

		ASN	2007-AHQ-26-COA
		Case Status	EXP RED
		Date Created	06/26/2007
		Date Submitted	08/13/2007
Proponent Organization		Sponsor	NOAA Unmanned Aircraft Systems Working Group
		Attn Of	(b) (6)
		Address	P.O. Box 273, Mail Stop 4830A
		Address2	NASA Dryden Flight Research Center
		City	Edwards
		State	CA
		Postal Code	93523
		Telephone	(661) 276-7421
		Email	(b) (6)
Declaration		Declaration(a)	Yes
		Declaration(b)	Yes
Point of Contact		Representative	(b) (6)
		Address	1125-B Ala Moana Blvd.
		Address2	
		City	Honolulu
		State	HI
		Postal Code	96814
		Telephone	(808) 983-3733
		Email	(b) (6)
Operational Description	Requested Effective Period	Beginning	
		End	
		Light out operation	No
		VFR operation	Yes
		IFR operation	No
		Day operation	Yes
		Night operation	No
		Program Executive Summary	<p>(revised 07/10/2007)</p> <p>Synopsis: An Unmanned Aircraft System (UAS) will provide an onsite remote aerial perspective to aid vessels tasked with the recovery of derelict fishing gear.</p> <p>Objective: Enhance efficiency of at-sea surveys for marine debris by utilizing a ship-based UAS to identify marine debris targets for open-ocean recovery or attachment of satellite-tracked marker buoys.</p> <p>Background: The concept of efficiently and cost effectively locating and removing derelict fishing gear at-sea, prior to extensive ecological damage, has been proposed for many years. Until recently, this has not been possible due to the high costs associated with reliably locating the debris in the open ocean. To date, the GhostNet project has successfully demonstrated the ability to detect open-ocean marine debris sites using anomaly detection imaging capabilities aboard low-flying aircraft. These aircraft are directed to likely debris accumulation zones determined by using satellite-derived oceanographic products. In addition, the project has utilized low cost satellite-tracked drifter buoys to successfully track the movement of derelict fishing gear in many areas of the Pacific. Based on these GhostNet tools, the first generation Debris Likelihood Maps of the North Pacific Subtropical Gyre have been developed.</p>
		Operational Summary	<p>(revised 8/7/2007)</p> <p>The Unmanned Aircraft (UA) would provide an onsite remote aerial perspective to aid vessels tasked with the recovery of derelict fishing gear and other marine debris. The NOAA research vessels OSCAR ELTON SETTE or HI'I ALAKAI would act as the support vessel. The UA would be deployed (hand launch) from the ship and monitored/piloted by a shipboard operator. The location of marine debris sites would be identified during the flight using streaming video and anomaly-detection software, coupled with known flight path data. At the conclusion of each survey flight, the aircraft would complete a water landing and be recovered by personnel on a small boat.</p> <p>The shipboard and UAS surveys for marine debris will be conducted in the area of the Pacific Ocean known as the subtropical convergence zone. Debris Likelihood Maps (derived from satellite remotely-sensed data and information on oceanographic features) will be used for survey planning. Operations will be conducted within the North Pacific Subtropical Gyre north of Pearl and Hermes Atoll, Northwestern Hawaiian Islands (NWHI) Marine National Monument. Operations may also occur in the NWHI Monument. The airport manager at Midway Island is aware of the anticipated UAS flights and formal coordination will be via NOTAM filed with Honolulu Flight Services. Maps of the operational area are included as attachments.</p> <p>A typical flight will involve launch from the ship, flying a pre-defined survey pattern, water landing, and recovery by small boat. The altitude for all flights will not exceed 3000 feet above sea level. The duration of each flight is anticipated to be less than 2 hours and multiple flights per day will be conducted during daylight hours.</p> <p>Additional aerial survey operations for marine debris may be conducted around the remote and uninhabited Pearl and Hermes Atoll in the Northwestern Hawaiian Islands Marine National Monument.</p>
	Location	State	HI
		County	Honolulu
		Nearest Airport	HENDERSON FIELD
		AOR	Hawaii

	Class Of Airspace	Class-A	
		Class-B	
		Class-C	
		Class-D	
		Class-E	
		Class-G	
System Description		Aircraft Type	
		Aircraft Type And Model Description Attachment	1
		Control Station Attachment	1
		Communications System Attachment	1
		List Certified Components (TSO) Attachment	1
		Other Attachment	0
Performance Characteristics		Climb Rate (feet/Minute)	500
		Descent Rate (feet/Minute)	500
		Turn Rate (Degrees/Second)	5
	Cruise Speed	Maximum	70
		Minimum	30
		Approach Speed	30
	Operating Attributes	Maximum MSL	3000
		Minimum MSL	500
		Gross Takeoff Wt	10.0
		Launch/Recovery Attachment	1
Airworthiness		FAA Type Certificate	
		If No FAA Certificate (Public Aircraft Only) Attachment	1
Procedures		Lost Link/Mission Procedures Attachment	1
		Lost Communications Procedures Attachment	1
		Emergency Procedures Attachment	2
Avionics/Equipment		Equipment Suffix Type	X
		GPS	Yes
		Moving map indicator (Command Station)	Yes
		Tracking capability	Yes
		TCA/MCAS	No
		ELT	No
	Transponder	Transponder	No
		On	
		Off	
		Standby	
		Ident	
		Mode S	
		Mode C	
		Transponder Retuneable in Flight	
Lights		Landing	No
		Position/Navigation	No
		Anti-collision	No
		Infrared ( R)	No
Spectrum Analysis Approval		Data Link	No
		Data Link Attachment	0
		Control Link(s)	No
		Control Link Attachment	0
		Operations utilizing Radio Control (R/C) frequencies as described in Title 47 CFR 95	No
		NTIA/FCC Authorization Attachment	1

