

# Q-4 ENTERPRISE NEWS

Volume IV, Issue 3

A Quarterly Newsletter

December 2011

## South Korea Sets Sights on Global Hawk

*Northrop Grumman Korean Industry Partners Sign MOUs*

**N**orthrop Grumman has recently signed key memoranda of understanding (MOU) with four South Korean companies as it anticipates a contract from South Korea for four RQ-4B Block 30 Global Hawk unmanned aircraft systems (UAS).

The MOUs were signed with Korean industry partners Dreaming and Challenging Company, FIRSTEC, Korea Jig and Fixture, and Korean Air Lines during the 2011 Seoul International Aerospace & Defense Exhibition, also known as the Seoul Air Show, at the Seoul Airport in South Korea.

"These agreements will enable the Northrop Grumman Korean Global Hawk industry team to manufacture various structural components, harnesses, cable assemblies, sheet metal, machinery, tubing and composites as integral suppliers to the RQ-4 Global Hawk production line," said Gregory Thomas, global supply chain program manager for Global Hawk international programs. "The team will also collaborate on future UAS projects."

A part of the 30 percent offset requirement of a prospective Global Hawk sale to South Korea, the agreements will eventually culminate with a memorandum of agreement with the Defense Acquisition Program Administration, South Korea's defense procurement agency, as the acquisition agency.

According to Rick Weir, campaign leader for the Global Hawk Korea program, the MOUs create flexibility for certain parts of the aircraft to be made in South Korea. However, the production of the Global Hawk aircraft and its associated ground systems will take



**Senior leaders from Korean Air Lines sign an MOU with Northrop Grumman executives during the 2011 Seoul Air Show in South Korea. Korean Air Lines is one of four Korean industry partners who recently signed an MOU with Northrop Grumman. Other partners include Dreaming and Challenging Company, FIRSTEC, and Korea Jig and Fixture.**

place in the United States. "The MOUs serve as a basis for the burgeoning relationship between the U.S. defense industry and the South Korean government that could result in the acquisition of additional types of aircraft built by Northrop Grumman," he said.

"Global Hawk can play a vital role in the defense of the peninsula and is the only capability to meet Korean and bilateral intelligence, surveillance and reconnaissance requirements," added Drew Flood, program manager for the Global Hawk Korea program. "We now look forward to promoting a good working relationship with our Korean

industry team members as the Korean Global Hawk program moves forward."

Flying up to 60,000 feet for more than 32 hours, the U.S. Air Force Block 30 Global Hawks flew relief support missions in Japan in response to the 9.0-magnitude earthquake and tsunami, and in support of the NATO-led coalition effort in support of Operation Odyssey Dawn over Libya. The Global Hawk was also used for disaster relief and recovery efforts following the 7.0-magnitude earthquake that struck Haiti in 2010, Hurricane Ike on the Gulf Coast in 2009, and the California wildfires in 2007 and 2008.



# Northrop Grumman-built Block 30 Global Hawks Receive U.S. Air Force Initial Operational Capability Declaration

SAN DIEGO – Aug. 16, 2011 – The U.S. Air Force Air Combat Command has declared that the Northrop Grumman -built unmanned RQ-4 Block 30 Global Hawk has reached its initial operational capability (IOC).

IOC is declared when a development program completes initial operational test and evaluation (IOT&E), and is cleared to support real-time operations.

While IOC was recently declared, the Air Force determined there was a critical need to implement Block 30 Global Hawks earlier this year. The Block 30s were moved to operational status prior to the IOT&E report being released and have provided critical intelligence, surveillance and reconnaissance in support of disaster relief efforts in Japan, NATO operations over Libya and are replacing Block 10 aircraft in Central Command operations.

“The men and women of Northrop Grumman are proud to provide Global Hawk’s unprecedented capabilities to support critical missions all over the world,” said George Guerra, HALE vice president, Northrop Grumman Aerospace Systems.

There are currently nine Block 30 Global Hawks stationed abroad. The Block 30 Global Hawks are currently equipped with the Raytheon enhanced integrated sensor suite (EISS), which includes electro optical/infrared and synthetic aperture radar. Within the next year, the Block 30 aircraft will be reconfigured to perform a multi-intelligence role with the introduction of Northrop Grumman’s Airborne Signals Intelligence Payload (ASIP) with the existing EISS.

# NASA Global Hawk Built by Northrop Grumman Prepares for 2012 Hurricane Missions



NASA Global Hawk in flight.

