

Visual Observers Description

NASA DFRC Ikhana Local Area
UAS COA Application Attachment

NASA Dryden Flight Research Center (DFRC) has procured from General Atomics – Aeronautical Systems Incorporated, an MQ-9 Reaper aircraft and a Ground Control Station (GCS). DFRC has assigned the number “NASA 870” to the aircraft and renamed it “Ikhana” (pronounced ee-kah-nah, a Native American word from the Choctaw Nation meaning intelligent, conscious, or aware).

This attachment is intended to describe the means of visual observation of the Ikhana aircraft during Local Area operations.

At least one chase aircraft observer or visual ground observer will be provided for operations in the local area and outside of R-2508/R-2515. Chase aircraft observers and visual ground observers are not required for operations within R-2508/R2515.

1. Airborne Observer -

The chase aircraft observer is not the chase aircraft pilot. The chase aircraft observer will maintain visual observation with one UAV at all times. Chase aircraft observers will remain within 2.5 nautical miles laterally and 2500 feet vertically of the UAS during all operations. Airborne observation will be provided by NASA or contracted by NASA. NASA DFRC will review the training records of prospective airborne observers to ensure compliance to the observers’ home organization proficiency requirements (other than NASA organizations are expected to be DOD/USAF or General Atomics requirements).

2. Ground Observers –

The visual ground observer is not the UAV pilot. The visual ground observer will maintain visual observation with one UAV at all times. Visual observers will remain within 2.5 nautical miles laterally and 2500 feet vertically of the UAV during all operations. Visual ground observation will be provided by NASA or contracted by NASA. NASA DFRC will review the training records of prospective visual ground observers to ensure compliance to the observers’ home organization proficiency requirements (other than NASA organizations are expected to be DOD/USAF or General Atomics requirements).

3. FAA COA Checklist V-6 (Revision 5, 6-15-2005) questions

17.d Visual (sic) Observation by Ground Observers

- a. What are the skills, knowledge, and certifications of each ground observer to detect other airborne operations? (I.e. Familiarity with FARs, AT operations and procedures, etc.) **A: Visual ground or airborne observers, as appropriate, will be utilized for local area operations outside of R-2508/R2515. Visual**

ground observers will be primarily contracted, typically General Atomics Aeronautical Systems, Inc. Contractors will be qualified and trained in accordance with their flight operations procedures. A visual ground observer is not required for operations within R-2508. The GCS pilot will communicate with the ground observer using the GCS UHF/VHF radio capability or hardware intercom.

- b. How will each ground observer detect other airborne operations in comparison to human visual capabilities from the cockpit perspective (on the UA)? A: Human visual capabilities will be utilized.
 - c. What are the lateral and vertical range limits that ground observers will be employed? A: Visual observers will remain within 2.5 nautical miles laterally and 2500 feet vertically of the UAS during all operations.
 - d. What are the communications capabilities between each ground observer and UA pilot? A: The GCS pilot will communicate with the ground observer using the GCS UHF/VHF radio capability or hardware intercom..
 - e. How many aircraft will each ground observer be responsible to monitor? A: One.
 - f. Will any ground observer also pilot the aircraft? A: No.
 - g. What is the legal connection between each ground observer and the proponent's organization? A: The visual ground observer will be contracted by NASA.
- 17.e Monitored by patrol/chase aircraft.
- a. What are the communications capabilities between the patrol or chase aircraft and UA pilot? A: Chase aircraft observers will be provided for operations in the local area and outside of R-2508/R-2515. A chase aircraft observer is not required for operations within R-2508/R-2515.
 - b. Will the pilot of the patrol or chase aircraft also be responsible for observing the UA and providing deconfliction information to the UA pilot? A: No, the chase aircraft pilot is not the chase aircraft observer.
 - c. What are the skills, knowledge, and certifications of the airborne observer to detect other airborne operations? A: Airborne observers will be primarily contracted, typically General Atomics Aeronautical Systems, Inc. NASA DFRC will review the training records of prospective chase/observers to ensure compliance to the chase/observers' home organization proficiency requirements (other than NASA organizations are expected to be DOD/USAF or General Atomics requirements).
 - d. How will the patrol or chase aircraft detect other airborne operations in comparison to human visual capabilities from the cockpit perspective (on the UA)? A: Human visual capabilities will be utilized.
 - e. Will the patrol or chase aircraft be treated as a "formation flight" with the UA by ATC? (I.e. MARSAs, etc.) A: No.
 - f. Will the airborne observer maintain visual observation with the UA at all times? A: Yes.
 - g. How many aircraft will the patrol or chase aircraft observer be responsible for monitoring? A: One.

- h. Will the airborne observer also pilot the UA? A: Assuming the question is with regard to simultaneous airborne observation and UA piloting, no.
- i. What is the legal connection between the patrol or chase aircraft and the proponent's organization? A: The chase aircraft will either be a NASA owned aircraft or one contracted by NASA.