

		ASN	2010-ESA-2-COA
		Case Status	EXPIRED
		Date Created	11/30/2009
		Date Submitted	01/12/2010
Proponent Organization		Sponsor	US Army Garrison, Redstone
		Attn Of	(b) (6) . AT&A Officer
		Address	IMSE-RED-PLA
		Address2	Redstone Army Airfield, Building 4808
		City	Redstone Arsenal
		State	AL
		Postal Code	35898-5000
		Telephone	(256) 876-4300
		Email	(b) (6) @conus.army.mil
Declaration		Declaration(a)	Yes
		Declaration(b)	Yes
Point of Contact		Representative	(b) (6)
		Address	Unmanned Aircraft Systems Project Office
		Address2	SFAE-AV-UAS-TM
		City	Redstone Arsenal
		State	AL
		Postal Code	35898
		Telephone	(256) 313-5430
		Email	(b) (6) @us.army.mil
Operational Description	Requested Effective Period	Beginning	
		End	
		Light out operation	No
		VFR operation	Yes
		IFR operation	No
		Day operation	Yes
		Night operation	Yes
		Program Executive Summary	Request a renewal of Certificate of Authorization (COA) certificate (2008-ESA-44) signed 30 January 2009. Operations are performed by AAI Corporation personnel at Redstone Army Airfield. The crew includes Air Vehicle Operators (AVO's), Mission Payload Operators (MPO's), Mission Commanders (MC's) and a maintenance team. Operations are performed on a daily basis in support of research and development flight testing for the Unmanned Aircraft Systems Program Office (PM UAS).
		Operational Summary	Operations are research and development flight-testing. Approximate 200 test flights per year at approximately 300 flight hours per year (1.5hrs per flight) at Redstone Army Airfield and R2104 - A,C,D,E. Operations will be conducted 7 days a week, intermittently 24 hours a day. Operations will only be conducted when Redstone ATC is operational. Launch and recovery will be from Redstone AAF (HUA). UAS will fly directly into R2104 after launch and return via the same route. Altitude will be at or below 2500'.
	Location	State	AL
		County	Madison
		Nearest Airport	REDSTONE AAF
		AOR	Alabama
	Class Of Airspace	Class-A	
		Class-B	
		Class-C	
		Class-D	Yes
		Class-E	

		Class-G	
System Description		Aircraft Type	8063 - Shadow - RQ-7B
		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)	1000
		Turn Rate (Degrees/Second)	9
	Cruise Speed	Maximum	110
		Minimum	60
		Approach Speed	70
	Operating Attributes	Maximum MSL	20000
		Minimum MSL	685
		Gross Takeoff Wt	386.0
		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	1
Avionics/Equipment		Equipment Suffix Type	U
		GPS	Yes
		Moving map indicator (Command Station)	Yes
		Tracking capability	Yes
		TCA/MCAS	No
		ELT	No
	Transponder	Transponder	Yes
		On	Yes
		Off	Yes
		Standby	Yes
		Ident	Yes
		Mode S	No
		Mode C	Yes
		Transponder Retuneable in	Yes

		Flight	
Lights		Landing	No
		Position/Navigation	Yes
		Anti-collision	Yes
		Infrared (IR)	No
Spectrum Analysis Approval		Data Link	Yes
		Data Link Attachment	0
		Control Link(s)	Yes
		Control Link Attachment	0
		Operations utilizing Radio Control (R/C) frequencies as described in Title 47 CFR 95	No
		NTIA/FCC Authorization Attachment	0
ATC Communications	Transmitter VHF Band	VHF Band	Yes
		Quantity	3
		In-Flight Retunable	Yes
	Transmitter UHF Band	UHF Band	Yes
		Quantity	1
		In-Flight Retunable	Yes
	Transmitter HF band	HF Band	No
		Quantity	
		In-Flight Retunable	No
	Receiver VHF Band	VHF Band	Yes
		Quantity	3
		In-Flight Retunable	Yes
	Receiver UHF Band	UHF Band	Yes
		Quantity	1
		In-Flight Retunable	Yes
	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	Yes
		SATCOM	No
		Relay via aircraft	No
Electronic Surveillance/Detection Capability		EO/IR	Yes
		Terrain detection	Yes

