



## RECORD OF CONVERSATION

**Michael Huhn**  
**Air Safety Investigator**  
**Western Pacific Region**

---

**Date: June 29, 2013**  
**Person Contacted: Mr. Zim Weakly (IMSAR Radar technician)**  
**NTSB Accident Number: WPR13FA294**

---

Several IMSAR personnel were interviewed at the IMSAR facility in Springville, UT.

**Attendees:**

Michael Huhn – NTSB  
Ricardo Asensio – Cessna Aircraft Company  
Doug Yarrington – IMSAR (Interviewee's representative)  
Adam Robertson - IMSAR

**Narrative:**

The following is a synopsis of the information provided by Mr. Weakly during an in-person interview on this date:

Full Name: Zim Alvin Weakley  
Position/Title: Radar Technician  
Reports to: Andy May  
How long at IMSAR: Started Sept 2012  
How long in current position: Started Sept 2012

- Function/Capacity/Responsibilities: Troubleshooting/repair circuit boards and hardware
  - Serves as an intermediary b/t engineering and manufacturing
- IMSAR is a "small volume / high mix" design & manufacturing firm per Adam Robertson
- He holds a BS in Electrical/Electronics technology ("ET")
- He does not hold any FAA certificates (pilot or mechanic)
- Prior experience
  - Military (US Army) as generator mechanic/weapons system technician (Apache program)
  - Technician at Lockheed Martin in Denver CO
  - Technician at small private manufacturer
  - QA (satellite configuration) at Northrop Grumman

- He has no specific knowledge of, and no formal role/responsibilities regarding, IMSAR flight operations, including interface with FAA or DoD/USAF etc personnel

Recount of generic hardware fabrication/installation process

- He is provided drawings/schematics of desired product
- He fabricates and/or assembles the hardware [wiring and/or components]
- He then conducts functional test(s)
- Most of the products he has worked on are airplane-oriented [will be tested on and eventually used on aircraft]
- Typically he does not interface with FAA or DoD
- He has interfaced occasionally with Tom Woodhouse [U77-based IA]
- "Eddie" [Nielsen, IMSAR pilot] usually installs hardware
- Mr. Weakly has occasionally attached [electrical/cannon] plugs or mounted pods on aircraft

Recount of N5285H (referred to internally as "Pearl") hardware fabrication/installation

- When he first hired on to IMSAR, Pearl had 1 wing cable and 1 door mount
- IMSAR wanted to have a second radar pod- he was provided with the schematic to build the second pod
- Mr. Weakly fabricated some wing data/power cabling for the airplane
- He fabricated the "Y interface" that ran between the pods on the wings and the power supply in the cockpit/cabin
- He installed the cables in the wings

Knowledge of/Role in accident airplane (N4495R, "Liberty") preparations

- Mr. Weakly used Pearl schematics to fabricate and install wing cables in N4495R
- This occurred about April 2013
- He fabricated all wiring/harnesses
- He primarily interacted w Eddie regarding fabrication/assembly guidance
- He also conferred with engineering for details re specific hardware questions/issues (eg wire gauge)
- He was the technician who was primarily responsible for the fabrication/assembly for the electrical power and information N4495R
- For "key items," he would go to "Quality" (Charee Keepers or Doug Holzworth) to verify integrity/quality of solder joints ( this was a company standard practice for a second set of eyes)
  - He was unable to cite any formal guidance for such processes/activities/requirements, and did not believe that IMSAR had any
  - Mr. Robertson did not cite or offer any such company guidance/documentation
- Doug Holzworth suggested that there was a need to "isolate" the auxiliary electrical power hardware [battery, gray box, etc] unit from the airplane electrical system and controls

Design/Fabrication of the "Gray Box" (the NTSB term for the fire-damaged gray plastic box (approximately 12"x14"x6") that was subsequently identified as the "power distribution box" or the "breakout box")

- Box was Eddie's (Mr. Edward Nielsen) concept
- Mr. Weakly did the majority of integrations/fabrication
- He had input from engineer (Scott Barton & Mark Catanzaro)
- Mr. Weakly provides parts list and concept to Lamont Dean (EE)
- Software "Altium" is electronic CAD and circuit board layout and schematic capture tool
  - It is capable of conducting a basic verification of the circuit layout, referred to as a "net list check." It verifies nodes, grounds, etc.
- A functional check serves as the informal QC.
  - There was no formal check for congruence b/t the as-fabricated box and the concept or detailed/formal engineering drawings

#### Design/Fabrication of the "Red Switch/Isolator" system

- Doug Holzworth idea; He forwarded that idea to Eddie
- Device/installation was intended to keep the airplane battery and the auxiliary battery separate to prevent inadvertent drawdown of either battery due to a problem with the other battery
- Mr. Weakly made the determination of the hardware that was needed
- Mr. Weakly presented the hardware list and system purpose to Andre Young (COO)
- Andre approved purchase of needed components
- Mr. Weakly assembled/installed/wired components per the manufacturer's drawings (yellow card in "Liberty" book)
- No formal or independent QC check was conducted
- Functional tests were conducted by Mr. Weakly (by means of verifying voltage to the inverter)
- Installation was completed approximately June 19 or 20
- Mr. Weakly recalled that the airplane flew (with the isolator systems installed and in use) the night of 6/20 and the morning of 6/21
- He was not made aware of any problems with the isolator system
- He did not have any discussions with the pilots or the technicians for those flights, or for the accident flight
- He was not sure whether (or if so, why) an FAA form 337 was done for the isolator system or the supplemental power system.
- He had never met the accident flight pilot (Mr. Soter)
- When asked, he estimated that the test engineer (Mr. Wilson) was approximately 6' tall and weighed about 230lbs