



## Federal Aviation Administration

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Date: December 30, 2015

To: Users of the National Air Space System (Vicinity of Hillsboro Airport)

From: Scott A. Burk  
Air Traffic Manager  
Portland Terminal Radar Approach Control (TRACON)

Subject: Recent Near Mid-Air Collision Reports, Hillsboro Vicinity

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You are receiving this information as a user of the National Air Space System who operates in the vicinity of Hillsboro Airport (HIO). This information is intended as an educational tool to increase safety through awareness, and as a means to mitigate risk.

During the summer of 2015 there were three filed near mid-air collision (NMAC) reports in the vicinity of HIO involving gliders and aircraft participating in air traffic control services. One NMAC involved a VFR Mooney and a glider operating 5 nautical miles north of the North Plains Gliderport (1OR4). Two NMACs included high performance turbo jets departing HIO and gliders operating near HETAT waypoint. The NMACs occurred at 2600, 2800, and 5000 feet.

In one instance the glider was operating with a mode C transponder and was visible to air traffic control on radar. In the other two instances the gliders were not utilizing a transponder and thus did not produce a consistently visible radar return. In the latter two instances the air traffic controllers did not observe a pending conflict on their radar display.

HETAT waypoint is part of the HIO BERNI and CHISM instrument departure procedures. HETAT waypoint is approximately 4 nautical miles west of HIO airport. In reference to the ground HETAT is near the intersection of Susbauer and Wren Roads. This area includes a large cluster of greenhouses which provide thermal lift desirable to the glider community. On occasion this thermal lift can carry a glider as high as 10,000 feet, making this a popular location. Another popular glider location is the area often referred to as the "Y". The "Y" is the junction of Highways 26 and 6, which provides lift from the concrete and asphalt that make up the interchange.

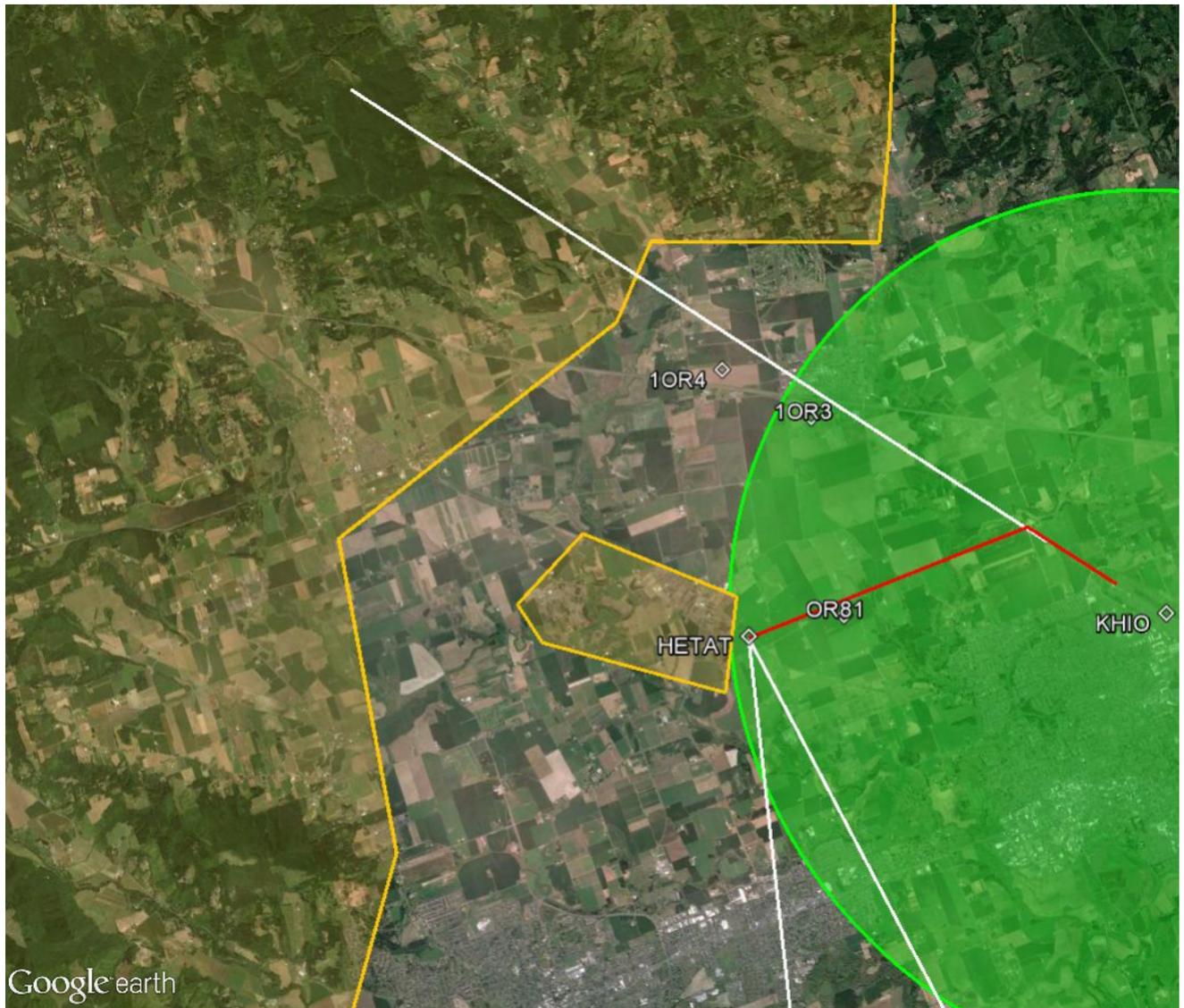
HIO IFR departure aircraft often utilize the BERNI, CHISM, and FARMINGTON Standard Instrument Departure Procedures. These procedures include a sweeping left turn to the south after departure from Runway 31L. During this left turn aircraft are “belly up” to the greenhouses and the “Y” intersection. In addition flight crews are looking into the sun during late afternoon departures. This makes for a difficult environment to observe gliders that may be operating in tight circles while tracking thermals upward. In both NMAC reports the IFR flight crew indicated they did not see the glider until it was too late to take evasive action. In all three instances the IFR/VFR aircraft and the gliders were in airspace they had the legal right to operate within.

