

# CALLBACK

From NASA's Aviation Safety Reporting System



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## High Impact Maintenance

Maintenance plays an ever increasing, dynamic, and crucial role in the safe operations of today's aircraft in the National Airspace System (NAS). It would not have been possible to amass the overall safety record that we enjoy and benefit from daily without our Maintainers and their dedication.

This month, *CALLBACK* has selected reports that demonstrate the high impact that maintenance can wield, be it positive or negative. Examine the scenarios, details, and Human Factors; then consider how the outcomes may have been affected with changes in the smallest details.

Charles Edward "Charlie" Taylor, Wright brothers' bicycle mechanic turned airplane mechanic, was born on May 24, 1868. Widely revered, and recognized as the inventor of the first successful aircraft engine, he had a long, illustrious aviation career and an unimaginable impact on aircraft maintenance. In honor of Charlie and his unique legacy, we salute and thank all Aviation Maintenance Technicians, men and women, who keep America's aircraft safe and airworthy.

### A Universal Aviation Hazard

This air carrier Lead Technician shares sound wisdom for all pilots and Aviation Maintenance Technicians (AMTs).

■ *Opened aircraft engine oil cans were found on an oxygen service cart near oxygen bottle service valves during the morning shift equipment inspection. Crews need to be aware of the danger of oil and oxygen and the correct method to dispose of used oil cans in the HAZMAT area.*

### Part 91 – Brake Check

An AMT misstep and pilot complacency together produced a hazardous condition, which was unknown until a surprise occurred during the flight following the Maintenance release.

■ *A Gulfstream III departed our maintenance facility... following replacement of the Emergency Brake Valve. After the replacement valve was installed, the installation was inspected. All four brakes were bled. The Chief Pilot for this aircraft is also a training instructor. He also holds an A&P Maintenance Certificate. Maintenance hooked up two each Hydraulic flex lines in reverse. We informed the pilot that we had not performed the operational check portion of the valve installation. He stated that he wanted to do that himself*

*and wanted to do a test flight following that. After the test flight, he taxied to the local FBO and put the aircraft in position for a...next day departure. The [Chief] Pilot never performed the operational check of the valve prior to the test flight or prior to the...departure [flight] the next day. The checklist was not followed for the [test] flight, which calls for "Parking Brake set/Aux Pump on and indicating 3,000 psi." If the Aux Pump had ever been operated, the aircraft would not have been able to taxi with the brakes locked up.*

*The Before Landing Checklist calls for the Aux Pump on and 3,000 psi indicated prior to landing. Since the lines were crossed, this built up 3,000 psi to the brakes and caused all four [brakes] to be locked up prior to touchdown [on the next-day departure flight].*

*The Maintenance facility made a policy change. Any component removed having more than one [hydraulic] line will have all lines marked with color coded tie straps/color coded paint markers/color coded inspector's seals or tape to prevent any crossed connections. Only the Inspector is approved to remove the markings once verified to be correct. Chief Pilots are no longer allowed to perform operational checks of components replaced without maintenance personnel witnessing the event. It is easy to get complacent. The crew members need to actually follow the checklist.*

### Eradicating Hangar Rash

A Lead Technician describes a situation that fortunately produced only a mild case of nonspecific hangar rash. A suggestion is offered for subsequent mitigation.

■ *During the performance of the work card [procedures], at some point, the nose of the aircraft started to roll off the spot three center line, moving approximately 14 feet before coming to rest against a scissor lift and being re-chocked. There is potential that the nose wheel chocks were not properly positioned or orientated, or were worn.... The Emergency/Parking Brake Accumulator pressure was released, and combined with the slope of the hangar floor, could be contributing factors.*

*Suggestion: In Step XX.X, of [the work card], define chocking the landing gear as: "Place chocks at all three landing gear wheels." In Step XX.Y, add a caution note: "Caution: Not having all three...landing gear chocked while*

the Emergency/Parking Brake Accumulator pressure is released may cause damage and/or injury.”

## Part 121 – A Non-Electrical Non-AMT

This AMT describes a hazard spawned by personnel working a problem outside of their own area of expertise.

■ A ground support worker was told to go look at an electrical problem. When he found what it was, he took it upon himself to try to repair it, but with the wrong plug. It was a 30 ampere plug on the unit. He substituted a 20 ampere plug and could have caused a fire or an electrical short, injuring people and the aircraft [the plug] was under. He was working out of his bid area and had no idea what should have been done. The aircraft could still have been worked on, but no aircraft were available for eight hours until the day shift came in.

