

## **Nominal Mission and Lost Link Procedures 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).

The NASA Ikhana Local Area mission objectives are the transit/ferry of the aircraft between Edwards Air Force Base (EAFB) within the R-2508/R-2515 special use airspace (SUA) and Gray Butte Field Airport (04CA) for the purpose of “depot level” maintenance. Transit/Ferry flights will proceed, outside of R2515, via the most direct route possible. Hand-off of aircraft control between the Ikhana GCS and the GCS at Gray Butte will occur entirely within the R-2508/R-2515 complex. Outside of the R2508/R-2515 complex within the Ikhana Local Area boundaries ground or airborne visual observation, as appropriate, will be provided for Ikhana. Transit/Ferry flights will be conducted during daylight hours, under Visual Flight Rules (VFR), in Visual Meteorological Conditions (VMC) and below 13,000 feet MSL. Flights will be coordinated in advance with High Desert TRACON.

Maintenance check flights will utilize class G and E airspace in and around the vicinity of Gray Butte Field and El Mirage (99CL) airports within the Local Area boundaries. Aircraft control for maintenance check flights will be provided by a GCS at either El Mirage or Gray Butte depending on the airport from which the UAV departed. While conducting maintenance check flights within the Ikhana Local Area boundaries ground or airborne visual observation, as appropriate, will be provided for Ikhana. Maintenance check flights will be conducted during daylight hours, under Visual Flight Rules (VFR), in Visual Meteorological Conditions (VMC) and below 13,000 feet MSL. Maintenance check flights will be conducted within glide range of Gray Butte Field or El Mirage airport for a minimum of 30 minutes and no longer than 60 minutes. Only one take-off and one landing will be accomplished (i.e. no touch and goes) while conducting a maintenance check flight. The pilot and flight crew will perform actions as specified in the MQ-9 Flight Crew Checklist, Normal Procedures (TO 1Q-9(M) A-1CL-1), as appropriate to exercise the systems maintained. Flights will be coordinated in advance with High Desert TRACON.

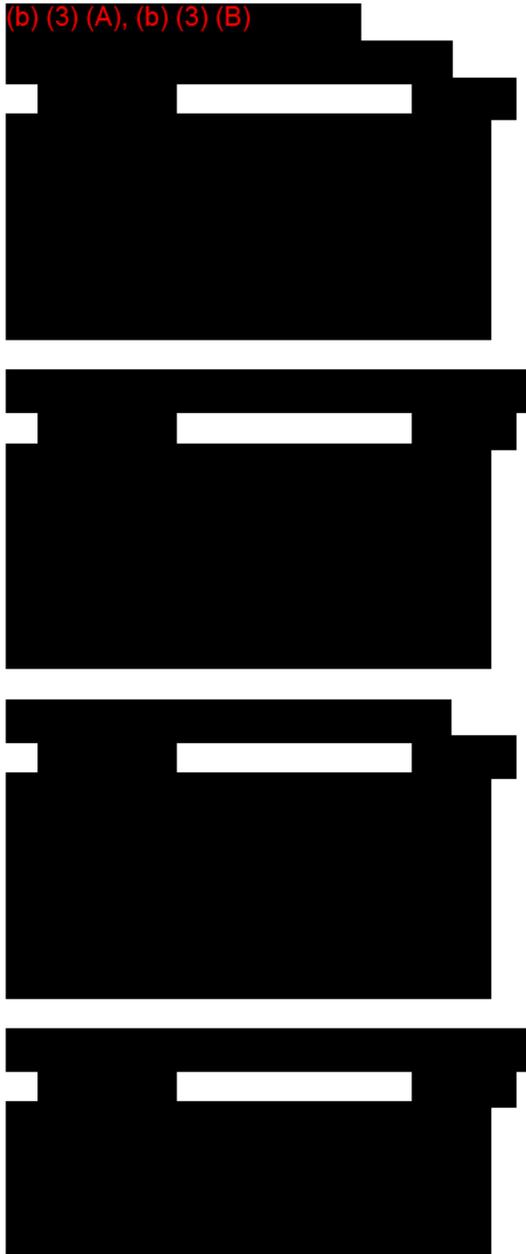
Lost link procedures differ depending on the area in which the mission is flown. If lost link occurs while on the range, the UAS will fly the flight plan route to the established range lost link pattern where line of sight communications can be restored to the UAS for the continuation of the mission or recovery of the aircraft. Prior to crossing the R-2508/R2515 complex airspace boundary, a handoff or transfer of communications is accomplished between High Desert TRACON and SPORT control for operations between the R-2508/R2515 complex and either El Mirage or Gray Butte. If the UAS is

lost link within the Local Area or prior to entering the R-2508/R2515 complex, the UAS will fly the flight plan route back to either El Mirage or Gray Butte depending on which airport the UAS departed. Once established in the lost link pattern, line of sight communications can be restored to the UAS for the continuation of the mission or recovery of the aircraft. The UAS route does not over fly densely populated areas.

In the event of a loss of control link, the UAS operator will immediately notify Air Traffic Control (ATC) and advise them of which lost link route will be flown.

The various pre-determined routes within the boundaries of the Ikhana Local Area are detailed below.

(b) (3) (A), (b) (3) (B)



The content of this page is almost entirely obscured by four large, solid black redaction boxes. The only visible text is the redaction code '(b) (3) (A), (b) (3) (B)' at the top left of the first box. Each redaction box has a small white rectangular cutout in its upper-left corner, which appears to be a scanning artifact or a placeholder for a logo.

(b) (3) (A), (b) (3) (B)

b. If lost link occurs while operating within the R-2508/R-2516 complex, the UAS will fly the flight plan route to the established lost link area also within the R-2508/R-2516 complex. Once established in the lost link pattern, command link can be restored to the UAS for the continuation of the mission or recovery of the aircraft.

(b) (3) (A), (b) (3) (B)

