



**Reconstruction Group Attachment
Mecanica Scientific Services Report**

Avenal, CA

HWY21FH003
(9 Pages)



February 8, 2021

Mr. Donald Karol
National Transportation Safety Board
Washington, DC

RE: Avenal, CA (HWY21IH003) 9-Fatal, 2013 Dodge Journey EDR Imaging

Dear Mr. Karol

Thank you for the opportunity to consult with your office on the above referenced matter. As discussed, the synopsis of the Chip Swap and EDR imaging from the ACM on the 2013 Dodge Journey involved a 9-fatality collision in Avenal, CA on January 1st of this year is submitted for your review.

Mecanica received an exemplar module from the National Transportation Safety Board (NTSB) for this chip swap and data imaging. Mecanica also purchased a second exemplar module for this imaging.

The NTSB provided an exemplar module - serial # T02JF0323280F2, with the identifier of 68163 807AB on the module. The CDR tool (Software Version 21.0) was utilized to image the data from this ACM. This exemplar ACM showed one event recorded in memory.

The MSSC exemplar module - serial # T04JF1834281V2, with the identifier of 68163 807AB on the module, was also imaged with the CDR tool. This exemplar ACM showed two events recorded in memory.

Mecanica conducted limited research into which EEPROM housed the EDR data. Both exemplar modules were opened to expose the various circuitry on the printed circuit board. A test was conducted to remove a chip from one module and attempt to read it out via the CDR software. This chip was removed and no communications with the module was available. It was anticipated that this was the probable chip that required removal from the incident ACM.

Chip Swap Process

On February 3, 2021, Sergeant John Kolter from the California Highway Patrol (CHP) Multidisciplinary Accident Investigation Team (MAIT) responded to Mecanica with the involved 2013 Dodge Journey's ACM. The ACM was in a CHP evidence bag.

A Zoom video teleconference was initiated between Mecanica and the NTSB to allow viewing of the process. Sgt. Kolter removed the involved ACM from the evidence bag. The ACM, which has been previously documented, was examined by Mecanica staff. The outer casing was opened to expose the printed circuit board (PCB) within. There was a crack across the entire circuit board, which disconnected one chip from its input legs (circled in Figure 1). The probable chip that was suspected to carry the EDR data (circled in Figure 2) was then removed from the PCB and inserted into the location on the exemplar PCB (Figure 3, 4)



Figure 1



Figure 2

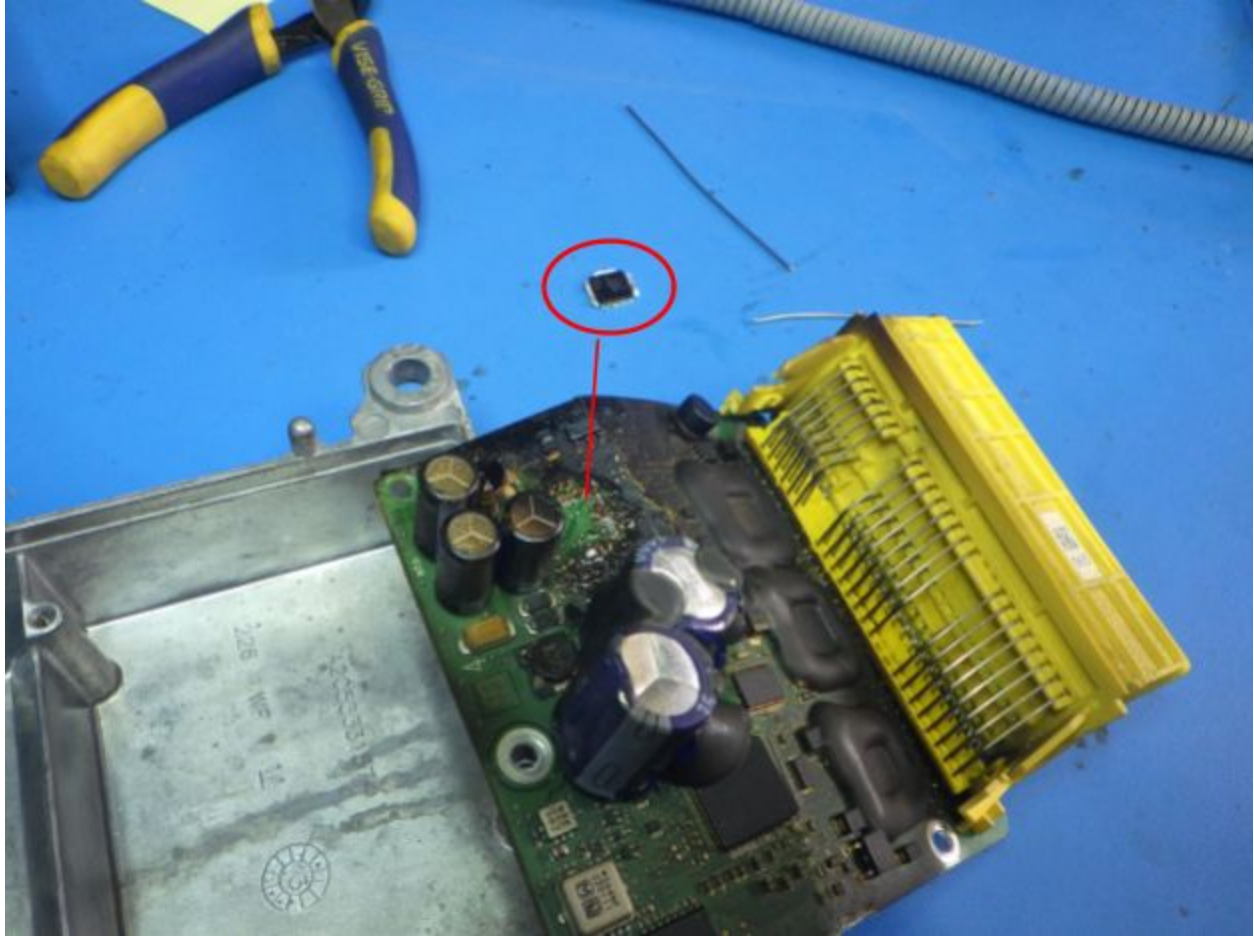


Figure 3 - Incident chip removed



Figure 4 - Incident chip on exemplar PCB

Once the suspected incident chip was placed in the PCB of the exemplar, the CDR tool was utilized to image the data. The data imaged from this transfer was the exemplar data originally obtained during the initial data imaging, not from the incident module.

