NATIONAL TRANSPORTATION SAFETY BOARD
Vehicle Recorder Division
Washington, D.C. 20594

April 18, 2017

Cockpit Display

Specialist's Factual Report
by Bill Tuccio, Ph.D.

1. EVENT

Location:	Friendly, Maryland
Date:	February 6, 2017
Aircraft:	Piper PA-32R-301
Registration:	N21HD
Operator:	Private
NTSB Number:	ERA17LA100

On February 6, 2017, about 1145 eastern standard time, a Piper PA-32R-301, N21HD, was substantially damaged during a forced landing during the initial climb after takeoff from Potomac Airfield (VKX), Friendly, Maryland. The private pilot was seriously injured. Visual meteorological conditions prevailed and an instrument flight rules flight plan had been filed. The personal flight, destined for Newport State Airport (UUU), Newport, Rhode Island, was conducted under the provisions of 14 *Code of Federal Regulations* Part 91.

2. DETAILS OF INVESTIGATION

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

> Device Manufacturer/Model: Bendix/King KMD-150 Multifunction Display (MFD)
> Device Serial Number: 27100256

2.1. Bendix/King KMD-150 MFD Device Description

The Bendix/King KMD-150 MFD is a color cockpit display capable of displaying Global Positioning System (GPS)-derived aircraft position over a moving map. The device contains a database of aeronautical information that may be updated every 28 days via a removable, front-mounted card. Options include a built-in GPS and Stormscope input. The device can store limited information to volatile memory,[1] including a track history with sampling intervals of 0 to 999 seconds selectable by the user; the volatile memory is powered by an internal battery.

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[1] Volatile memory requires power to maintain recorded information.

2.1.1. Bendix/King KMD-150 MFD Data Recovery

Upon arrival at the Vehicle Recorder Division, an exterior examination revealed the unit had not sustained any damage and information was extracted using procedures provided by the manufacturer, including the use of Matronics SkyComm software.

2.1.2. Bendix/King KMD-150 MFD Data Description

The unit was set to record track history every 30 seconds. Approximately 2,050 points were recorded. While the unit is capable of recording date and time, these values were invalid and all entries contained a date of "11098" and a time of "1500". Comparing known information about the accident flight with recorded data, the five data points shown in table 1 were identified as the accident flight.

Latitude DDMM[1]	Longitude DDDMM	Groundspeed Knots (kts)	Magnetic Track Degrees	GPS Altitude Feet (ft)
N3845.05	W07657.16	20	228.2	118
N3844.67	W07657.69	80	228.2	321
N3844.11	W07658.16	88	192.2	829
N3843.52	W07657.65	81	126.2	1109
N3843.47	W07658.05	85	324.2	534

[1]The first character is the hemisphere, followed by degrees, then minutes and fractions thereof.

Figure 1 shows a Google Earth overlay of the five points. The first recorded point was at the northeast side of runway 24 at VKX. After departure, the aircraft tracked left (southerly) and climbed. The maximum recorded altitude was 1,109 ft (the fourth recorded point). The fifth and final point was northeast of the prior point, at an altitude of 534 ft.

Weather and lighting conditions shown in figure 1 are not necessarily representative of the weather and lighting conditions at the time of the accident.

Figure 1. Accident flight.

Point 1, 20 kts, 118 ft

Point 2, 80 kts, 321 ft

Point 3, 88 kts, 829 ft

Point 5, 85 kts, 534 ft

Point 4, 81 kts, 1,109 ft

Google earth

1 mi

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