

LETTER OF PROCEDURE

PROJECT MANAGER -UNMANNED AIRCRAFT SYSTEMS AND FORT HUACHUCA AIR TRAFFIC AND AIRSPACE OFFICE, AND LIBBY AIR TRAFFIC CONTROL

SUBJECT: US Army Unmanned Aircraft (UA) Entering and Exiting Fort Huachuca Special Use Airspace, R-2303A/B/C.

EFFECTIVE DATE: 30 October 2011

1. PURPOSE: To establish air traffic control procedures to safely transition Unmanned Aircraft managed by US Army Aviation and Mission Command, Program Executive Office (PEO) -Aviation. (Hereafter, referred to as PM-UAS) between Cochise College Operational Area (attachment 1) and Ft. Huachuca's restricted airspace, R-2303 A/B/C.

2. SCOPE: The responsibilities and procedures described in this LOP are applicable to PM-UAS, Fort Huachuca Air Traffic and Airspace Office (AT&A), and Libby Air Traffic Control (ATC).

3. REFERENCES: The following documents provide the regulatory guidance under which LOP participants shall perform flight operations.

a. Federal Aviation Administration (FAA), N JO 7210.766 Air Traffic Organization Policy, SUBJECT: Unmanned Aircraft Operations in the National Airspace System (NAS), dated March 28, 2011.

b. Department of the Army, US Army Intelligence Center and Fort Huachuca Regulation 95-2. Aviation - Test Aircraft, Unmanned Aerial Vehicle and Indirect Fire Procedures, dated 22 September 2001

c. FAA, Memorandum for Department of Army, UAS Project Office, Subject/Activity: FAA Certificate of Authorization (2010-WSA-23) REV 1 - Operation of the Hunter UAS at Cochise College Airport, and in the Class G and E airspace depicted (see attachment 1) under the jurisdiction of Albuquerque Air Route Traffic Control Center (ZAB ARTCC).

4. PROCEDURES:

a. General:

(1) While operating in National Airspace System class E Airspace, UA flight operations shall be conducted in accordance with FAA approved COA, (ref: 3 .c.).

(2) PM-UAS shall schedule restricted airspace use with the Ft. Huachuca AT&A at least one week prior to the operation. Operations may or may not be approved based on scheduled flight activities.

(3) Waypoints used for this procedure are: Thompson: N 31°26.00', W 110° 05.501 and Lewis Springs: N 31°34.80', W 110°08.00' (see attachment 3).

b. Entering Restricted Airspace.

(1) The UA will proceed from the vicinity of Cochise College airport (PO3) to the Thompson waypoint at an altitude appropriate for direction of flight that will ensure line of sight for positive voice/transponder communications.

(2) Prior to crossing 110 ° West Longitude, the UA aerial vehicle operator (AVO) or chase plane pilot shall establish communication with Libby ATC on 120.65 or 127.05. If unable to establish communications, the UA shall remain east of the 110 ° West Longitude and re-establish communications with ZAB ARTCC to continue flight operations in accordance with the COA.

(3) Once positive radio communications and radar identification are achieved, Libby ATC will issue clearance into restricted airspace via Thompson and Lewis Springs waypoints (see attachment 3). The clearance may include an assigned altitude and /or a heading to fly for traffic avoidance.

(4) Prior to arriving at the Lewis Springs waypoint, UA AVO shall have complied with the Libby ATC entry instructions. If unable to comply with Libby ATC entry instructions, the UA shall remain outside restricted airspace until such time as the issue is overcome or a decision is made to depart Libby ATC controlled airspace via Thompson waypoint and continue flight operations in accordance with the COA.

(5) Once inside restricted airspace, flight operations will be conducted as approved by ATC in accordance with reference 3b. The chase plane may be discontinued or, depending on the mission, remain with the UA. At all times, the chase plane is considered a participating aircraft and not afforded separation service from the UA.

c. Exiting restricted airspace and returning to Cochise Operational Area.

