NATO OTAN

Fact Sheet

NATO Airborne Early Warning & Control Force, E-3A Component, Public Affairs Office
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The NATO Airborne Early Warning & Control Force

In the early 1970's, studies directed by NATO's major military commanders showed that an airborne early warning (AEW) radar system would significantly enhance the Alliance's air defence capability. In December 1978 NATO's Defence Planning Committee (DPC) signed a memorandum of understanding to buy and operate a NATO-owned AEW system. With this decision, the member nations embarked on NATO's largest commonly funded acquisition program.

The NATO Airborne Early Warning & Control Force (NAEW&CF) was established in January 1980. It was granted full NATO Command headquarters status by the DPC on 17 October 1980.
Force Command Headquarters is located with Supreme Headquarters Allied Powers Europe (SHAPE) in Mons, Belgium, and is commanded either by a US Air Force or German Air Force Major General on a rotational basis. The Deputy Force Commander is always an RAF Air Commodore.
Force Command reports directly to the Supreme Allied Commander Europe (SACEUR).

Today the NAEW&C Force consists of two operational elements called Components:
The multi–national NATO E-3A Component at Geilenkirchen, Germany, operating 17 Boeing NATO E-3A AWACS (Airborne Warning and Control System) aircraft and the RAF E-3D Component at Waddington in the UK with 7 Boeing E-3D AWACS aircraft manned and operated by RAF personnel exclusively. The E-3D Component declared its Initial Operating Capability on 1 July 1992, thus putting the NAEW&C Mixed Force concept into effect.

Eighteen nations (Belgium, Canada, Czech Republic, Denmark, Germany, Greece, Hungary, Italy, Luxembourg, the Netherlands, Norway, Poland, Portugal, Romania, Spain, Turkey, United Kingdom and the United States) participate in the NAEW&C Force program, with 16 of them providing personnel to the NATO E-3A Component (the UK flies its own E-3 system and Luxembourg does not provide personnel). The E-3As have been operating from the Main Operating Base (MOB) at Geilenkirchen since February 1982. There are four additional bases: Forward Operating Bases (FOBs) are located in Trapani (Italy), in Aktion (Greece) and in Konya (Turkey). There is also a Forward Operating Location (FOL) in Oerland (Norway).

The E-3A/D normally operates at an altitude of 30,000 feet. When established at this altitude, a single E-3A/D can continuously survey the airspace within a radius of more than 400 km of the aircraft and, using digital data links, exchange information with ground- and sea-based commanders. Thus an E-3A/D positioned well within friendly airspace can provide early warning information on both low-flying and high-altitude aircraft operating over the territory of a potential aggressor. While the Force's principal role is air surveillance, it can also conduct tactical battle management functions such as support and control of friendly aircraft involved in offensive and defensive counter air operations, close air support, battlefield air interdiction, combat search and rescue, reconnaissance, tactical air transport and air to air refuelling missions.

The E-3A/D's multi-mode radar is able to separate moving targets from ground clutter by use of the so called 'Doppler' principle. Consequently the E-3A/D crews are able to detect and track low-flying aircraft, and they are also capable of operating in the maritime mode, which enables the radar to detect and track ships.

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The E-3A Component

The E-3A Component is one of two operational elements of the NATO Airborne Early Warning & Control Force. It is NATO's only multinational operational flying unit, making it unique in military history. The Component's mission comprises the entire spectrum of tactical command and control in support of effects-based operations throughout the world at the direction of the competent NATO Commanders.

The actual build-up of the E-3A Component started in January 1980; in October 1980 it was granted the status of a NATO International Military Headquarters by 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 reached Full Operational Capability by the end of 1988.

The Component consists of five main functional areas (Headquarters, Operations Wing, Logistics Wing, Training Wing and Information Technology Wing) as well as other normal staff functions. Each of these major units is commanded by a colonel from a specific NATO nation.

The position of the Component Commander alternates between a German and American Brigadier General. Overall integrated manning of the Component consists of 2,900 multinational military and civilian personnel. This figure includes military and civilian personnel in support functions, such as the engineering support teams of the Bundeswehr Service Centre, the national support units and morale and welfare activities.

Seventeen E-3A aircraft are assigned to the Component. Normally, only a certain number of the E-3As are at NATO Air Base Geilenkirchen at any given time.
The remainder are deployed to the Component's Forward Operating Bases in Aktion (Greece); Trapani (Italy); and Konya (Turkey); and to the Forward Operating Location at Oerland (Norway); or to other allied airfields. Each of the forward operating facilities is located on a national installation.
The Component has approximately 20 military and civilian personnel at each site; they are NATO personnel assigned to the Component, but all are from the respective host nations.

Thirty multinational aircrews from 16 out of NATO's 28 nations are assigned to the Component's three operational E-3A squadrons. The Training Wing has a flying squadron as well, the Aircrew Training Squadron.

NATO's three Trainer Cargo Aircraft (TCA) were used from 1985 to 2011 for flight crew training and for transporting cargo. The aircraft, a modified Boeing 707-320C, could be configured for all-passenger or all-cargo use, or in a combined setup for carrying both cargo and passengers.

The first TCA was retired in August 2010 (to the USA), the second in September 2011 (to Germany) and the last one in December 2011 (to the Netherlands).

TNT Airlines SA has been contracted to provide cargo and passenger services, starting January 2012.

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The E-3A Component emblem

The distinctive insignia of the NAEW&C Force Command E-3A Component features a central field with a NATO star above the prominent image of an E-3A aircraft and three lightning bolts emanating from below it; these elements are superimposed over a dark blue globe with an upper background fading from orange to yellow.

The NATO star symbolizes the Alliance members, who operate and support the E-3A Component, NATO's first multinational flying unit. The prominent image of the E-3A depicts the aircraft on station, performing surveillance and command as well as control duties. The lightning bolts portray the rapid dissemination of information through the 21st century communication technology.

The globe curving across the horizon represents NATO's global role within the NATO Reaction Force (NRF). The striking orange-to-yellow gradient illustrates the early dawn just before sunrise, as a figurative reference to the start of the Component's new era with the recently modernized NATO AWACS fleet.

The entire insignia portrays a modernized NATO AWACS in a global role and as an important NATO asset for maintaining peace and security.

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Early history of NATO Air Base Geilenkirchen

NATO Air Base Geilenkirchen, home of the NATO Airborne Early Warning & Control Force Command E-3A Component, is located four kilometers west of Geilenkirchen in the Federal Republic of Germany, adjacent to the Netherlands border.

The Component's Main Operating Base (MOB) was handed over to NATO by the host Nation on 31 March 1982.

Surrounded by farmland and a natural woodland preserve, the base was originally built by the Royal Air Force after World War II. It was known as RAF Geilenkirchen (or Flugplatz Teveren by the local population). The British used the facilities as a fighter installation for various RAF fighter squadrons from May 1953 until January 1968.

Flying operations at Geilenkirchen ended in January 1968 and the installation was handed over to the German Air Force in March 1968. In August that same year, it became the home of the German Surface-to-Surface Missile Wing Number 2 equipped with Pershing missiles and supported by the U.S. Army's 85th Field Artillery Detachment.

After the decision to make the base the E-3A Component MOB, a major construction program began in 1980 to modify operational and support facilities to accommodate the E-3A unit. Since then, the majority of the buildings on base have been renovated to present day standards and numerous new buildings have been erected.

Major construction on the base, which covers 620 hectares/1,530 acres, included a new 3.4 kilometer/10,000 feet runway that is 45 meters/150 feet wide, as well as aprons and taxiways, a control tower, the Information Technology Wing building (which also houses the flight and mission simulator facilities), on-base housing and major renovation of the four existing hangars.

In January 1980 the first Component personnel started arriving at the base. By the end of 1981, the German Pershing Wing had left the base and moved to Niederheid, north of Geilenkirchen, while the U.S.Army's 85th Detachment remained on base until being de-activated in July 1991.

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The NATO E-3A Aircraft

Primary function: Airborne surveillance, command, control and communications

Power plant: four TF33 Pratt & Whitney 100A turbofan engines

Thrust: 20,500 lbs. Each engine/9.523,5 kp each engine

Dimensions:

Aircraft
wingspan: 44.45 m / 145 ft 9 in
length: 46.68 m / 152 ft 11 in
height: 12.70 m / 41 ft 9 in

Rotodome
diameter: 9.1 m / 30 ft
thickness: 1.8 m / 6 ft
height: 3.35 m / 11 ft
rotation: once every 10 seconds

Speed: more than 800 kph / 500 mph

Operational altitude: above 9,150 m / 30,000 ft

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

Fuel capacity: 89,610 liters / 70,371 kg
22,768 gallons / 148,000 lbs

Endurance: more than 10 hours
all E-3A aircraft are air-refuelable

Armament: none

Aircrew:

Flight Crew
2 pilots
1 navigator
1 flight engineer

Mission Crew
1 tactical director
1 fighter allocation officer
2 weapons controllers
1 passive controller
1 surveillance controller
3 surveillance operators
1 communications technician
1 radar technician
1 system technician

Total number can vary for a specific mission.

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Radar coverage: One E-3A flying at 30,000 ft / 9,150 m has over 312,000 km^2 in its field of view. Three E-3As in overlapping orbits can provide complete coverage 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.

Prime contractor: The Boeing Company, Seattle, Washington, United States.

Locations:

Main Operation Base (MOB)
Geilenkirchen, Germany

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

Forward Operating Location (FOL)
Oerland, Norway.

Cost per aircraft: 70 million US dollars (June 1977)

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NATO E-3A Modernization Program

In 1987 NATO commanders accepted the proposal for a comprehensive modernization program for the NATO E-3A AWACS fleet. Several years later, the participating nations agreed to fund this program. The ongoing improvements to the communication, navigation, console and radar equipment started in 1991 and the NMT retrofit was completed in December 2008.

Dec 1978	NATO decision to acquire a fleet of 18 NATO E-3A AWACS aircraft
1979-1985	Establishment of the NATO E-3A fleet. (System technology of the mid–1970s)
1987	Major NATO commanders agreed to a NAEW System Improvement Plan (NASIP) containing near-, mid- and longterm operational requirements for the modernization of the NATO E-3A fleet
1990	NAPMO Programme nations agreed to fund the NATO E-3A near-term modernization program
1991-1999	Implementation of the nearterm programme: The first phase, consisting of computer memory upgrade, anti-jam UHF communications, operator consoles with coloured displays, new data link system (Link 16) and Electronic Support Measures (ESM) equipment, was completed in 1997 and the second phase, the Radar System Improvement Program (RSIP), was completed in January 2000
1994	Major NATO commanders and NAEW Force Command reassessed and prioritised the mid-term operational requirements
1997	Approval of the NATO E-3A Mid-Term Modernization Program by the NAPMO Board of Directors
1998-2007/8	Implementation of the Mid Term Modernization Program consisting of nine major projects: • improved human – machine interface • multi-sensor integration • automated digital communication switching • navigation system improvement (GPS/GINS) • wide spectrum VHF radios • UHF satellite communications • additional display consoles • new IFF transponder • new IFF interrogator
Dec 2008	NMT Modernization Program completed, including the retrofit of 17 E-3As and two Mission Simulators. Total cost: 1.6 billion US dollars.