

NATIONAL TRANSPORTATION SAFETY BOARD

Vehicle Recorder Division
Washington, D.C. 20594

September 28, 2020

Recorded Flight Data

Specialist's Factual Report
By Charles Cates

1. EVENT SUMMARY

Location: Osage Beach, Missouri
Date: August 16, 2020
Aircraft: Cirrus SR22
Registration: N949CG
Operator: Private
NTSB Number: CEN20LA336

2. GROUP

A group was not convened.

3. DETAILS OF INVESTIGATION

The National Transportation Safety Board (NTSB) Vehicle Recorder Division received the following devices:

Device Manufacturer/Model:	Aerosance RDM
Serial Number:	n/a

Device Manufacturer/Model	Avidyne PFD
Serial Number:	n/a

3.1. Aerosance RDM Device Description

The Aerosance recoverable data module (RDM) is a crash-hardened data storage unit installed in the tail of some Cirrus aircraft. The unit records flight, engine, and autopilot parameters. Data is logged once per second and stored on a Compact Flash (CF) card installed inside the crash-hardened enclosure. When the storage limit of the memory device is reached, the oldest recording is deleted.

3.2. Aerosance RDM Device Condition

Upon arrival at the Vehicle Recorder Laboratory, an examination revealed the unit had sustained minor external thermal and smoke damage. The extent of the damage is shown

in figure 1. The device was disassembled, and the internal CF card was found to be undamaged, as shown in figure 2.



Figure 1. Photo of heat and smoke damaged RDM unit.



Figure 2. Internal circuit board of RDM showing undamaged CF card.

3.3. Aerosance RDM Data Description

The data on the CF card was partially corrupted however individual flight segments were recovered using file system tools. The data extracted only included information from December 1, 2007¹ through October 27, 2008, meaning that the card had been corrupted for many years. The event occurred on August 16, 2020. There were no data pertinent to the event recorded on the device.

4.0 Avidyne PFD

4.1 Avidyne PFD Device Description

The Avidyne PFD unit includes a solid-state Air Data and Attitude Heading Reference System (ADAHRS) and displays aircraft parameter data including altitude, airspeed, attitude, vertical speed, and heading. The PFD unit has external pitot/static inputs for altitude, airspeed, and vertical speed information. Each PFD contains two flash memory devices mounted on a riser card. The flash memory stores information the PFD unit uses to generate the various PFD displays. Additionally, the PFD has a data logging function, which is used by the manufacturer for maintenance and diagnostics. Maintenance and diagnostic information recordings consist of system information, event data and flight data.

4.2 Avidyne PFD Device Condition

Upon arrival at the Vehicle Recorder Laboratory it was evident that the unit had suffered extreme thermal damage, as shown in figure 3. While this device was capable of storing data in the non-volatile memory (NVM)², the extent of the thermal damage destroyed the memory components and precluded any recovery of data.

¹ All dates and times are referenced to Coordinated Universal Time (UTC).

² Non-volatile memory is semiconductor memory that does not require external power for data retention.



Figure 3. As received condition of Avidyne PFD.