(1) The UA AVO shall notify Libby ATC upon completion/termination of its mission inside restricted airspace and request exit departure from R-2303. The return route will be via Lewis Springs and Thompson waypoints or as directed by ATC, at an altitude appropriate for direction of flight that will ensure line of sight for positive voice/transponder communications.

(2) Prior to exiting R-2303, the UA AVO shall establish voice communications with its chase aircraft and obtain visual confirmation at the designated rendezvous point. If unable to establish either, the UA shall remain in restricted airspace until the issue is overcome or a determination is made to land at the designated recovery site.

(3) The UA AVO will establish positive communications with ZAB ARTCC prior to crossing the 110° West Longitude, eastbound, and request permission to proceed into the Cochise College operational area. Failure to establish voice communications with ZAB ARTCC shall cause the UA AVO to re-establish communications with Libby ATC and hold until the manned chase pilot can establish communications.

(4) The UA shall continue flight operations with ZAB ARTCC in accordance with the COA, ultimately landing at Cochise College airport, Letter of Procedure, Subject: US Army Unmanned Aircraft (UA) Entering and exiting Fort Huachuca Restricted Airspace, R-2303A/B/C.

d. EMERGENCY PROCEDURES: In the event of an emergency, the UA AVO shall declare an "EMERGENCY" with Libby ATC and provide the following information: the location of the UA, nature of the emergency, Intentions of the UA pilot/operator, amount of fuel on board in hours and minutes, and the flight profile required to safely land the UA. Depending on the nature of the emergency, possible courses of actions may include, but are not limited to the following:

(1) If operating in the NAS, the UA will return to base (Cochise College airport) (see attachment 4), provided the operator deems such action can be performed safely and within the capabilities of the UA. If unable, proceed to the nearest available open land/terrain most suitable to safely land the UA. The operator shall use the manned chase aircraft pilot/observer to provide "see and avoid" clearance to the most suitable surface to perform a landing and/or use the on-board emergency recovery system.

(2) If an emergency occurs while flying within R-2303 airspace, UA operator shall contact Libby ATC, and request assistance in accordance with paragraph 4d above. A manned chase aircraft may not be escorting or providing "see and avoid" clearance.

e. LOST LINK/RETURN HOME PROCEDURES:

(1) Within R-2303: UA AVO shall inform Libby ATC as soon as possible when a "LOST LINK" occurs. If primary radio communications between UA pilot/operator and ATC are lost, UA Operator/Pilot or ATC will be notified immediately via designated alternate communications method at 538-2853. The UA operator will set the Initial Lost Link Heading (ILLH) to ensure the aircraft remains within the R-2303. Lost Link is Hubbard Hold as depicted in attachment #2 until link is regained/or use of the on-board emergency recovery system is used.

(2) Outside R-2303: Unless otherwise designated and agreed upon by Libby ATC and PM-UAS, the "Lost Link Return Home" point is Lost Link Waypoint: 31°23'38"N 109°41'24" as depicted in attachment # 4.