It was necessary to pull various suspected chips to determine which chip contained the EDR data. After removal of the chips, it was determined that the 8-pin chip (Figure 5) for this module was the EDR EEPROM that contained the EDR data. This was accomplished by removing the 8-pin chip from one exemplar and installing it to the second exemplar, then imaging the data to confirm that data was in fact consistent with the swapped chip. The 8-pin chip was then removed from the incident module PCB (Figure 6) and was placed onto the exemplar PCB (Figure 7).



Figure 5

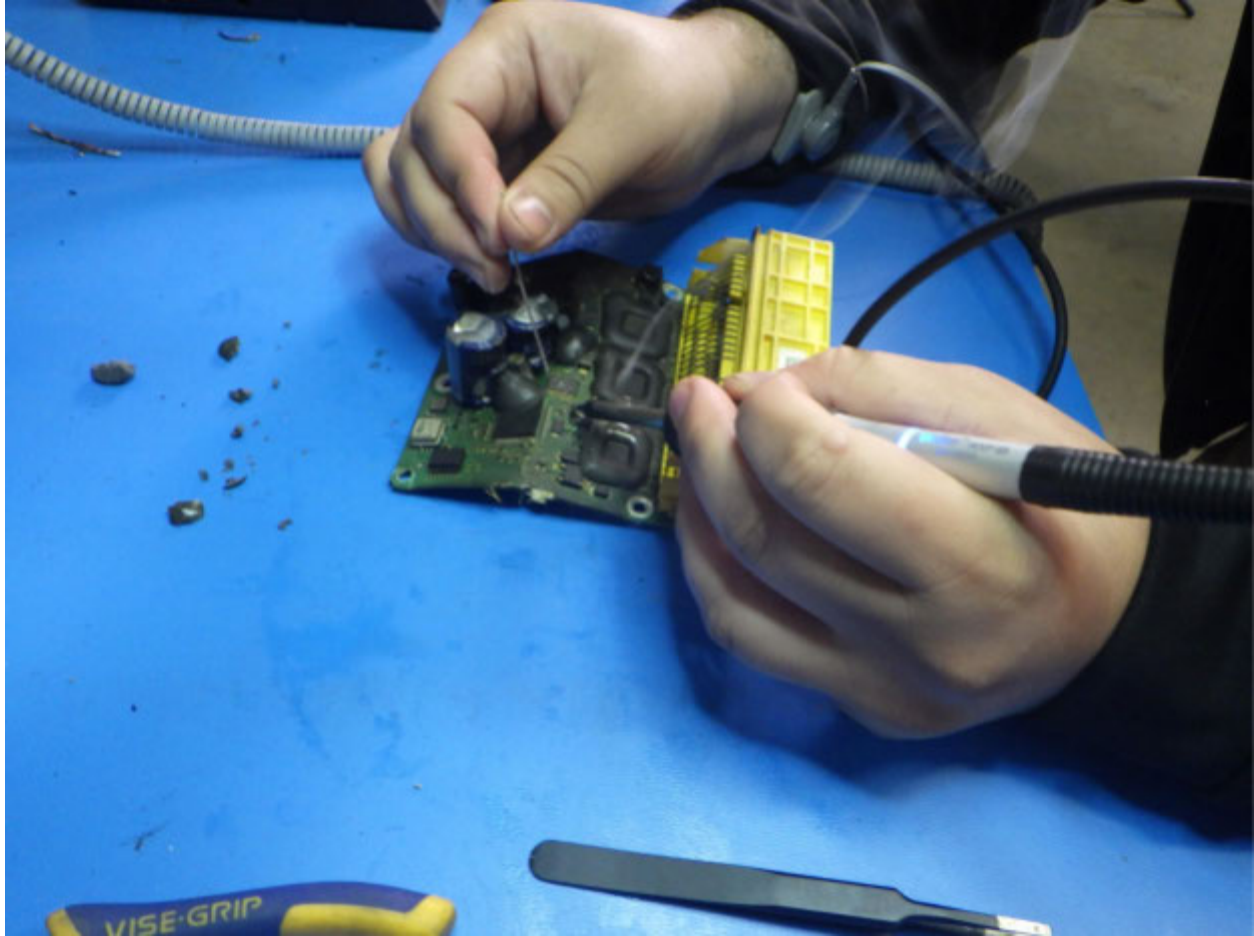


Figure 6



Figure 7

The exemplar PCB with the incident 8-pin chip was connected to the CDR Tool and the data was imaged from the module. The data obtained during imaging was not from the exemplar imaging and showed several indications that it was from the incident module, confirming the chip transfer was successful.

The imaged data was then given to Sgt. Kolter for his records and review, as well as a copy of the data being sent to Mr. Don Karol of the NTSB.

If you need further assistance, please feel free to contact us with your request.

Respectively submitted,

[REDACTED]
John Grindey
COO / Crash Reconstruction Expert