

CALLBACK

From NASA's Aviation Safety Reporting System



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The Forgotten Man

Charles Edward “Charlie” Taylor is not a household name. He is, in many respects, a typical “Forgotten Man,” whose contributions have been all but forgotten throughout aviation history. Charlie Taylor, born May 24, 1868 in Cerro Gordo, Illinois, quit school at age 12, was essentially self-educated, and had a brilliant, mechanically inclined mind. He settled in Dayton, Ohio where, through serendipitous circumstances, he met Orville and Wilbur of Wright brothers’ fame.

Fast forward...and Charlie began working for the Wright Brothers on June 15, 1901 repairing bicycles and keeping shop, allowing Orville and Wilbur freedom to pursue their work with flying machines. Charlie accomplished many tasks for the Wrights while they pursued their dream of powered flight, allowing Charlie to demonstrate his genius. When the Wrights could not interest nearly a dozen automobile manufacturers to build a powerful, lightweight engine needed for their purpose, Charlie took on the task. Without instruction books, formal drawings, manuals, handbooks, or tooling, Charlie completed the task in just six weeks. The rest is history.

Charlie worked for the Wrights for over a decade, and logged many “firsts” as a pioneering icon in aviation maintenance. In addition to building the first aircraft engine, he became the first Airport Manager. He participated in building the first military airplane, and he engineered the first transcontinental flight. He was the first person to investigate a fatal powered flight accident, and Charles E. Taylor was inducted into the USAF Museum as the very first airplane mechanic.

This month, *CALLBACK* pays tribute to Charles E. Taylor and is dedicated to the thousands of Aviation Maintenance Technicians, men and women, who keep America’s aircraft airworthy and return them to service when they require servicing, repair, or periodic maintenance.

The Aircraft Maintenance Technicians (AMTs) who submitted the following reports have contributed to improved maintenance practices. Their contributions to aviation safety exemplify commitment and dedication in the tradition of Charles E. Taylor.

Right Seal, Wrong Place; Return to Base

This aircraft maintenance team thought that they had correctly replaced a seal on a CRJ200. A successful leak

check added confidence, but a procedural error would soon come to light...along with a lamentable loss of lubrication.

■ *[Another] Aircraft Maintenance Technician and I were installing a new carbon seal on the Integrated Drive Generator (IDG) on Engine #1. During that process, we put a seal in the wrong location. We misinterpreted the diagram depicting where the seal went. