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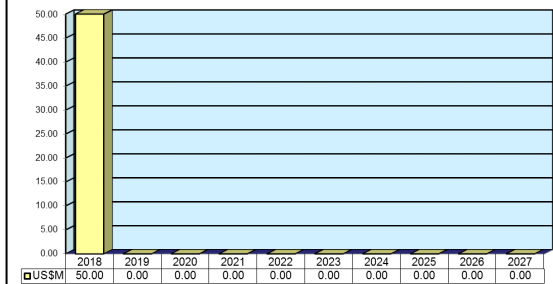
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NATO Alliance Ground Surveillance

Outlook

- FI projects that at least \$1.7 billion will be spent on the systems comprising the NATO AGS system
- It appears that the NATO Alliance Ground Surveillance system is fully operational
- With the NATO AGS up and running, FI will archive this report in 2019

**Funding Forecast
2018-2027**



Orientation

Description. The North Atlantic Treaty Organization (NATO) Alliance Ground Surveillance (AGS) program is developing an airborne ground surveillance system to be owned and operated by NATO.

The NATO AGS system will be composed of multiple systems (a system of systems). The focus of this report is on the NATO AGS system as a whole rather than the individual systems that comprise it.

Sponsor

North Atlantic Treaty Organization (NATO)

NATO Alliance Ground Surveillance

Management Agency

NATO HQ

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Status. The NATO AGS program is in the acquisition phase.

Application. Airborne ground surveillance.

Price Range. Forecast International estimates the cost of the NATO AGS program to be between \$1.7 billion and \$2 billion.

Contractors

Prime

Northrop Grumman Corp	http://www.northropgrumman.com , 2980 Fairview Park Dr, Falls Church, VA 22042 United States, Tel: + 1 (703) 280-2900, Email: onewebmaster@ngc.com , Prime
Airbus Defence and Space	http://www.intelligence-airbusds.com/ , Willy Messerschmitt St, Ottobrunn, Germany, Tel: + 49 0 89 6070, Fax: + 49 89 607 26481, Program Participant
General Dynamics Mission Systems - Canada	http://www.gdcanada.com , 1941 Robertson Rd, Ottawa, Ontario, Canada, Tel: + 1 (613) 596-7000, Fax: + 1 (613) 596-7396, Email: info@gdcanada.com , Program Participant
Indra Sistemas SA	http://www.indracompany.com , 35 Bruselas Ave, Alcobendas, Madrid, Spain, Tel: + 34 91 480 50 00, Fax: + 34 91 480 50 80, Email: indra@indracompany.com , Program Participant
Leonardo SpA	http://www.leonardocompany.com/en , Piazza Monte Grappa, 4, Rome, Italy, Tel: + 39 06 324 731, Fax: + 39 06 320 8621, Program Participant (RDT&E)
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Contractors are invited to submit updated information to Editor, International Contractors, Forecast International, 22 Commerce Road, Newtown, CT 06470, USA; rich.pettibone@forecast1.com

Technical Data

The NATO Alliance Ground Surveillance system will provide NATO commanders with a comprehensive picture of what is happening on the Earth's surface (the ground) before, during, and, if necessary, after NATO operations. Specifically, the NATO AGS system will enable NATO to perform persistent surveillance over wide areas from high-altitude, long-endurance (HALE) unmanned air platforms operating at considerable standoff distances. Using advanced radar sensors, the NATO AGS system will continuously detect and track moving objects throughout the observed areas, as well as provide radar imagery of areas and stationary objects.

The NATO AGS system will be an integrated system consisting of an air segment and a ground segment.

Air Segment. The system's air segment will be based on the Block 40 version of the U.S. RQ-4B Global Hawk HALE unmanned aerial vehicle. The UAV will be equipped with the Multi-Platform Radar Technology Insertion Program (MP-RTIP) ground surveillance radar sensor and an extensive suite of line-of-sight and beyond line-of-sight long-range, wideband datalinks.

Note: For detailed information on the RQ-4B Global Hawk, see Forecast International's "RQ-4A Global Hawk/MQ-4C Triton" report in the *Unmanned Vehicles Forecast - Airborne Systems*. For information on the MP-RTIP ground surveillance sensor, see the "ZPY-2

MP-RTIP" report in Forecast International's Airborne Electronics, Electronics Systems, AN Equipment, and Radar Forecasts.

Ground Segment. The system's ground segment will provide an interface between the NATO AGS core system and a wide range of command, control, intelligence, surveillance, and reconnaissance (C2ISR) systems to interconnect with and provide data to multiple deployed and non-deployed operational users, including reach-back facilities remote from the surveillance area.

The primary ground segment will consist of a number of ground stations in different configurations (such as mobile and transportable) that will provide datalink connectivity, data processing, and exploitation capabilities, as well as interfaces for interoperability with C2ISR systems. The NATO AGS system core ground segment will also include dedicated mission support facilities located at the NATO AGS main operating base and ground stations for flight control of the UAVs. The base will be located at Sigonella air base, Italy.

Supplementation. The NATO AGS core system will be supplemented by the interoperable airborne standoff ground surveillance systems of NATO countries, thus forming a system of systems.

NATO Alliance Ground Surveillance

Program Review

The NATO AGS program began in 1995, when the NATO defense ministers agreed that "the Alliance should pursue work on a minimum essential NATO-owned and -operated core capability, supplemented by interoperable national assets."

Initially, the NATO AGS system aimed to develop a pooled NATO asset, consisting of both manned and unmanned platforms as well as ground control stations in various configurations. The manned platform was to be based on the Airbus A321 commercial airliner, and the unmanned platform on the Global Hawk HALE UAV. Both the manned and unmanned platforms were to carry the Transatlantic Cooperative AGS radar.

In November 2007, however, due to declining European defense budgets, NATO chose to move forward with a UAV-only solution based on an off-the-shelf RQ-4B Global Hawk and the MP-RTIP. In September 2008, a Request for Proposals (RFP) was released. Prime contractor Northrop Grumman Corporation identified a transatlantic team made up of industries from NATO AGS participating nations to provide this ISR capability.

In January 2009, the North Atlantic Council selected Sigonella air base as the location for the NATO AGS system's main operating base, which will host the UAVs and the ground segment (flight control capabilities and command & control systems). On February 20, 2009, the NATO nations participating in the NATO AGS program started the process of signing the program's Memorandum of Understanding (MoU).

In September 2009, the 15 nations participating in the NATO AGS program completed the signature process. The MoU, along with the AGS Charter, sets the legal, organizational, and budgetary framework for the NATO AGS program and establishes the NATO AGS Management Organization (NAGSMO) and the NATO AGS Management Agency (NAGSMA) as the entities that will be in charge of the program. The NAGSMA conducts negotiations with industry on behalf of the participating nations and is responsible for the acquisition of the NATO AGS core capability.

In the first week of June 2010, Northrop Grumman formally submitted its first proposal for the NATO AGS system. In March 2011, the company submitted its final proposal for the NATO AGS core capability.

In May 2012, Northrop Grumman announced it had signed a \$1.7 billion (EUR1.2 billion) contract to provide the NATO AGS system's core capability.

Under the contract, Northrop Grumman will provide, operate (initially), and maintain five Block 40 Global Hawk unmanned aircraft equipped with an advanced ground surveillance radar sensor under the MP-RTIP program. Also under the contract, European industry contributors will deliver transportable ground stations suitable for in-theater support directly to commanders of deployed forces, the mobile ground stations to moving operations, and the remote workstations to higher echelon commands.

In July 2012, SELEX Elsas received a subcontract from SELEX Galileo to provide a wideband datalink line-of-sight subsystem for the NATO AGS system. The WBDL-LOS will be integrated on board the Global Hawk HALE UAV, as well as in various stations of the NATO AGS ground segment. The WBDL-LOS will provide broadband, bidirectional data transfer among these components.

On March 21, 2013, at the meeting of the NAGSMO Board of Directors, Poland announced it would formally rejoin the AGS core nations procuring the system for NATO. At the meeting of the NAGSMA Investment Committee held on June 18, 2013, authorization was given for 10 civil works projects to provide all required facilities for the establishment of the NATO AGS main operating base in Sigonella.

In December 2013, Northrop Grumman started production of the first NATO AGS Block 40 Global Hawk aircraft, enhanced to meet NATO operational requirements.

On November 5, 2015, Airbus Defence and Space rolled out the Mobile General Ground System for the NATO AGS at its facilities in Immenstaad, Germany. On December 3, 2015, Finmeccanica-Selex ES rolled out the Transportable General Ground System at facilities in Torino, Italy. Both assets are being integrated into the NATO AGS core system segment located in Sigonella.

On December 19, 2015, Northrop Grumman and NAGSMA celebrated the achievement of a much-anticipated milestone. Leaving from Palmdale, NATO's first AGS aircraft successfully executed a comprehensive range of tests before landing at Edwards Air Force Base.

In July 2016, Northrop Grumman announced the NATO AGS system would be presented to heads of state and senior NATO and national officials at the 2016 Warsaw Summit. The AGS summit display was the first time the deployable elements of the system came together.

NATO Alliance Ground Surveillance

Both air and ground elements have entered into the formal test phase of their development process. The aircraft's flight test program is underway at the Edwards Air Force Test Center, California. Preparations were made at the AGS Main Operation Base in Sigonella,

Sicily, to prepare for the arrival of the first of the five aircraft later that year. According to Northrop Grumman, this capability will become operational in the 2017/2018 timeframe.

