

## RQ-4A Global Hawk Unmanned Aircraft System description

**a. Aircraft type:** The UAS that will be used for this activity is a US Navy RQ-4A UAS manufactured by Northrop Grumman Corporation, Inc.

**b. Control Station:** The Global Hawk Maritime Demonstration Unmanned Aircraft System (GHMD UAS) system is comprised of the air vehicle, two Launch and Recovery Elements (LRE) Ground Stations (GS), and one Mission Control Element (MCE) GS. The GS (with at least one LRE) will be situated in a compound adjacent to a building near the take-off location during flight operations at (b) (3). The UAS pilot will operate the RQ-4A (GH) air vehicle through the GS only. The LRE is used for launch and recovery of the air vehicle at the launch and recovery site (for the purposes of this COA the launch and recovery site will be (b) (3)). The MCE is primarily for control of the air vehicle during mission operations, and down load of mission payload data products (for the purposes of this COA the MCE will be located at (b) (3)). Both control stations can control the operation of the GHMD UAS in-flight with line-of-sight (LOS) and beyond line-of-sight (BLOS) links. The pilot, through the GS command and control link, can manually maneuver the GH air vehicle horizontally or vertically in real-time through the GS computers. RQ-4A responds to override heading and /or altitude commands from the pilot (b) (3).

Positive control of the RQ-4A is assured at all times through multiple links as depicted below:

Range	Link	Purpose	Location	
LOS <sup>1</sup>	(VHF/UHF)	ATC Voice at operating airfield	LRE	-
LOS	TCDL	Nose camera data	LRE	-
LOS	UHF	AV C2, health, & status	LRE	-
LOS	CDL (Ku & X)	AV C2, health, & status, sensor data, V/UHF Voice	-	MCE
BLOS	INMARSAT	AV C2	LRE	MCE
BLOS	UHF SATCOM	AV C2	LRE	MCE
BLOS <sup>2</sup>	Ku SATCOM	AV C2, health, & status, sensor data, UHF Voice	-	MCE

<sup>1</sup> LOS Voice communications are direct transmissions from the LRE to the controlling airport ATC and do not go through the UAS

<sup>2</sup> BLOS Voice communications are routed from the MCE and relayed through a spaced-based satellite, and ultimately through the UAS to the affected ATC control facility.