



External assistance to Recreational Aviation Australia (RA-Aus) - Fatal Accident - Evektor Sportstar 24-4148 - 12 km SE Bindoon ALA, WA

21 December 2007

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Abstract

On 21 December 2007, an Evektor Sportstar, Recreational/ Light Sport Aircraft registration 24-4148 was involved in a fatal accident 12 km SE of Bindoon ALA, WA. Recreational Aviation Australia (RA-Aus) staff commenced an investigation into the occurrence. Three Global Positioning System (GPS) units were recovered from the accident site.

On 9 April 2008, RA-Aus requested technical assistance from the Australian Transport Safety Bureau (ATSB) to recover the data from the GPS units. No analysis of the data by the ATSB was sought by RA-Aus. To protect the information supplied by RA-Aus and the investigative work undertaken to assist RA-Aus, the ATSB initiated an investigation under the *Transport Safety Investigation Act 2003*.

Data was successfully recovered from all three GPS units in May 2008 by ATSB Technical Analysis staff and subsequently provided to RA-Aus investigators.

FACTUAL INFORMATION

GPS Units

On 21 December 2007, an Evektor Sportstar, Recreational/ Light Sport Aircraft registration 24-4148 was involved in a fatal accident 12 km SE of Bindoon ALA. Recreational Aviation Australia (RA-Aus) staff commenced an investigation into the occurrence. Three Global Positioning System (GPS) units were recovered from the accident site.

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Bureau (ATSB) to recover the data from the GPS units. No analysis of the data by the ATSB was sought by RA-Aus.

The three GPS units recovered were a Garmin GPSMAP 96, a Lowrance AirMap 1000 and a Lowrance AirMap 2000c.

Garmin GPSMAP 96

The Garmin GPSMAP 96 unit, S/N 74301242, had a damaged screen and case. Upon disassembly, the ribbon between the keypad and the main circuit board was found to have been broken. A new display screen and keypad circuit board were placed into the unit from a serviceable GPSMAP 96 unit. The data was recovered using Garmin MapSource software (Reference 2) onto a desktop computer (Windows XP) via the appropriate serial cable in accordance with the instructions in the Garmin pilot guide (Reference 3). A 1.13 MB GPX file was recovered (file name AllTracks24-4148.gpx). This file, when viewed using the manufacturer's software (Reference 2), comprised 10,000 track points in 67 track logs, one route and 13 waypoints.

Figure 1: Garmin GPSMAP 96 as received



Lowrance AirMap 2000c

The Lowrance AirMap 2000c unit, S/N 101178693, was undamaged. Power was applied to the unit and data was saved to the flash memory of the secure digital/ Multimedia Card (SD/MMC) in accordance with the procedures in the Lowrance instructions (Reference 7). A 20KB USR file was recovered (file name DATA.usr). This file, when viewed using the manufacturer's software (Reference 5), comprised one trail of 2,000 data points, nine routes and 26 waypoints.

Figure 2: Lowrance AirMap 2000c as received



Lowrance AirMap 1000

The Lowrance AirMap 1000 unit, S/N 11805699, had a broken case and cracked screen. The unit was decontaminated using a bleach solution prior to disassembly. Several internal components within the unit were visibly damaged and a crystal oscillator had separated from the circuit board. The crystal oscillator was replaced from a serviceable unit. The circuit board P/N 017-0746-OC Rev C, S/N E2110790434 was placed into a serviceable unit and was able to be powered.

The GPS was powered up and data was saved to an SD/MMC card in accordance with the Lowrance instructions (Reference 6). A 19KB USR file was recovered (file name DATA.usr). This file, when viewed using the manufacturer's software (Reference 5), contained one trail of 2,000 data points, one route and 16 waypoints.

Figure 3: Lowrance AirMap 1000 as received



FILES PROVIDED TO RA-AUS

The three raw data files downloaded from the GPS units were provided to RA-Aus (2 X USR, 1 X GPX). The data was also exported to Microsoft Excel using the Garmin and Lowrance proprietary software packages (References 2 and 5), as well as OziExplorer (Reference 1).

Google Earth (Reference 4) KML files from each data set were also created using GPS TrackMaker (Reference 8).

These files were copied to a compact disc and provided to RA-Aus investigators (Attachment 1).

REFERENCES

- 1 – D &L Software Pty Ltd, OziExplorer v3.95.4i
- 2 – Garmin MapSource v6.13.7 February 27 2008
- 3 – Garmin GPSMAP 96/96C Portable Aviation receiver Pilot's Guide, March 2007, Part Number 190-00420-00 Rev C
- 4 – Google Earth v4.2.0205.5730 November 13 2007
- 5 – LEI MapCreate USA v7.0.9
- 6 – Lowrance AirMap 1000 Aviation Mapping GPS Receiver Operation Instructions, 2003
- 7 – Lowrance AirMap 2000c Aviation Mapping GPS Receiver Instructions, 2004
- 8 – Odilon Ferreira Junior, GPS TrackMaker v13.1.259

ATTACHMENTS

- 1 – Compact disc (provided to RA-Aus only) containing the downloaded proprietary data files, Microsoft Excel files and Google Earth files for each GPS unit and photos of the recovery process. Raw download data files included on CD are, AllData24-4148.gpx (Garmin GPSMAP96), DATA.usr (Lowrance AirMap1000), DATA.usr (Lowrance AirMap2000c).