Funding

The following nations are participating in the NATO AGS program: Bulgaria, the Czech Republic, Denmark, Estonia, Germany, Italy, Latvia, Lithuania, Luxembourg, Norway, Poland, Romania, Slovakia, Slovenia, and the United States. Forecast International assumes that these 15 nations, along with the North Atlantic Treaty Organization, are financing the acquisition of systems that will compose the NATO AGS system.

Forecast International estimates the cost of the NATO AGS program to be between \$1.7 billion and \$2 billion.

Contracts/Orders & Options

Contractor	Award (\$ millions)	Date/Description
Northrop Grumman	29.5	Apr 2005 – Contract to study the technological and financial risks involved in developing the NATO AGS system with the goal of reducing those risks.
Northrop Grumman	1,700.00	May 2012 – Contract to provide the core capability for the NATO AGS system. Under the contract, Northrop Grumman will provide, operate (initially), and maintain five Block 40 Global Hawk unmanned aircraft equipped with an advanced ground surveillance radar sensor under the MP-RTIP program. Also under the contract, European industry contributors will be responsible for development and delivery of the transportable ground stations, mobile ground stations, and remote workstations.

Timetable

Month	Year	Major Development
	1995	NATO defense ministers agree that "the Alliance should pursue work on a minimum essential NATO-owned and -operated core capability, supplemented by interoperable national assets"
Apr	2002	Northrop Grumman-led contractor team submits proposal for development and production of NATO AGS system
Apr	2004	NATO chooses Northrop Grumman team to design and develop NATO AGS system
Apr	2005	NATO C3 agency awards Northrop Grumman team a contract to study the technological and financial risks involved in developing NATO AGS system
Oct	2005	Northrop Grumman team completes NATO AGS system risk-reduction study
Nov	2007	Due to declining European defense budgets, NATO moves forward with a UAV-only NATO AGS program based on an off-the-shelf Global Hawk RQ-4B and the MP-RTIP
Sep	2008	NATO releases an RFP; Northrop Grumman identifies a team made up of industry from nations participating in AGS program to provide ISR capability
Feb	2009	NATO participants start process of signing MoU
Sep	2009	NATO participants complete signing of MoU
Mar	2011	Northrop Grumman submits its final proposal for the NATO AGS core capability
May	2012	Northrop Grumman signs \$1.7 billion contract to provide core capability for NATO AGS system
Mar	2013	Poland to formally re-join the AGS core nations procuring the NATO AGS system
Dec	2013	Northrop Grumman starts production of the first NATO AGS Block 40 Global Hawk aircraft, enhanced to meet NATO operational requirements
Dec	2015	Leaving from Palmdale, NATO's first AGS aircraft successfully executed a range of tests before landing at Edwards Air Force Base
	2018	NATO Alliance Ground Surveillance system fully operational

NATO Alliance Ground Surveillance

Worldwide Distribution/Inventories

The NATO Alliance Ground Surveillance system will be available to NATO member countries. NATO AGS system technology cannot be exported to non-NATO nations.

Forecast Rationale

The NATO Alliance Ground Surveillance (AGS) program has developed an airborne ground surveillance system that is owned and operated by NATO. The NATO AGS system is composed of multiple systems (a system of systems).

FI projects that the 15 nations participating in the NATO AGS program will spend at least \$1.7 billion on the systems that will comprise the AGS system. NATO AGS program funding is being driven by the need to provide NATO commanders with a picture of what is occurring on the Earth's surface before, during, and after NATO operations.

The NATO AGS system appears to be fully operational.

The NATO AGS system was presented to heads of state, NATO officials, and hundreds of attendees at the 2016 Warsaw Summit. The summit, held on July 8 and 9, 2016, represented the first time the aircraft model and the operational mobile and transportable ground stations were displayed together. The display came only

a few months after the aircraft's first flight and in advance of the system's delivery to the main operating base in Sigonella, Sicily.

The first fully NATO-owned and operated system expands NATO's joint intelligence, surveillance, and reconnaissance capability, and supports a full range of NATO missions, including protection of ground troops and civilian populations, border control and maritime safety, crisis management, and humanitarian assistance in natural disasters.

The full NATO AGS system consists of air, ground, mission operations and support elements, performing all-weather, persistent wide area terrestrial, and maritime surveillance in near real-time.

A derivative of the wide area surveillance Global Hawk, the unmanned aircraft has the ability to fly for up to 30 hours at a time.

With the NATO AGS up and running, FI will archive this report in 2019.

Ten-Year Outlook

ESTIMATED CALENDAR YEAR PROCUREMENT FUNDING (in millions US\$)												
Designation or Program		High Confidence				Good Confidence			Speculative			
	Thru 2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	Total
MFR Varies												
NATO Alliance Ground Surveillance (AGS) Military <> Multi-agencies <> NATO												
	1650.00	50.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	50.00
Total	1,650.00	50.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	50.00