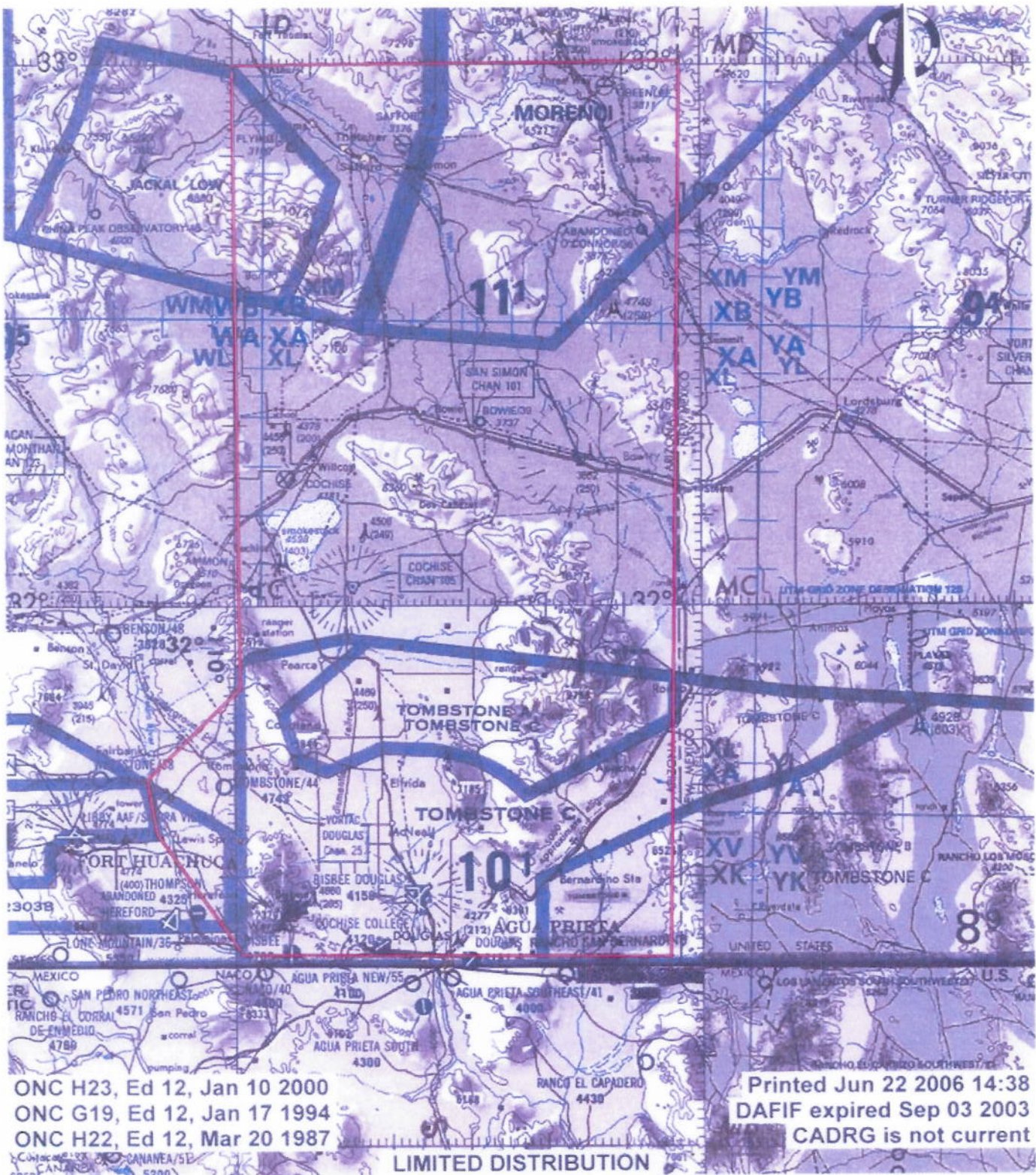
5. EXCEPTIONS: Exceptions to the above shall be coordinated and agreed upon by all parties concerned.

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Fort Huachuca, AZ	Fort Huachuca, AZ	Libby Army Airfield Fort Huachuca, AZ