Currently HIO Tower receives notification from the Willamette Valley Soaring Club when glider operations commence for the day at the North Plains Gliderport. HIO Tower then includes a statement on the HIO ATIS denoting glider activity in the area. When you hear this statement on the HIO ATIS I encourage you to maintain extra vigilance for glider operations and be familiar with popular glider areas. I also encourage gliders to utilize transponders, be familiar with HIO IFR and VFR traffic patterns, and monitor PDX approach control frequencies.

A System Service Review was conducted by Portland Approach Control after the first NMAC. This review included various user groups from Hillsboro Airport, Willamette Valley Soaring Club, Hillsboro Flight Standards District Office, and Hillsboro Air Traffic Control Tower. Ideas and concerns were shared by all during this review. One of the consensus determinations made in the review was an educational piece, thus the sharing of this information.

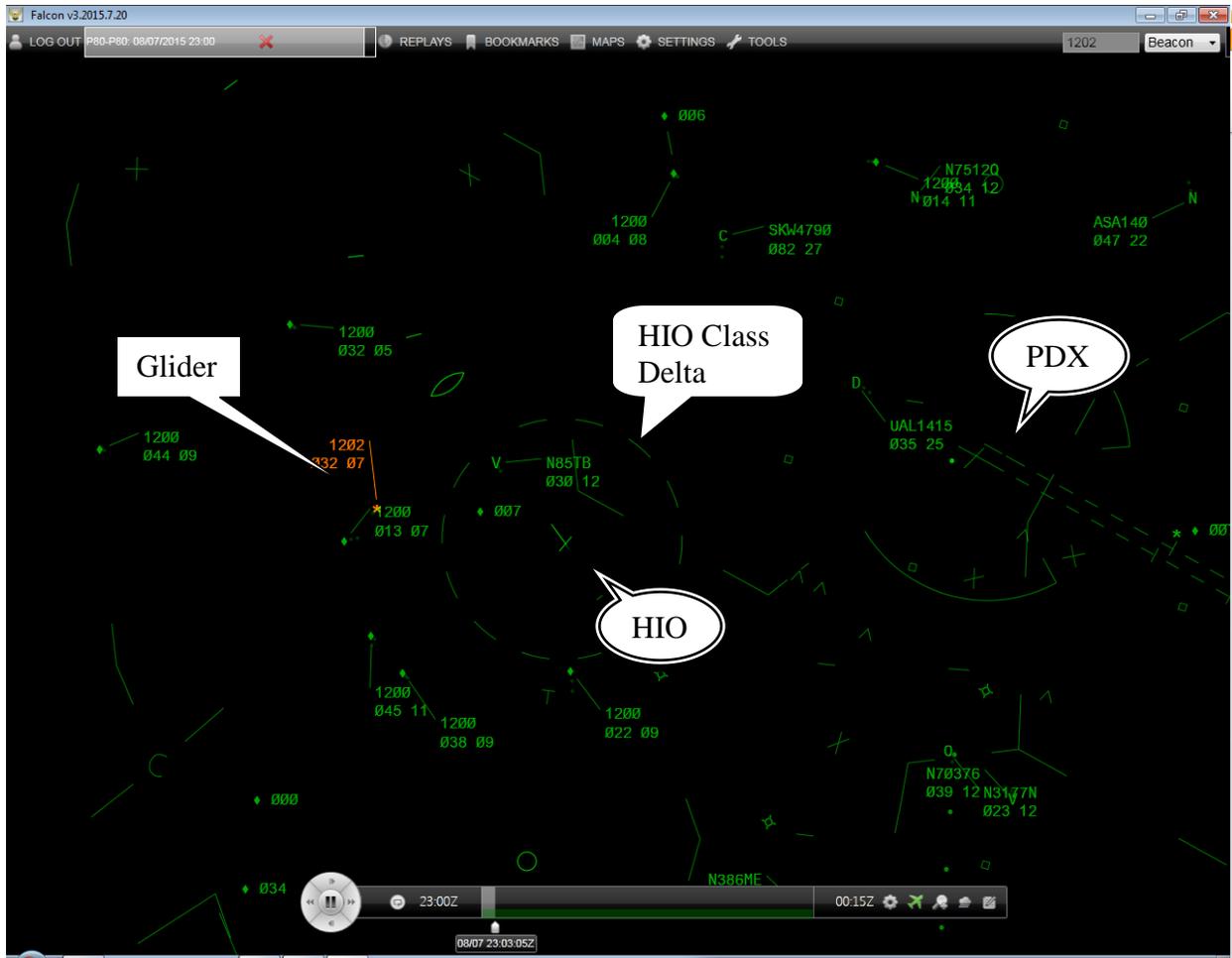
Attached you will find a diagram of the “hot spot” around HETAT waypoint, screen shots of a radar display showing a glider squawking 1202, and Instrument Departure Procedures utilized by IFR aircraft at HIO. Also included is a power point developed by the FAA’s Rocky Mountain District, resultant of similar events occurring in the Denver area.

Portland Approach Control in conjunction with Hillsboro Tower, and Hillsboro FSDO plan to conduct briefings for user groups that operate in and around the vicinity of HIO airport. These briefings will be similar to those provided to the air traffic controllers at Portland Approach. Please look for announcements regarding pilot briefing location and times. I look forward to seeing you at a future pilot briefing.