## Ferry Out of Trim

This AMT describes how a random, seemingly small and simple problem can escalate into an otherwise unrelated complex issue that presents a serious flight hazard. Fortunately, no injuries or damage occurred.

■ A Citation 560XL came to Company X for scheduled maintenance. I was tasked to perform the Inspection Document 1. On this inspection, it was required to remove the nose landing gear actuator panel for a corrosion inspection. While trying to remove the panel, I found several screws that were free spinning. After further investigation, it was found that 36 screws were installed that were too long and damaged the dome nuts that resided in the pressure vessel. In order to gain access to the dome nuts, it was required to remove the center pedestal. This included the trim wheel for the aileron. Before removal, the trim was zeroed, and the connecting rod was marked as such. The repair took two weeks to complete. Upon closing up, the trim tab was verified to still be at zero, but the connecting rod was now not reaching the rod from the wheel. I requested assistance from another technician who was not involved in the job to help line up the rods. He was able to get them to reach each other and left me to finish the job. At this time, I did not realize the trim tab was no longer at zero, [because] the marked index lines matched up on the [flight deck]. I proceeded with the installation and RTS (Return to Service) paperwork. Company Y, the operator, took the airplane out for a reposition flight...and the crew experienced that excessive aileron trim was required and returned to the FBO.... I was called out to investigate the next day and realized the trim indication did not match the trim tab. I performed the required rigging and once again released

the airplane. As of today, the airplane has completed a successful test flight, and the issue is resolved.

## Part 121 – Gear Up

These AMTs were shocked as they performed what should have been a routine gear door maintenance task.

From the ground AMT’s report:

■ The Lead assigned me and [another AMT] to gear door checks on Aircraft X. We slugged the gear in preparation for the test. I was on the ground while [the other AMT] and Inspector...went to the [flight deck]. I took off the door locks, and at this time, the [gear] locks were still on the gears. I cleared hydraulics and closed the gear doors. I was informed by [the flight deck AMT] that the slugs needed to be removed... then reinstalled. I [reconfigured] the slugs and informed the [flight deck], and the [flight deck AMT] started the test. I was standing by the right gear and saw the actuator attempt to raise the gear, with it flexing slightly. At that point, I realized the [gear] locks had been removed from the gears. I turned toward the nose gear, and it had begun to retract. The aircraft lowered [itself] and came to rest on the right-hand door stand. Supported by the entry door resting on the door stand, it stayed this way for 30 to 45 seconds until the right entry door broke at the fitting, and the entire nose hit the ground.

From the flight deck AMT’s report:

■ The Lead assigned me and another AMT...for the main landing gear door check with the Inspector... Not knowing the gear pins were removed, after [the ground AMT] informed me that the targets [slugs] were installed, I asked... if everything was clear. The [ground AMT] informed me that it was. The Inspector [and I] continued...the operational check. I selected the gear handle to up and told the Inspector what we had to look for. That is when the [incident] happened. Nothing but shock.

From the Crew Chief’s report:

■ Being the Crew Chief, I was assigned the task of working two aircraft. Aircraft X was close to being completed. The only job left before we went outside to do an engine run leak check was to operate the gear doors with slugs on the gear... I was going back and forth to Aircraft Y and... had 3 probationary mechanics working it, so I was more interested in keeping an eye on them. On Aircraft X, I had 2 people undocking the aircraft. As soon as the landing gear job was complete, we would exit the hangar to do the engine runs to finish this visit. An AMT asked me if they should remove the gear locks. I told them they could because as soon as hydro was shut off, we would be ready to roll.

ASRS Alerts Issued in March 2024	
Subject of Alert	No. of Alerts
Aircraft or Aircraft Equipment	6
Airport Facility or Procedure	11
ATC Equipment or Procedure	4
Maintenance Procedure	1
<b>TOTAL</b>	<b>22</b>

532  
 A Monthly Safety  
 Newsletter from  
**The NASA**  
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 P.O. Box 189  
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March 2024 Report Intake	
Air Carrier/Air Taxi Pilots	6,177
General Aviation Pilots	1,480
Flight Attendants	1,353
Military/Other	643
Controllers	314
Mechanics	309
Dispatchers	216
<b>TOTAL</b>	<b>10,492</b>