4 Attachments:

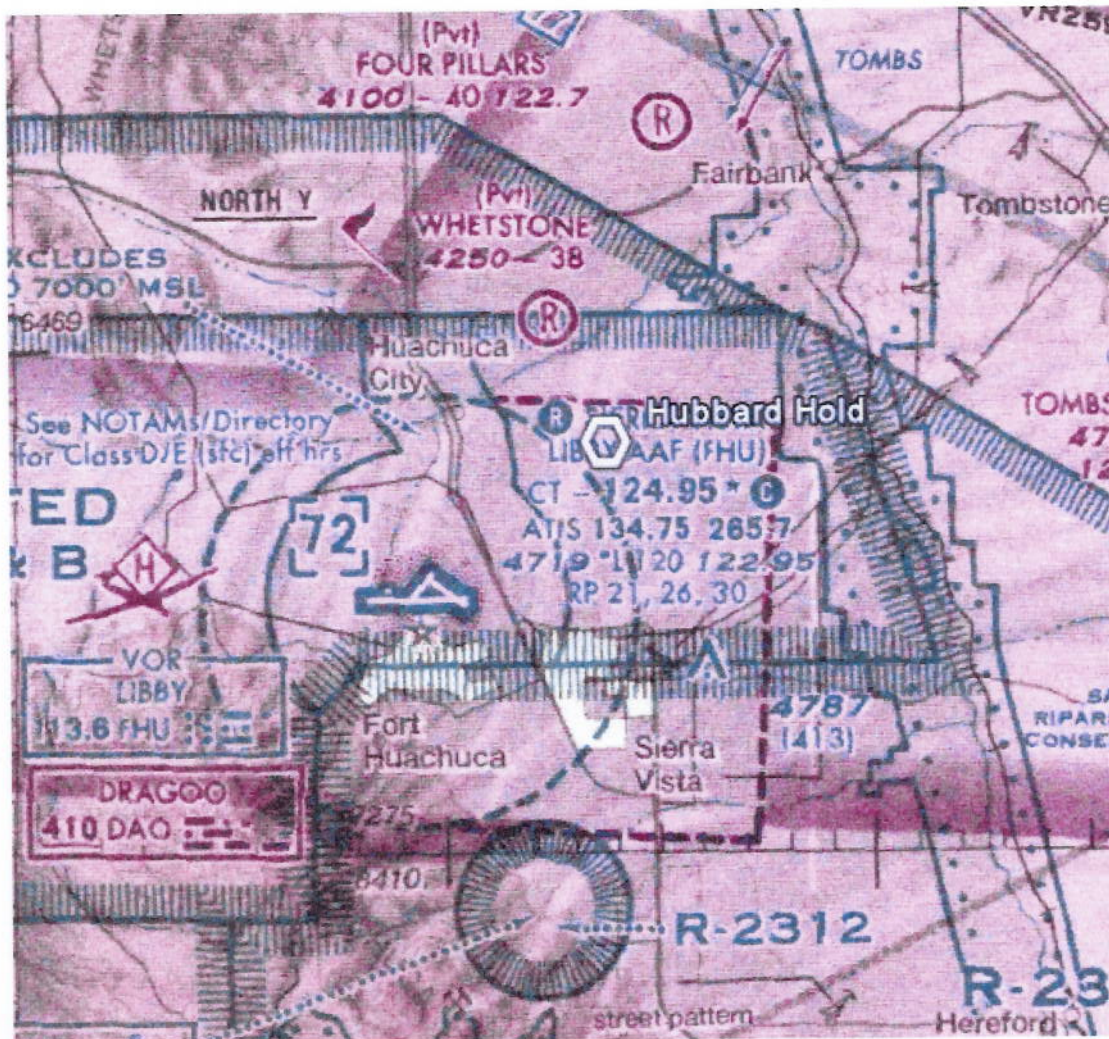
1. Hunter COA/Cochise College Operational Area Depiction
2. Hubbard Hold
3. Thompson and Lewis Spring Waypoints
4. Lost Link Return Home Outside R-2303