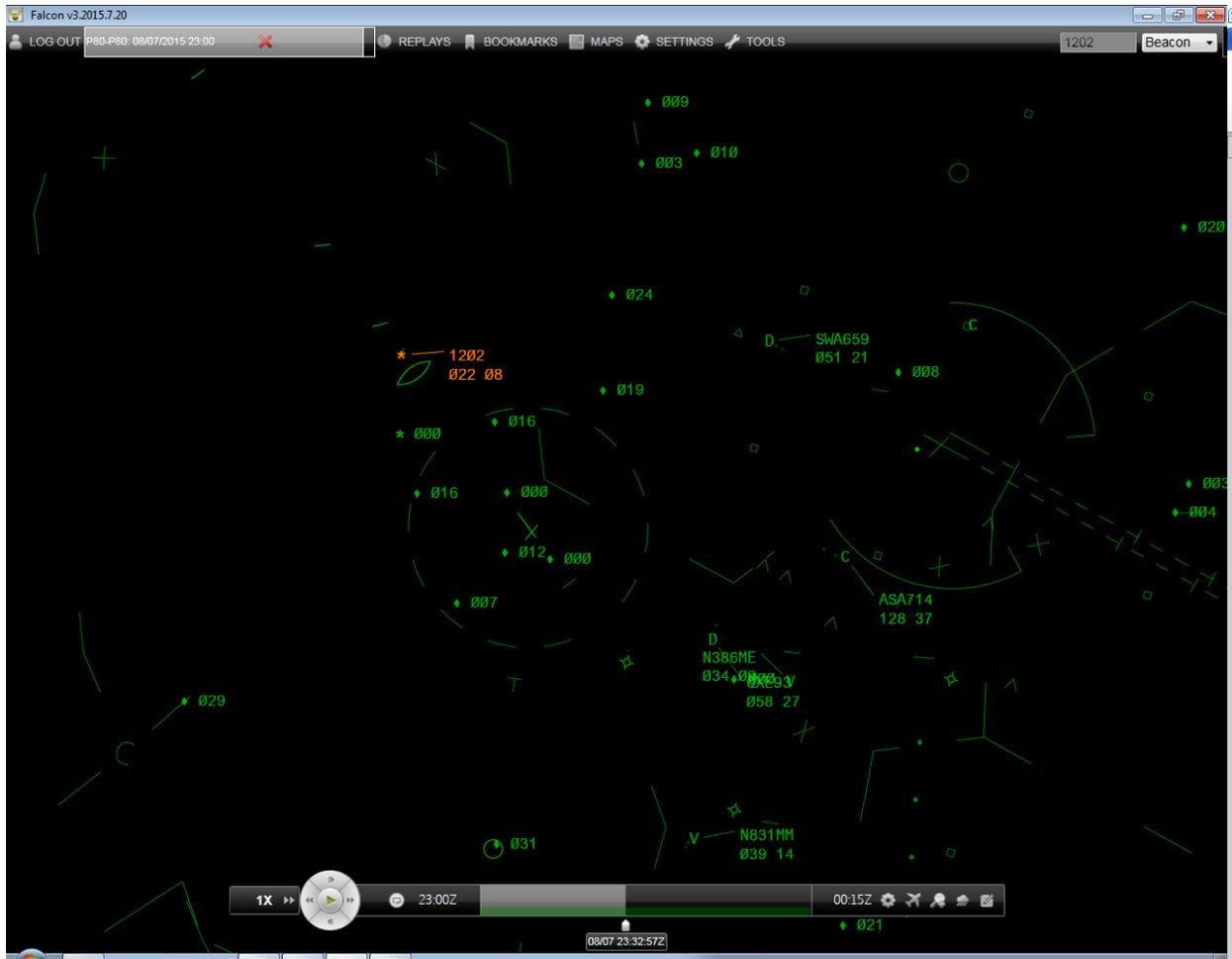
The yellow shaded areas indicate where gliders are often operating in the vicinity of Hillsboro airport. The white line from the northwest to HIO is the ILS runway 13 localizer. The red line from HIO to the west is the BERNI and CHISM IFR departure routes to HETAT. The white line to the south from HETAT is the BERNI departure and the white line to the southeast is the CHISM departure. 1OR4 denotes North Plains Glider Port where the Willamette Valley Soaring Club is located. 1OR3 Sunset Air Strip and OR81 Olinger Strip are locations near HIO that gliders have utilized as well.

To the west of HETAT is a group of greenhouses that the gliders use to receive lift from thermals to as high as 10,000 feet. HIO departure aircraft proceeding to HETAT are in a left turn, belly up to the greenhouses to the west. Another location that is “hot” for the gliders receiving lift is what they call the “Y”. It is the junction west of HIO where Highway 26 and Highway 6 merge.



Screen shot of the Portland Tracon Radar with a 1202 code, a glider, highlighted.





Screen shot of the Portland Tracon Radar with a 1202 code, a glider, highlighted.

(BERNI2.BERNI) 15120

### BERNI TWO DEPARTURE (RNAV) SL-5063 (FAA)

PORTLAND-HILLSBORO (HIO)  
PORTLAND, OREGON

ATIS 127.65  
GND CON  
121.7  
HILLSBORO TOWER \*  
119.3 (CTAF) 239.3 ( Rwy 02-20 and 13R-31L )  
120.55 239.3 ( Rwy 13L-31R )  
PORTLAND DEP CON  
126.0 284.6