Photo Courtesy: NASA Dryden

SAN DIEGO – Oct. 24, 2011 – Environmental scientists will utilize the Northrop Grumman -built unmanned NASA Global Hawks as part of the multi-year Hurricane and Severe Storm Sentinel (HS3), a study of the processes that underlie hurricane formation and intensity change in the Atlantic Ocean.

“The high-altitude and long-duration capabilities of NASA’s Global Hawks allow HS3 to sample storms virtually anywhere in the Atlantic and for durations up to three times that of conventional aircraft,” said principal investigator Scott Braun of NASA’s Goddard Space Flight Center in Greenbelt, Md. “Being able to stay over a storm for 15 or more hours allows us to observe storms in ways that were simply not possible before.”

Environmental scientists came together to embark upon a multi-year airborne science investigation of hurricane formation and intensification - or HS3. The scientists prepared for

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## Recent Accomplishments

- First Block 30M with ASIP Delivery
- First Block 40 Delivered to Grand Forks
- For the first time, two Global Hawk aircrafts were delivered on the same day. A Block 30M was delivered to Beale Air Force Base and a Block 40 was delivered to Grand Forks Air Force Base.
- Block 30 Global Hawk Support for Operation Tomodachi and Operational Support to AFRICOM for Odyssey Dawn and Unified Protector
- Total Hours: 66,000+
- Total Combat Hours: 50,000+

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# NASA-Northrop Grumman Global Hawk Team Receives the NASA Group Achievement Award



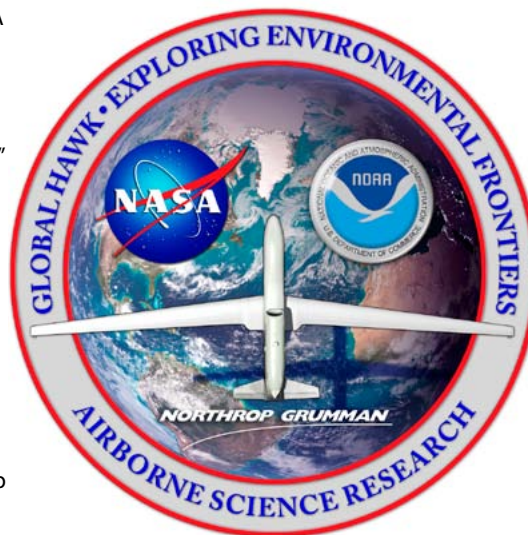
**Northrop Grumman / NASA Team at NASA Dryden Flight Research Center**

SAN DIEGO – August 17, 2011 – The National Aeronautics and Space Administration (NASA) and Northrop Grumman Corporation have received a NASA Group Achievement Award for the successful development of the first civilian use of the Global Hawk system for the NASA science community.

“The strong partnership between NASA and Northrop Grumman enabled the Global Hawk team to recognize the individuals and the benefits of collaboration, reaching new capabilities and discoveries in earth science,” said Scott Winship, Advanced Concepts vice president, Northrop Grumman Aerospace Systems.

In 2007, NASA obtained two Advanced Capability Technology Demonstration Global Hawks from the U.S. Air Force for Environment Science research. In 2008, an agreement was signed between NASA Dryden Flight Research Center and Northrop Grumman Aerospace Systems, Advanced Programs and Technology Division, to operate the aircraft in a partnership known as the Space Act Agreement, sharing equally in the expenses - and employment of the aircraft. A team was put into place at NASA Dryden Flight Research Center at Edwards Air Force Base, Calif., to retrofit, operate and maintain the aircraft for various operations.

This government/industry partnership has been a key enabler to expanding every nation’s access to environmental data related to our world. Flying as high as 65,000 feet for periods of up to 30 hours, Global Hawk provides the NASA science community with a vehicle to explore the



earth’s atmosphere and conduct further critical science missions over remote areas of the globe. The award recognized this innovative partnership and use of a system that provided an unprecedented capability for the NASA airborne science program.

Under the Space Act Agreement, the team has made significant strides to prepare and ready for missions – from developing a new ground control station for Dryden operations to retrofitting the aircraft to meet the specific requirements of planned science missions. In 2010, a NASA Global Hawk flew over the Pacific Ocean as part of the Global Hawk Pacific campaign, operating over the Equator of the Pacific to the North Pole. Later that year, the aircraft was used in the Genesis and Rapid Intensification Process hurricane surveillance missions, which provided extended coverage monitoring changes in hurricane intensity during five different storms in the Southern Caribbean and Western Atlantic.

This year, a NASA Global Hawk was used for the Winter Storms and Pacific Atmospheric Rivers campaign to study atmospheric rivers. Northrop Grumman, under contract with the Defense Advanced Research Projects Agency for the KQ-X program will demonstrate the first high altitude fully autonomous aerial refueling between two NASA Global Hawk unmanned aircraft.

