UAS FTC Visual Observer Procedures

The Aerostar UAS flights comply with FAA UAS Integration Office policy and procedures regarding personnel and procedures. All observers have a FAA Class II medical certificate and have been through the NMSU UAS FTC training course which has been reviewed and approved by the FAA UAS Integration Office ASI's.

During UAS low level operations close to the launch/recovery location, one or more ground visual observers are used and positioned so that the UAS PIC and UAS FTC Mission Commander will receive warning of any air traffic entering the flight area of the UAS. At both Las Cruces and Playas, the observer is located within 300 yds of the GCS in a position to have a clear view of the flight operations area If determined by the PIC, a second observer may be sued to supplement the observer duties. This observer will also maintain communications connectivity to the PIC and the position will be selected by the PIC to optimize visual coverage depending on the situation of local traffic. In the case of anomalies, the standard procedure is to maneuver the UAS to a location to avoid collision and to recover if communications with the non-participating aircraft cannot be achieved. UHF brick radios are used for communications between the observers and the UAS pilot. Observers are not daisy chained unless prior approval has been obtained from the FAA UAS Integration Office. Observers also have civil air band ICOM radios to monitor air traffic. A rough distance of up to one point five (1.5) miles and 3000 feet vertical is used for UAS range; however, this is contingent upon weather and clearness of viewing. The UA is always kept in visual range of the observer so that
he/she can determine the direction of the UA from their position.

If during low level flight operations communications between the pilot and visual observer(s) is lost, 1) the UAS will be maintained in a position where it is safe from immediate danger of collision and 2) the issue will be resolved or the UAS will be recovered as soon a practical and safe. If ATC communication (UNICOM) is lost, the UAS will be recovered as soon as safely possible.

For chase operations, the Aerostar UAS uses the UAS FTC chase standard operating procedure. This procedure has been validated by the FAA UAS Integration Office. Extensive discussion and planning occurs between the chase pilot/observer and the UAS PIC prior to each flight. A post flight debrief occurs and the PIC and Chase Pilot discuss all aspects of the flight, with emphasis on the marrying-up of the chase with the UAS and how the chase flight went and changes as needed are made.

In the advent of abnormal conditions or problems, the general policy is for the UAS to return to base and be recovered. Albuquerque Center (ZAB) will be notified of the emergency if the situation dictates. If the UAS has issues of any type including control communications, the UAS will return to base and recover with the Chase plane providing see and avoid. If for some reason, the chase aircraft is unable to continue to perform chase duties, safety of the chase aircraft and

crew will dictate the procedures taken. Immediately the chase pilot or UAS Pilot will contact ZAB and inform them of the situation and determine the appropriate course of action. Although too numerous to define all the potential possibilities here, the primary areas for emergency possibilities are:

1) Return to base at the ATC/UAS pilot agreed altitude/route to avoid terrain and then recovered as soon as safely possible.
2) If control communications are lost, the UAS PIC will be in communications with ZAB to provide the controller with flight return home flight path/profile. If communications are re-established, the UAS will continue return home point or lost link point (LLP) on the designed route/altitude and then recovered.

The Chase aircraft has a pilot who flies the chase airplane in a set formation position to ensure that safety of flight with the UAS is maintained while the observer performs his/her duties. Two radios are in the aircraft, one for the chase pilot to monitor and communicate as needed. The second radio is used for the observer to talk directly to the UAS PIC. The chase pilots used for Aerostar UAS chase plane operations are trained by qualified NMSU chase plane pilots and vetted prior to flying their first real chase plane operation. This includes formation flights using other manned aircraft prior to receiving training with the Aerostar UAS.