

		ASN	2012-CSA-70-COA
		Case Status	APPROVED
		Date Created	05/29/2012
		Date Submitted	08/04/2012
Proponent Organization		Sponsor	Indiana State University
		Attn Of	Dr. Richard Baker
		Address	Center for Unmanned Systems
		Address2	650 Cherry Street Room 216
		City	Terre Haute
		State	IN
		Postal Code	47809
		Telephone	(812) 237-2641
		Email	richard.baker@indstate.edu
Declaration		Declaration(a)	Yes
		Declaration(b)	Yes
Point of Contact		Representative	Dr. Richard Baker
		Address	ISU Center for Unmanned Systems
		Address2	650 Cherry Street Room 216
		City	Terre Haute
		State	IN
		Postal Code	47809
		Telephone	(812) 237-2662
		Email	richard.baker@indstate.edu
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	The primary objective of the program is to conduct research into the use of small UAS for emergency response and first responders. Specific research topics include: CONOPS, team processes, semi-autonomous pilot assistance technologies for Search And Rescue, operational use of small UAS in cluttered, urban environments, and evaluation of State and Federal emergency responders. A secondary objective is to conduct photo ops of EO and IR cameras over the agriculture fields to see how effective small UAS may be at assisting crop growth.
		Operational Summary	Operations of the Draganflyer X6( <a href="http://www.draganfly.com/uav-helicopter/draganflyer-x6/specifications/">http://www.draganfly.com/uav-helicopter/draganflyer-x6/specifications/</a> ) from the off-airport Muscatatuck Urban Training Center facility near North Vernon Airport and Brush Creek Airport. Operations are to be less than 400' AGL, and will not leave the geographic bounds of the Muscatatuck training facility as demarcated in Flight Ops Area (photo attached). The primary research objectives for the research will be examining mixed human and UAS team processes, CONOPS procedures, and pilot assistance with semi-autonomous technologies. The secondary research objectives will include examining crop foliage for damage and moisture content of soil and plants.
	Location	State	IN
		County	Jennings
		Nearest Airport	BRUSH CREEK
		AOR	Indiana
	Class Of Airspace	Class-A	
		Class-B	
		Class-C	
		Class-D	
		Class-E	
		Class-G	Yes
System Description		Aircraft Type	102154746 - Crop Cam
		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)	390
		Descent Rate (feet/Minute)	390
		Turn Rate (Degrees/Second)	90.0
	Cruise Speed	Maximum	30
		Minimum	0
		Approach Speed	0
	Operating Attributes	Maximum MSL	8000
		Minimum MSL	0
		Gross Takeoff Wt	6.0
		Launch/Recovery Attachment	1
Airworthiness		FAA Type Certificate	

		If No FAA Certificate (Public Aircraft Only) Attachment	2
Procedures		Lost Link/Mission Procedures Attachment	1
		Lost Communications Procedures Attachment	1
		Emergency Procedures Attachment	1
Avionics/Equipment		Equipment Suffix Type	X
		GPS	Yes
		Moving map indicator (Command Station)	No
		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	Yes
		Anti-collision	No
		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	Yes
		NTIA/FCC Authorization Attachment	0
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	Yes
		SATCOM	No
		Relay via aircraft	No
Electronic Surveillance/Detection Capability		EO/IR	Yes
		Terrain detection	No

		Weather/icing detection	No
		Radar	No
		Other Attachment	0
		Electronic detection systems	No
		Electronic detection systems attachment	0
		Radar observation	No
		NAS Operational Capability Attachment	0
Visual Surveillance/ Detection Capability	Maximum Distance from UA	Vertical	400 Feet
		Horizontal	0.5 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	0
Aircraft Performance Recording		Flight data recording	Yes
		Control station recording	Yes
		Voice Recording	No
Flight Aircrew Qualifications	Pilots	Private (Written)	Yes
		Private (Certified)	No
		Instrument	No
		Commercial	No
		Air Transport	No
		Unique Trained Pilot	Yes
		Unique Trained Pilot Description	Pilots shall be trained by the manufacturer in normal, abnormal, and emergency operations procedures of the UAS.
		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	All pilots will maintain currency according to FAR Part 61. In addition each pilot will maintain currency on the Draganflyer X6 by performing at least 3 launch and recovery operations with maneuvering within the preceding 90 days. If the 90 days elapses the pilot will gain currency by logging the 3 launch and recovery operations with a qualified instructor operator.
		Duty Time Restrictions	Flight operations will not exceed 8 hours during any 24 hour period.
		Single UAS Control	Yes
UAS Description	Pilots will only control one UAS at any given point.		
	Total Numbers of UAS Controlled	1	
Observers	Observers	Private (Written)	No
		Private (Certified)	No
		Instrument	No
		Commercial	No
		Air Transport	No
		Unique Trained Pilot	No
		Unique Trained Pilot Description	Observers shall be trained on: 14 CFR 91.111, 91.113, 91.155, communications procedures, and relevant sections of the AIM.
		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	All pilots will maintain currency according to FAR Part 61. If it has been more than 90 days since being involved with Draganflyer X6 operations, the PIC/Operator will ensure the observer is thoroughly briefed on the standard operating procedures of the operation and any recent changes to operation protocol.
		Duty Time Restrictions	Flight operations will not exceed 8 hours during any 24 hour period.
Single UAS Control	Yes		
UAS Description	There will be only one UAS active at any given time. All observers shall be observing this vehicle.		
	Total Numbers of UAS Controlled	1	
Special Circumstances	Special Circumstances	Muscatatuck Urban Training Center is with 5 NM of North Vernon Airport (to the West) and Brush Creek Airport (to the East). Attached is a copy of the agreement between the Indiana National Guard at Muscatatuck, the North Vernon Airport, McKellar Corporation (owner of Brush Creek) and Indiana State University regarding the coordination, notification, and use of airspace over Muscatatuck. Flight operations will be conducted in Class G airspace.	

Flight Operations Area/Plan

Type	User Defin Point	Loc ID	Degree	Distance	Latitude	Longitude	MSL Ceilin	MSL Floor
USER DEFINED ARE	MUTC	Boundary	1					
			2					
			3					
			4					
			5					
			6					
			7					
			8					

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Total Map Attachment 2

Maximum	Minimum	ξ Radius	SUA Description		
	39-02-28.27N		85-32-34.74W	1200	800
	39-02-56.35N		85-32-36.60W	1200	800
	39-03-09.78N		85-32-10.95W	1200	800
	39-03-31.62N		85-31-51.48W	1200	800
	39-03-31.38N		85-31-10.38W	1200	800
	39-02-40.03N		85-31-10.08W	1200	800
	39-02-40.03N		85-31-27.69W	1200	800
	39-02-29.71N		85-31-32.32W	1200	800

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