Electronic Surveillance/Detection Description

NASA DFRC 2007 Fire Mission
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 Ikhana on-board aircraft electronic surveillance and detection capabilities.

1. **Electronic Surveillance Capability** (Onboard aircraft) –

    1.1. **Cameras** – The aircraft has two fixed forward looking cameras with a 30° field of view. One of these is daylight, and the other infrared (IR). The pilot (and co-pilot) can select either of these cameras to display in the respective heads-up display (HUD). The aircraft has no side looking cameras.

2. **Electronic Detection Capability** (Onboard aircraft) –

    2.1. **Icing Detection** – The aircraft has an icing detector built into the forward fuselage. It nominally vibrates at 40 kHz. An ice layer of approximately 0.020" thick causes an annunciation of icing conditions. The sensor continues to indicate icing conditions for 60 seconds after the ice has cleared.

    2.2. **Weather Detection –** The pilot can use the forward cameras for limited weather detection capability. There is no other automatic weather detection capability on the aircraft

    2.3. **De-ice capability –**

        2.3.1. **Pitot static system –** The 3 pitot static systems all have heated static ports and heated pitot probes. The pilot can manually turn ON pitot heat, or leave it in "auto" control. If in "auto" control, the pitot heat systems turn ON when the ice detector detects ice.

        2.3.2. **Wings & Prop –** The aircraft has no deice capability on the wings nor on the propeller.