National Transportation Safety Board
Office of Research and Engineering
Washington, DC 20594

CEN21FA360

JPI 830 ENGINE DATA MONITOR

Specialist's Factual Report

October 12, 2022

TABLE OF CONTENTS

A. ACCIDENT

Location: Victoria MN
Date: August 7, 2021
Time: 17:40 Central Daylight Time
Airplane: Mooney M20M, private operator, N9156Z

B. JPI 830 ENGINE DATA MONITOR SPECIALIST

Specialist: David Case
Vehicle Recorder Specialist
National Transportation Safety Board (NTSB)

C. DETAILS OF THE INVESTIGATION

A recorded flight data group was not convened.

The NTSB Vehicle Recorder Division received the following Engine Data Monitor (EDM):

Recorder Manufacturer/Model: JP Instruments (JPI) 830
Recorder Serial Number: 32825

1.0 EDM 830 Description

The J. P. Instruments EDM-730/830 is a panel mounted LCD display that is capable of displaying and recording up to 24 parameters related to engine operations. Depending on the installation, engine parameters can include:

- Exhaust Gas Temperature (EGT)
- Cylinder Head Temperature (CHT)
- Oil Pressure and Temperature
- Manifold Pressure
- Outside Air Temperature
- Engine Revolutions per Minute
- Fuel Flow
- Carburetor Temperature
- Battery Voltage

The unit can also calculate, in real-time, horsepower, fuel used, shock cooling rate and EGT differentials between the highest and lowest cylinder temperatures. The calculations are also based on the aircraft installation.

The unit contains non-volatile memory for data storage of the recorded and calculated parameters. The rate at which the data is stored is selectable by the operator from 2 to 500 seconds per sample. The memory can store up to 20 hours of data at a 6 second sample rate. For a non-damaged unit, the data can then be downloaded by the operator using a USB flash drive and following the instructions on the unit.

1.1 EDM 830 Data Recovery

The JPI 830 was damaged in the event. The extent of the damage is shown in figure 1. Because the display was destroyed and the circuit board would not power up when connected to a surrogate display, the memory chip was removed and read out with lab equipment.