Attachment 1: Hunter COA/Cochise College Operational Area

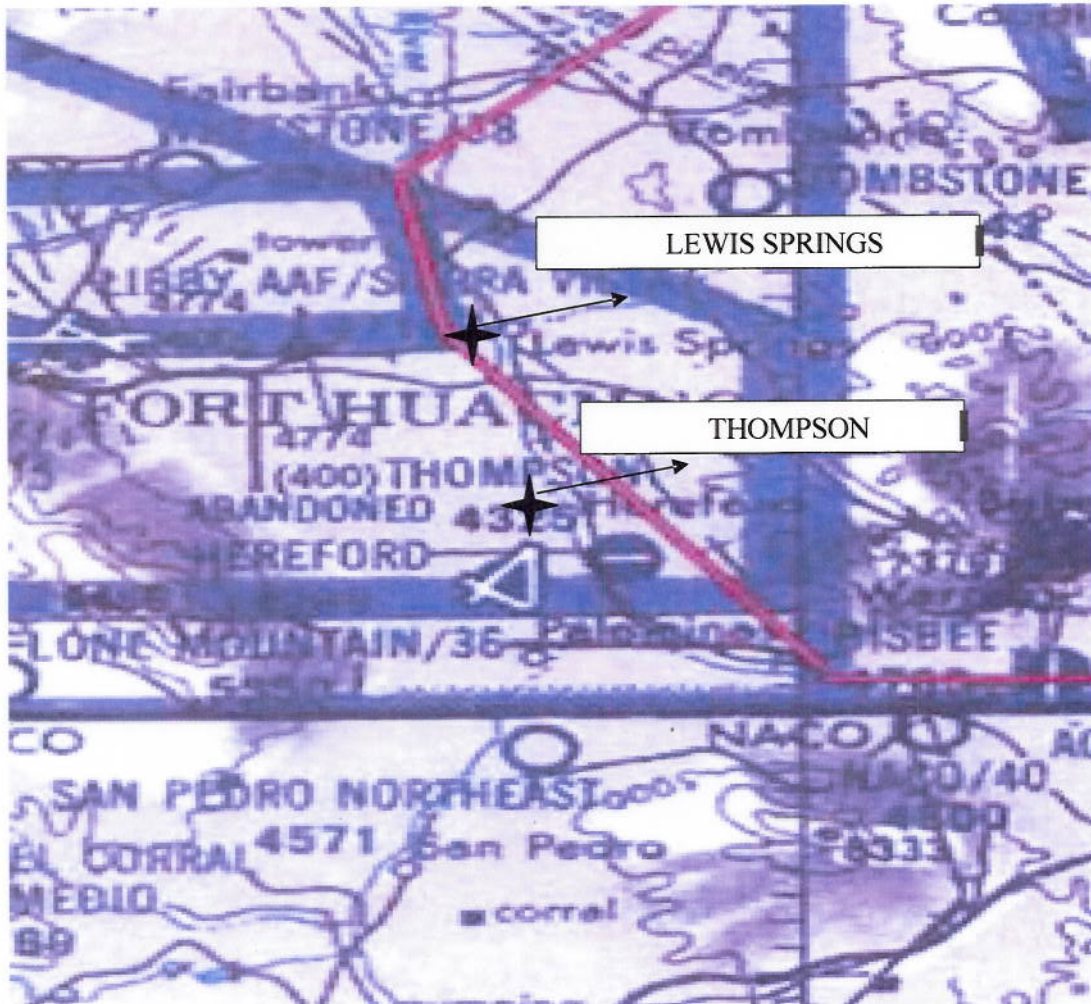


Attachment 2

(Hubbard Hold, DMS: N 31° 38' 12.1", W 110° 16' 09.1" / MGRS: 12RWA 69300030)



Attachment 3
(Lewis Springs and Thompson Waypoints)



Attachment 4

Lost Link Return Home Outside R-2303 Hunter Lost Link / Mission Procedures:

The Hunter Unmanned Aircraft System is operated with pre-established procedures in the event of link loss. If lost link occurs, the UAS will execute the programmed Return Home.

Data Coordinates, airspeed and altitudes are programmed/loaded into the aircraft's modular central processing assembly (MCPA) flight control computer and can be modified in flight, if required.

Programmed setting for Cochise College Operations is 2 sec for return home, (5 min for flightplan or hold loiter with continue loss of link will "NOT" be selected.) This means the AV will go return home in 2 seconds after loss of link.

NOTE: The UAS operator normally recovers the UAS upon receiving a LINK LOSS warning on displayed on the UAS operator control console within the programmed time sequence.

NOTE: During lost link the chase aircraft will remain with the UA until arrival at lost link recovery area providing necessary radio calls with dedicated observer.

RETURN HOME parameters are:

In the event of Loss of Link/Return Home Point, the Hunter aircraft will fly the autonomous preprogram flight to a waypoint located one and one half mile North of Cochise College Airport (Figure 1), where the potential for reacquiring direct control of the aircraft is enhanced.

