Aircraft System

CONTROL STATION

The ground control station (GCS) (see Figure 1 and 2) configuration includes a rugged Laptop PC which contains the Mission Control Software (MCS) and the Base Station which communicates between the laptop and UA. The laptop provides the operator with three main sections, which include the map area used for managing the flight of the Hornet, camera view used for managing the camera, and the status section used to display messages to the operator. On the lower right hand of the Hornet command station is the Picture in picture display currently showing the map. This is interchangable with the camera view in the main screen. The status and fault notification is at the bottom of the screen.
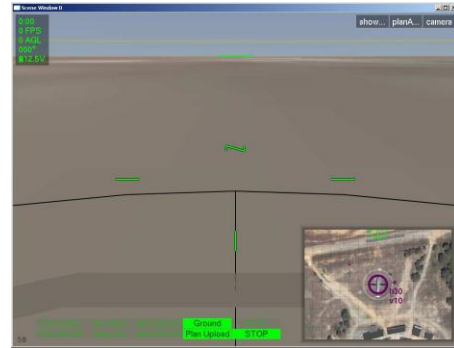

Figure 1: Laptop Display

This will alert the pilot of the status of the systems and will indicate faults of errors by color. A green box indicates there are no issues with the current flight, a yellow box indicates conditions that could be threating to the flight operation, and a red box indicates conditions that could seriously threaten the flight operation.

Figure 2: Base Station

Two flight operation modes are available for the operator. The Manual Flight mode allows the operator to guide the aerial vehicle from position to position by simply pressing and holding the desired direction for the UAV to approach on the hand controller connected to the command station laptop. This feature allows the pilot to navigate on demand. This is different from the Waypoint mode which restricts the operator to select a predetermined path through specified positions. Prior to performing the waypoint operation the pilot must plan the flight with the Flight Planning mode. Once all waypoints are selected and the UAV is in operation, the UAV navigates itself by means of GPS.

The link between the Command Stations and the Base Stations uses an Ethernet hardwired connection. The Base Station then communicates to the UAS via (b) (2), DSS link.