MQ-8B Fire Scout Ground Control Station

Control Station (CS)

The CS is the operational focal point for the VTUAV System. It provides the VTUAV System operators the displays, controls, and external interfaces to perform the following functions:

- Mission planning & validation
- AV monitoring and control
- Payload data processing & real-time control
- Targeting
- C4I interfaces
- Takeoff and landing control
- Internal Communications System

The USN CS is installed in an S-280 or Test and Training (T&T) shelter or is integrated into a ship's Command and Control system. Shipboard integration of the CS is documented in a Design Requirements Document.

The CS is comprised of two identical and redundant operator stations for the Air Vehicle Operator (AVO) and Mission Payload Operator (MPO). The AVO has the primary tasks of monitoring the AV health and status, and controlling launch, flight and recovery operations. The MPO has the primary tasks of monitoring the payload health, status and operation, evaluating payload data, and performing real-time operation of the payload as required during the mission. Each station can be utilized for either AVO or MPO functions. A seat behind the AVO/MPO operators with internal and external communication capability is provided for a Mission Commander, instructor or observer (S-280 and T&T only).

Internal to the CS, the Tactical Control System (TCS) software, manufactured by Raytheon, is the Human Computer Interface (HCI) for commanding, monitoring, and controlling the VTUAV.

Data Link Suite

The Data Link Suite (DLS) provides line-of-sight uplink transmissions (command, control and voice communications) and downlink transmissions (imagery, AV status and health, and voice communications). The DLS contains a primary and a secondary data link. The Primary Data Link (PDL) is the TCDL with a (b) (3) uplink and (b) (3) downlink. The Secondary Data Link (SDL) is the AN/ARC-210 VHF/UHF radio with a (b) (3) half-duplex uplink and downlink. The VHF/UHF data link has the same uplink and downlink command/data capabilities as the TCDL, except that it does not have the bandwidth to transmit imagery.

The TCDL PDL is manufactured by Cubic Corporation, and is comprised of an Airborne Data Terminal (ADT), forward and aft AV-mounted omni-directional and directional

antennas, and a Ground Data Terminal (GDT) with accompanying omni-directional and directional antennas. The TCDL link is a Ku band data link.

The ARC-210 based SDL is comprised of three ARC-210 radios in the AV, four radios in the GCS, and omni-directional ground and air antennas. Each air vehicle radio is equipped with a blade antenna arranged on the air vehicle designed to maximize 360 degree coverage to ground-based equipment. Each ground radio is equipped with a collapsible mast-mounted antenna.

In the GCS, secure voice communications are encrypted and transmitted to the AV. For secure communications relay, the AV transmits encrypted data. For non-secure communications, the GCS transmits unencrypted voice data and the AV retransmits the voice communication. The command and control link is always secure.

AV control during takeoff, landing and mission area ingress/egress is accomplished via the SDL, except for times when the operator wants to check the operation of the payload camera, IR or LDRF systems. In general, the PDL is reserved for operation and control of the AV in the mission area.