue operations.

***Airspace control***

Control and coordination of airspace and the aircraft present within it.

***Missile defence***

Control of ground-based airspace defence units.

***Support of maritime operations***

Establishing and providing a radar picture of ongoing activities within a maritime area.

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## Operations

In the course of the E-3A Component's history its E-3A aircraft have accomplished numerous missions in support of operational requirements. These include not only military operations but also the safeguarding of major high-profile events. The Component also employed its Trainer Cargo Aircraft (TCAs) to provide support to humanitarian relief operations. Since March 2014 AWACS are providing surveillance and reconnaissance flights on NATO's Eastern flank in support of NATO's Assurance Measures. These missions enhance NATO's situational awareness and show the solidarity and commitment of NATO's towards its allies. Since October 2016 AWACS improves the counter ISIL coalition's overall air picture by providing surveillance and contributing to airspace management, thereby making the skies safer. These flights are conducted from Forward Operating Base Konya, Turkey.

**Missions supporting military operations**

| Operation | Date of mission | Location |
|---|---|---|
| Anchor Guard, Crescent Guard | 1990-1991 and 2003 | Iraq |
| Sharp Guard, Deny Flight, Deliberate Force, Decisive Endeavour, Deliberate Guard, Allied Force, Joint Guardian | 1992-2004 | Balkan region |
| Agile Genie, Unified Protector | 1992 and 2011 | Libya |
| Eagle Assist | 2001-2002 | USA |
| Active Endeavour | 2009-2016 | Mediterranean region |
| ISAF | 2011-2014 | Afghanistan |
| Support Counter ISIL coalition | 2016-ongoing | Middle East |
| Sea Guardian | 2017-ongoing | Mediterranean |

**Missions safeguarding major high-profile events**

| Event | Date of mission | Location |
|---|---|---|
| International Conference on Afghanistan | 31 March 2009 | The Hague (NL) |
| US President's visit to Germany | 4-5 June 2009 | Germany |
| G-8 summit | 7-11 July 2009 | L'Aquila (Italy) |
| Nobel Prize for Peace | 10-11 Dec. 2009 | Norway |
| Climate Conference | 17-18 Dec. 2009 | Copenhagen (Denmark) |
| European Football Championship | 8-28 June 2012 | Poland |
| Inauguration of King Willem Alexander | 30 April 2013 | Amsterdam (NL) |
| Nuclear Security Summit | 24-25 March 2014 | The Hague (NL) |

**Missions supporting humanitarian relief operations**

| Event | Date of mission | Location |
|---|---|---|
| Hurricane Katrina | Sep-Oct 2005 | USA |
| Earthquake in Pakistan | Oct 2005 | Pakistan |
| Earthquake in Haiti | Jan-Apr 2010 | Haiti |
| Major flooding in Pakistan | Aug-Sep 2010 | Pakistan |

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## The E-3A Component emblem

The E-3A Component emblem features a central field with the NATO star above the image of an E-3A aircraft and three lightning bolts emanating from below it. These elements are superimposed on an orange-yellow background with a portion of a dark blue globe beneath.

The NATO star symbolizes the multinational nature of the operational and supporting workforce of NATO's first international operational flying unit.

The image of the E-3A depicts the aircraft performing surveillance taks in order to provide early warning or accomplish battle management tasks in case of imminent danger. The lightning bolts portray the transmission of information with the aid of 21st century communications technology.

The curving globe symbolizes the E-3A Component's worldwide role as an element of the NATO Reaction Force (NRF), an operational unit that can be deployed within five days. The striking orange-to-yellow upper background represents sunrise and symbolizes the new era of the Component's recently modernized fleet of aircraft.

The emblem as a whole represents a modernized NATO AWACS fleet in its worldwide role as an important NATO asset for maintaining peace and security.

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# NATO Air Base Geilenkirchen

NATO Air Base Geilenkirchen – home of the NAEW&CF E-3A Component – is located four kilometres west of Geilenkirchen in Germany, adjacent to the Netherlands border.

The air base, which is surrounded by farmland and a natural woodland reserve, was constructed after World War II by the British armed forces. Known as "Flugplatz Teveren" to the local population, it was used by the British Royal Air Force (RAF) from May 1953 onwards as a base for various fighter squadrons.