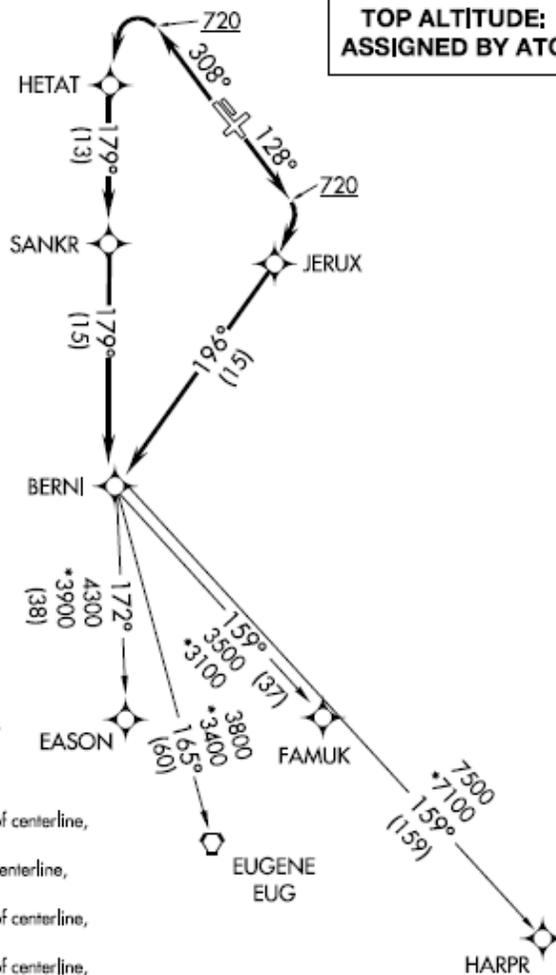
NOTE: GPS Required.  
NOTE: RNAV 1.  
NOTE: RADAR required.  
NOTE: Turbojet aircraft only.

#### TAKEOFF MINIMUMS

Rwys 2, 13L, 20, 31R: NA-ATC.  
Rwys 13R, 31L: Standard with minimum  
climb of 500' per NM  
to 720.

#### TAKEOFF OBSTACLE NOTES

Rwy 13R: Pole 38' from DER, 149' left of centerline,  
4' AGL/200' MSL  
Sign 72' from DER, 299' right of centerline,  
5' AGL/201' MSL  
Tree 1030' from DER, 754' right of centerline,  
60' AGL/260' MSL  
Tree 1103' from DER, 613' left of centerline,  
60' AGL/234' MSL  
Trees beginning 1835' from DER, 609' right of centerline,  
up to 60' AGL/307' MSL  
Trees beginning 3101' from DER, 9' right of centerline,  
up to 150' AGL/344' MSL  
Trees beginning 5097' from DER, 582' right of centerline,  
up to 160' AGL/357' MSL  
Rwy 31L: Trees beginning 1664' from DER, 795' right of centerline,  
up to 80' AGL/271' MSL  
Trees beginning 5874' from DER, 583' right of centerline,  
up to 200' AGL/380' MSL.



NOTE: Chart not to scale.

NW-1, 12 NOV 2015 to 10 DEC 2015

NW-1, 12 NOV 2015 to 10 DEC 2015



#### DEPARTURE ROUTE DESCRIPTION

**TAKEOFF RUNWAY 13R:** Climb heading 128° to 720, then climbing right turn direct JERUX, then on track 196° to BERNI, thence . . . .

**TAKEOFF RUNWAY 31L:** Climb heading 308° to 720, then climbing left turn direct HETAT, then on track 179° to SANKR, then on track 179° to BERNI, thence . . . .

. . . . on (transition). Maintain assigned altitude. Expect filed altitude 10 minutes after departure.

EASON TRANSITION (BERNI2.EASON)

EUGENE TRANSITION (BERNI2.EUG)

FAMUK TRANSITION (BERNI2.FAMUK)

HARPR TRANSITION (BERNI2.HARPR)

### BERNI TWO DEPARTURE (RNAV)

(BERNI2.BERNI) 15120

PORTLAND, OREGON  
PORTLAND-HILLSBORO (HIO)



## Forms of Lift - Thermals

- **Usually Summer time**
- **Unstable atmosphere**
- **Gliders climb to cloud base and then zoom to next cloud**
- **Clouds streets are good!**



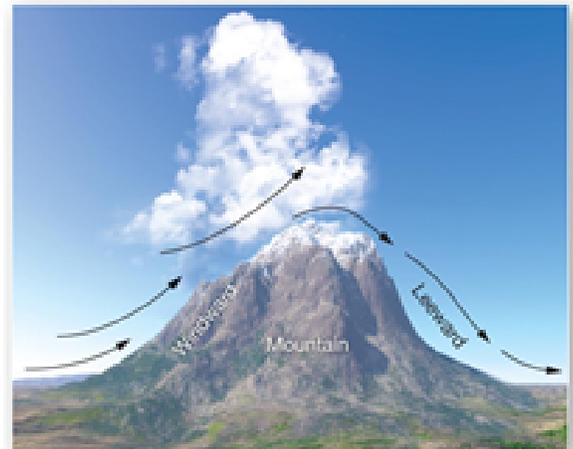
## Forms of Lift – Mountain Wave

- **Mostly in winter**
- **Stable atmosphere**
- **Capable of very high altitudes**
- **ZDV Wave window activated**