		Weather/icing detection	No
		Radar	No
		Other Attachment	0
		Electronic detection systems	No
		Electronic detection systems attachment	0
		Radar observation	Yes
		NAS Operational Capability Attachment	0
Visual Surveillance/Detection Capability	Maximum Distance from UA	Vertical	2500 Feet
		Horizontal	1.0 Nautical Miles
		Airborne based (Chase Aircraft)	No
		Ground based	Yes
		Visual observation from one or more ground sites	Yes
		Forward or side looking cameras	Yes
		Attachment for All	1
Aircraft Performance Recording		Flight data recording	Yes
		Control station recording	Yes
		Voice Recording	Yes
Flight Aircrew Qualifications	Pilots	Private (Written)	Yes
		Private (Certified)	Yes
		Instrument	No
		Commercial	No
		Air Transport	No
		Unique Trained Pilot	Yes
		Unique Trained Pilot Description	All crewmembers and observers are trained and evaluated under US Army regulations and guidelines.
		DOD certified/trained	Yes
		Other Certified Training	No
		Trained on FAR Part 91 Requirement	Yes
		Medical Certification Class (FAA or DOD equivalent)	2
		Currency Status	All crewmembers and observers maintain currency under US Army regulations and guidelines.
		Duty Time Restrictions	12 hours
		Single UAS Control	Yes
		UAS Description	Observers are trained under the rules and responsibilities described in 14 CFR 91.111 and 14 CFR 91.113. Observer duties are to visually monitor air traffic outside of R-2104 and communicate clearly to the operator any turning instructions required to stay clear of conflicting traffic.
		Total Numbers of UAS Controlled	1
	Observers	Private (Written)	No
		Private (Certified)	No
		Instrument	No

		Commercial	No
		Air Transport	No
		Unique Trained Pilot	Yes
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		DOD certified/trained	Yes
		Other Certified Training	No
		Trained on FAR Part 91 Requirement	Yes
		DOD Certified Training Attachment	0
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		Total Numbers of UAS Controlled	1
Special Circumstances		Special Circumstances	<p>Application is renewal. The testing at Redstone Army Airfield is critical to supporting the GWOT. Cloned from application for certificate (2007-ESA-4), data updated.</p> <p>Application is a renewal. Renewal is needed to continue flight operations supporting critical research and development flight-testing.</p> <p>Night Operation Mitigations:</p> <ol style="list-style-type: none"> 1. UA launch and recovery operations will take place wholly within controlled airspace (Redstone AAF Class D) 2. Ground observer(s) will be in place and have communications with Redstone ATCT and the ground control station. 3. The UA ground observer(s) will be positioned at the dedicated location for a minimum of one hour before the UA operation, to ensure night vision adaptation has occurred. 4. In addition to ground observer(s), the Redstone ATCT will monitor DBRITE display located in the ATCT cab as a supplement to ensure no civil traffic is approaching the Redstone AAF Class D. Additionally, information from the DBRITE will be used to reduce the effects of the visual observer's position being offset from the UA location, and to help reduce possible nighttime optical illusions. 5. UAS operations will not occur within one hour prior to and one hour after published sunset times in order to avoid operations during civil twilight hours. 6. The ground observer(s) will undergo additional training on the lighting configuration of Shadow UA to ensure proper recognition during night flights. 7. UA will spend less than thirty minutes in the Redstone AAF Class D airspace for launch and less than thirty minutes in the Redstone AAF Class D airspace during recovery operations. 8. There will be no UAS training operations within the Redstone AAF Class D airspace: all training will occur within the restricted area. 9. The UAS shall operate navigation and strobe lights for all nighttime operations while in the Redstone AAF Class D airspace and recommends that they remain on for operations within the restricted area airspace. Nighttime operations will not be allowed if the UAS lights are inoperable.

Flight Operations Area/Plan

Type	User Define Area ID	Loc Point ID	Degree	Distance	Latitude	Longitude	MSL Ceiling	MSL Floor	Maximum Speed	Minimum Speed	Radius	SUA Description
SUA												Restricted area - 2104A: BEGINNING AT LAT. 34-38-40N, LONG. 86-43-0W; TO LAT. 34-38-40N, LONG. 86-41-0W; TO LAT. 34-38-0N, LONG. 86-40-53W; TO LAT. 34-37-35N, LONG. 86-37-40W; TO LAT. 34-37-0N, LONG. 86-37-0W; TO LAT. 34-36-27N, LONG. 86-36-38W; TO LAT. 34-34-50N, LONG. 86-36-38W; THENCE WEST ALONG TENNESSEE RIVER TO LAT. 34-33-10N, LONG. 86-38-0W; TO LAT. 34-33-40N, LONG. 86-40-0W; TO LAT. 34-35-0N, LONG. 86-40-30W; TO LAT. 34-35-2N, LONG. 86-43-25W; TO LAT. 34-37-19N, LONG. 86-43-20W; TO LAT. 34-37-19N, LONG. 86-43-5W; TO POINT OF BEGINNING.

Total Map Attachment 3