RAF flying operations in Geilenkirchen ended in January 1968. The air base was handed over to the German Air Force in March 1968, and in August of that year it became the home of a German missile unit (Flugkörpergeschwader 2) equipped with surface-to-surface missiles of the Pershing type and supported by the US Army 85th Field Artillery Detachment.

Following the decision to use the airfield as the main operating base of the E-3A Component, a large-scale programme of construction work was started in 1980 in order to convert the existing operational and support facilities into suitable accommodation for the E-3A unit. Since then, most of the buildings on base have been renovated to meet present-day standards, and various new buildings have been added.

The most important project at the 620-hectare base was the upgrading of the runway to a length of 3048 metres and a width of 45 metres, together with the construction of new aprons and taxiways and the expansion of the air traffic control tower. An IT building to include the flight simulator and the mission simulator was also constructed. Large-scale renovation and expansion of the four existing hangars and accommodation blocks gave the air base a completely different appearance.

At the start of January 1980 the first E-3A Component personnel arrived at the base to launch the organizational build-up. At the end of 1981 the German missile unit left the base and was relocated in Niederheid, north of Geilenkirchen. Until its deactivation in July 1991, the US Army 85th Field Artillery Detachment remained at the NATO air base.

On 31 March 1982, Germany handed the airfield over to NATO for use as the main operating base of the E-3A Component.

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# The NATO E-3A aircraft

**Engines:** Four TF-33 Pratt & Whitney 100A turbofan engines

**Thrust:** 20,500 lb / 9523.5 kp per engine

**Dimensions:**

***Aircraft***

| | |
|---|---|
| Wing span: | 44.45 m / 145 ft 9 in |
| Fuselage length: | 46.68 m / 152 ft 11 in |
| Height: | 12.70 m / 41 ft 9 in |

***Radar dome:***

| | |
|---|---|
| Diameter: | 9.1 m / 30 ft |
| Thickness: | 1.8 m / 6 ft |
| Height: | 3.35 m / 11 ft |
| Rotation speed: | 1 full rotation every 10 seconds |

**Speed:** More than 800 km/h – 500 mph

**Operational altitude:** Above 9,150 m / 30,000 ft

**Maximum take-off weight:** 147,429 kg / 325,000 lb

**Fuel capacity:** 89,610 ltr / 70,371 kg
22,768 gallons / 148,000 lb

**Endurance:** More than 10 hrs. All E-3A aircraft have air refuelling capability.

**Crew:**

| ***Flight deck crew*** | ***Mission crew*** |
|---|---|
| 2 pilots | 1 tactical director |
| 1 navigator | 1 fighter allocation officer |
| 1 flight engineer | 2 weapons controllers |
| | 1 passive controller |
| | 1 surveillance controller |
| | 3 surveillance operators |
| | 1 communications technician |
| | 1 radar technician |
| | 1 system technician |

*These numbers may vary, depending on specific operational requirements*

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**Armament:** None

**Radar coverage:** An E-3A aircraft flying at an altitude of 9,150 m can monitor an area of more than 312,000 sq km. Three E-3As with overlapping orbits can cover the entire area of Central Europe. An E-3A can detect low-flying targets within 400 km or 215 nautical miles, and medium-altitude targets within 520 km or 280 nautical miles.

**Aircraft manufacturer:** The Boeing Company, Seattle, Washington, U.S.A.

**Operational bases:**

Main Operating Base (MOB)
Geilenkirchen, Germany

Forward Operating Bases (FOBs)
Konya, Turkey
Aktion, Greece
Trapani, Italy

Forward Operating Location (FOL)
Ørland, Norway

**Cost per aircraft:** 70 million U.S. dollars (as of June 1977)


**Modernization programmes**

NATO's E-3A fleet is among the most modern of its kind. Since the E-3A Component was established various modernization programmes have been executed for the upgrading of communications, navigation and radar equipment. In addition, all the operator consoles have been modified to include colour displays.

Fourteen E-3As are currently undergoing cockpit modifications. The most important aspect of these is the replacement of many analogue instruments by a 'glass cockpit'. The navigation equipment is also being modified. This programme of modifications is scheduled for completion before 2018 and means the E-3A will meet the requirements for facing future challenges.