# Forms of Lift – Orographic

- **An obstacle is required**
- **Wind perpendicular to obstacle**
- **Steady lift but not great height**



(c) Orographic lifting

## Glider performance

### High Performance

- **Distance Record 1280 miles**
- **Altitude Record 51,721 MSL**
- **Speed range 50 to 150kts**
- **Glide Ratio up to 60:1**

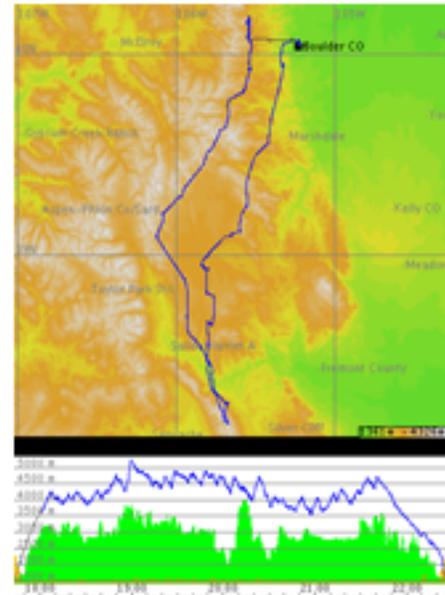
### Trainer

- **Stays within 5 miles of home airport**
- **Usually below 5000 AGL**
- **Slow moving**
- **Not usually equipped very well**

# A flight from BDU

- 253 miles (408km)
- Max Alt 17285ft (5270m)
- Duration 4 Hours 17 Min

Meter	Feet
7200	23600
7000	22960
6800	22320
6600	21680
6400	21040
6200	20400
6000	19760
5800	19120
5600	18480
5400	17840
5200	17200
5000	16560
4800	15920
4600	15280
4400	14640
4200	14000
4000	13360
3800	12720
3600	12080
3400	11440
3200	10800
3000	10160
2800	9520
2600	8880
2400	8240
2200	7600
2000	6960
1800	6320
1600	5680
1400	5040
1200	4400
1000	3760



# RADAR Limitations

- Weak primary returns
- Aircraft are in a turn most of the time reducing the chances of consistent radar detection
- Transponder equipment limited by
  - Battery power
  - Antenna position
  - Outside temperature

# RADAR Limitations



# Sailplane Cockpit

- Limited Space



# Sailplane Equipment

- **Transponder**
  - Battery operated
  - Has Mode C
  - Temperature affects performance
  - Enhances RADAR detection
- **Power FLARM**
  - Detects Mode C
  - ADS-B
  - Other FLARM

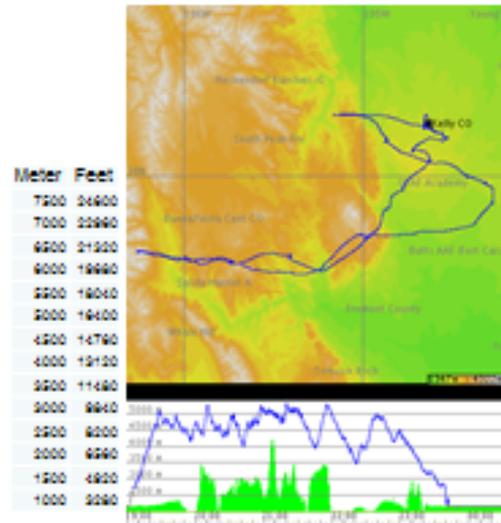


## What actions can You take?

- **Issue a safety alert**
  - FAAO 7110.65 2-1-2 Duty Priority, 2-1-21 Traffic Advisories, 7-6-1 Basic Radar Service to VFR Aircraft- Application
- **Issue control instructions to prevent a collision**
  - FAAO 7110.65 2-1-1 ATC Service, 2-1-21 Traffic Advisories, 7-1-2 VFR Conditions
- **Apply merging target procedures**
  - FAAO 7110.65 5-1-8 Merging Target Procedures

# A Flight From CO15

- 270 miles (436km)
- Max Alt 17197ft (5243m)
- Duration 4 Hours 26 min



# Mid Air Collision with a Glider

Hawker 800XP  
landed gear up

All on the Jet  
were safe



Glider pilot bailed  
out and parachuted  
safely

# THANK YOU



**BE AWARE  
GLIDERS ARE  
EVERYWHERE!**