When the UA is operating within the boundaries of the present COA dimensions of 100 NM by 60 NM area of operation with appropriate Chase Plane and Qualified on-board Observer, the return home plan will be loaded that maintains our assigned altitude at 60 KIAS, until we are at the return home point and then spiral down in left hand turn not to exceed 15 degree bank angle in a 1300 meter orbit to 6200 ft MSL (2000ft AGL) until link is regained or the UA runs out of fuel, at which time the AV will automatically deploy the parachute.

Local pattern Link Loss-Return Home point is similar with the exception that the return home plan maintains pattern altitudes until reaching the return home point.

NOTE: There is ALWAYS a fully redundant ground control station operational/up and a standby operator ready to regain link with the AV if necessary, consisting of a separate One System Ground Control Station (OSGCS) and Ground Data Terminal (GDT) antenna that is always in the "hot" standby configuration ready to gain control should such an event occur.

The LOL/Return Home Point (Figure 1) overlays an uninhabited area that is flat terrain mitigating collateral damage to personnel and property. Additionally, the Hunter UAS has

installed onboard a Flight Termination System (FTS) which is also preprogrammed prior to each flight to execute the parachute recovery system to safely recover the UA at the LOL/Return Home Point in the event that control is unattainable.

Attachment 4

Lost Link Return Home Outside R-2303

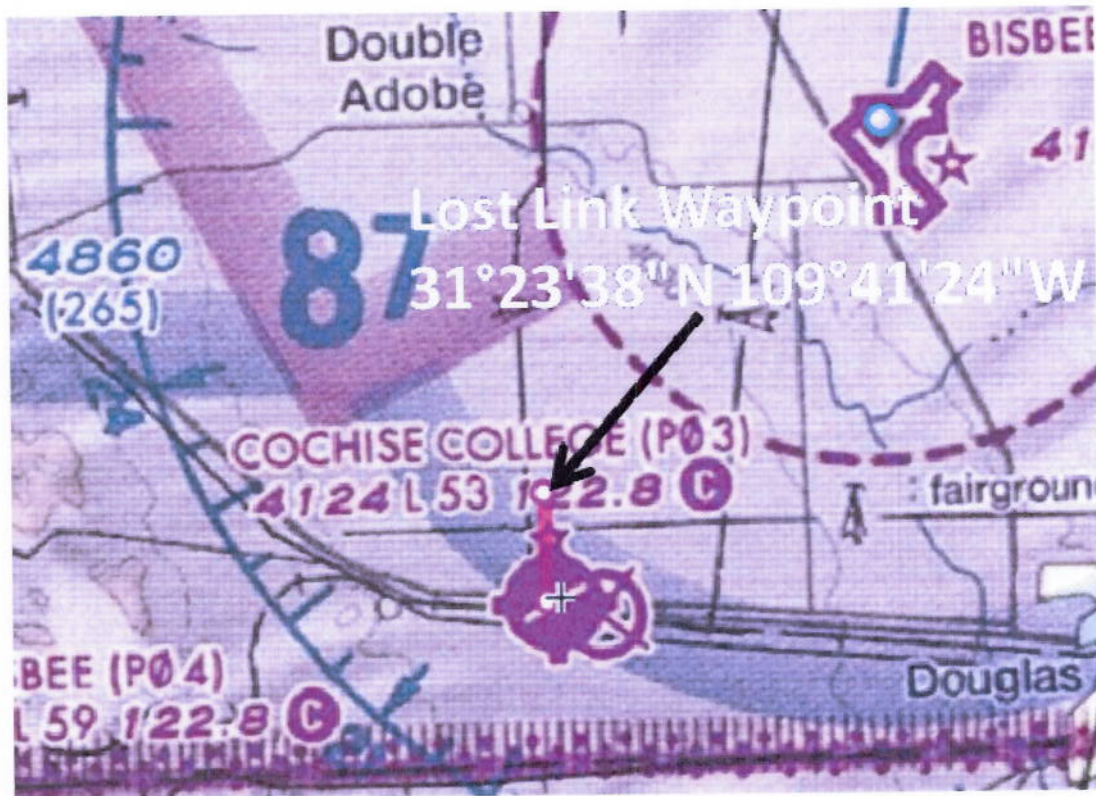


Figure 1 Lost Link Point