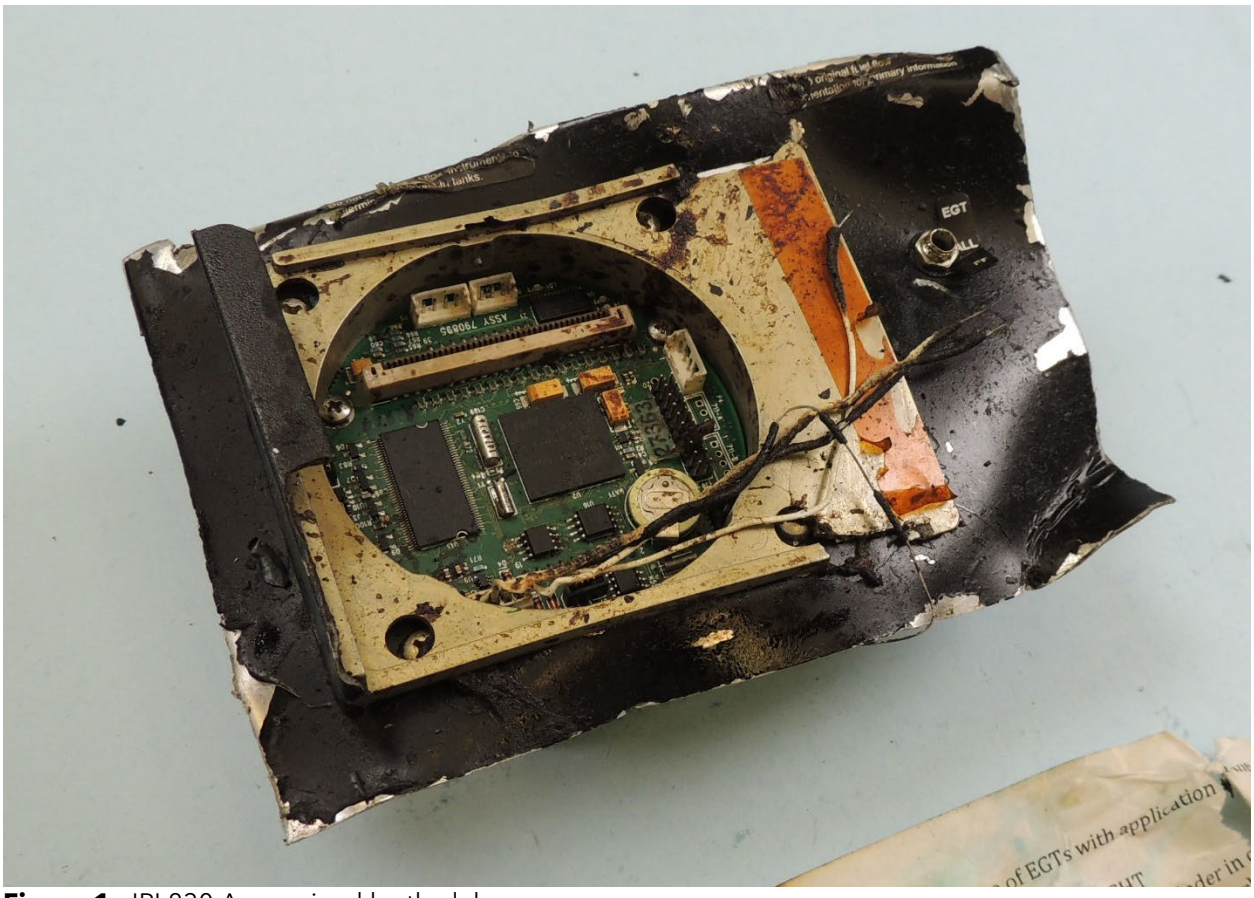

Figure 1. JPI 830 As received by the lab.

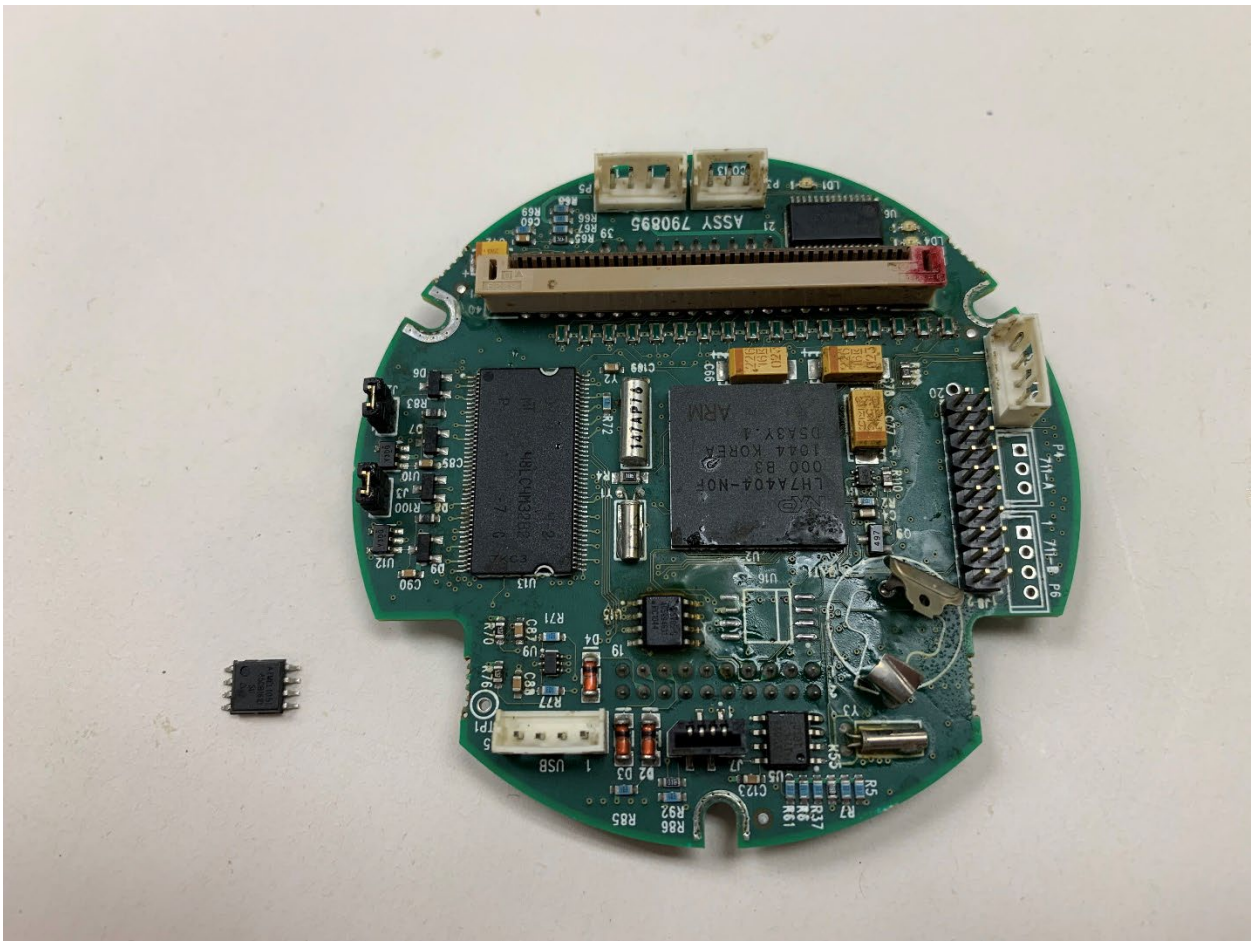

Figure 2. Non-volatile memory chip after removal from the board.

1.2 EDM 830 Recording Description

The data extracted included information from August 25, 2018[1] through August 7, 2021. The event occurred on August 7, 2021. The device created a log file on startup before the accident, but the log file was empty, and no data were found.

Submitted by:

David Case
Vehicle Recorder Specialist

[1] All dates and times are referenced to coordinated universal time (UTC).