ATC Communications	Transmitter VHF Band	VHF Band	No
		Quantity	
		In-Flight Retunable	No
	Transmitter UHF Band	UHF Band	No
		Quantity	
		In-Flight Retunable	No
	Transmitter HF band	HF Band	No
		Quantity	
		In-Flight Retunable	No
	Receiver VHF Band	VHF Band	No
		Quantity	
		In-Flight Retunable	No
	Receiver UHF Band	UHF Band	No
		Quantity	
		In-Flight Retunable	No
	Receiver HF band	HF Band	No
		Quantity	
		In-Flight Retunable	No
	Guard (Emergency) Frequencies VHF Band	VHF Band	No
		Quantity	
	Guard (Emergency) Frequencies UHF Band	UHF Band	No
		Quantity	
	Instantaneous Two-Way Voice	Direct to pilot	No
		SATCOM	No
		Relay via aircraft	No
Electronic Surveillance/ Detection Capability		EO/IR	No
		Terrain detection	No
		Weather/icing detection	No
		Radar	No
		Other Attachment	1
		Electronic detection systems	No
		Electronic detection systems attachment	0
Radar observation	No		
Visual Surveillance/ Detection Capability	Maximum Distance from UA	Vertical	3000 Feet
		Horizontal	10 Nautical Miles
		Airborne based (Chase Aircraft)	No
		Ground based	Yes
		Visual observation from one or more ground sites	Yes
		Forward or side looking cameras	No
		Attachment for All	1
Aircraft Performance Recording		Flight data recording	No
		Control station recording	Yes
		Voice Recording	No
Flight Aircrew Qualifications	Pilots	Private (Written)	Yes
		Private (Certified)	Yes
		Instrument	Yes
		Commercial	Yes
		Air Transport	No

		Unique Trained Pilot	Yes
		Unique Trained Pilot Description	Pilot is a member of the UAS development team and has extensive experience in operating the aircraft and knowledge of the aircraft's capabilities.
		DOD certified/trained	No
		Other Certified Training	No
		Trained on FAR Part 91 Requirement	Yes
		Medical Certification Class (FAA or DOD equivalent)	2
		Currency Status	Class 2 Medical Certificate current for the duration of the planned mission.
		Duty Time Restrictions	Max of 4 flights per day with each flight lasting no longer than 2 hours. Maximum duty day of 12 hours.
		Single UAS Control	Yes
		UAS Description	See Aircraft System
		Total Numbers of UAS Controlled	1
	Observers	Private (Written)	No
		Private (Certified)	No
		Instrument	No
		Commercial	No
		Air Transport	No
		Unique Trained Pilot	Yes
		Unique Trained Pilot Description	Observers will be trained in the FAA regulations applicable in the airspace where the UA will operate. Observers may be stationed in small boats within visual line of sight of the UA, but possibly some distance away from the mother ship. They will be trained in small boat and shipboard safety procedures and the protocol for UAS flights and communicating with the pilot-in-command.
		DOD certified/trained	No
		Other Certified Training	No
		Trained on FAR Part 91 Requirement	Yes
		DOD Certified Training Attachment	0
		Medical Certification Class (FAA or DOD equivalent)	2
		Currency Status	Class 2 Medical Certificate current for the duration of the planned mission.
		Duty Time Restrictions	Max of 4 flights per day with each flight lasting no longer than 2 hours. Maximum duty day of 12 hours.
		Single UAS Control	Yes
		UAS Description	See Aircraft System
		Total Numbers of UAS Controlled	1
Special Circumstances		Special Circumstances	<p>(revised 8/7/2007)</p> <p>This COA is the first one requested by Department of Commerce, National Oceanic and Atmospheric Administration (NOAA) for a UAS mission being exclusively managed by NOAA. A small and low-cost UAS, such as the one identified for this mission, may be well suited for a number of applications related to management of marine resources and oceanographic and atmospheric research and monitoring. The NOAA UAS working group is working closely with FAA to address any concerns and issues related to this COA.</p> <p>We would like to reiterate that this UAS project will principally take places over-water, in the middle of the Pacific ocean, 1000 miles from the nearest commercial airport. A smaller number of aerial surveys of near-shore and beach areas are planned for Pearl and Hermes Atoll, a remote uninhabited island in the Northwestern Hawaiian Islands Marine National Monument. Access to the island and surrounding waters is by permit only.</p> <p>The unmanned aircraft system being developed for this mission is an economical battery powered airframe with a wingspan of less than 8 feet and a total weight of less than 10 lbs.</p> <p>An analysis of various hazards (fly-away, fire, mid-air collision, injury from propeller, launch/recovery collision) and mitigations is included as an attachment. (See the "Emergency Procedures" section.)</p> <p>*Note(8/12/07): This COA was completed on 8/9. NOAA was unable to submit the COA due to technical problems with the OE/AAA website. The help desk and Steve Glowacki were notified of the problem. The ticket was closed on 8/12.</p>

Flight Operations Area/Plan

Type	User Defin Point	Loc ID	Degree	Distance	Latitude	Longitude	MSL Ceilin
USER DEFINED ARE PHR			1				
USER DEFINED ARE N.Pacific			1				

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Total Map Attachment 3

MSL Floor Maximum	Minimum	Radius	SUA Description	
	27-51-14.00N		175-48-57.00W	3000
	33-00-00.00N		175-00-00.00W	3000

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500  
500

70  
70

30  
30

75.0  
350.0