# Unmanned Block 10 Global Hawks Built by Northrop Grumman Complete Air Force Service, Embark Upon New Missions

SAN DIEGO— September 23, 2011 – A U.S. Air Force Block 10 Global Hawk unmanned aircraft, built by Northrop Grumman, completed its last mission in late May. The last Block 10 to fly as an Air Force aircraft was the one with the most flight hours, more than 7,650 with more than 7,000 of those hours flown providing surveillance for our combat troops.

“For many years Block 10 Global Hawks have persistently performed countless missions in support of the warfighter and in support of disaster relief efforts,” said George Guerra, HALE Systems vice president, Northrop Grumman Aerospace Systems. “While the aircraft have concluded their missions and support for the Air Force, they will now support missions for the U.S. Navy.”

The U.S. Air Force (USAF) is transferring its seven Block 10 aircraft for use by other government agencies. Currently, three were transferred to the U.S. Navy to continue to support the Broad Area Maritime Surveillance Demonstration (BAMS-D) program and two

**The U.S. Air Force has deployed Block 30 Global Hawks to support the missions once supported by Block 10 aircraft. The Block 30 Global Hawks currently deployed are equipped with the Raytheon Enhanced Integrated Sensor Suite (EISS). EISS includes electro optical/infrared and synthetic aperture radar. Within the next year, the Block 30 aircraft will be reconfigured to include Northrop Grumman’s multi-intelligence sensor package, the Airborne Signals Intelligence Payload in addition to EISS.**

were transferred for museum static displays.

In August, the Navy awarded Northrop Grumman a \$35.5 million annual contract for continued operations and maintenance for the BAMS-D aircraft.

All seven Air Force Block 10 Global Hawks are fully operational. The Block 10 made its first flight on Sept. 9, 2003. Since then,

Air Force Block 10 aircraft flew 2,141 missions for 35,528 hours, 89 percent of which were in support of combat operations. In addition to combat missions, the aircraft supported disaster response teams addressing forest fires, earthquakes, hurricanes and floods and also provided support to the U.S. counter drug mission.

After DARPA’s initial seven ACTD aircraft, the Air Force contracted with Northrop Grumman to build nine Block 10s as a transitional capability until the larger Block 20 configuration could begin production. Two of the Block 10 aircraft were acquired for the Navy BAMS-D program in the original procurement program.

## NASA Global Hawk (Continue from page 2)

their investigation at NASA Dryden Flight Research Center, Edwards Air Force Base, Calif.

“Global Hawk’s ability to fly as high as 65,000 feet for periods of up to 30 hours provides the science community the opportunity to explore remote areas of the Earth’s atmosphere,” said Scott Winship, advanced concepts vice president, Northrop Grumman Aerospace Systems. “Additionally, Global Hawk’s flexible and mature design allows for modifying the aircraft with varying scientific instruments for different types of science missions.”

Two flight tests were conducted by one of the NASA Global Hawks. The first took place on Sept. 8-9, a 24 hour flight over the Pacific Ocean and the second on Sept. 13-14, a 19.5 hour flight over the Gulf of Mexico. Data were collected from three scientific instruments aboard the Global Hawk: National Oceanic and Atmospheric Administration’s (NOAA) Airborne Vertical Atmospheric Profiling System (dropsonde), the University of Wisconsin’s Scanning High-Resolution Interferometer Sounder (S-HIS), and the High Altitude Monolithic Microwave Integrated Circuit Sounding Radiometer (HAMSR.)

NOAA’s dropsonde dispenser is located in the tail of the Global Hawk. The dropsondes are released from the aircraft into the atmosphere to collect data as it falls to the ground or ocean. The S-HIS mounted in the Global Hawk’s belly takes measurements of the atmosphere’s temperature and water vapor profiles. HAMSR provides measurements that are used to determine the 3-D distribution of temperature, water vapor, and cloud-liquid water in the atmosphere.

In 2010, a NASA Global Hawk flew over the Pacific Ocean as part of the Global Hawk Pacific campaign, operating over the Equator to the North Pole. Later that year, the aircraft was used in the Genesis and Rapid Intensification Processes, hurricane surveillance missions which provided extended coverage monitoring changes in hurricane awestern Atlantic. In February-March 2011, NASA flew an atmospheric science payload suite on long duration Global Hawk flights over winter storms in the Pacific and Arctic under a project called Winter Storms and Pacific Atmospheric Rivers.



Photo Courtesy: NASA Dryden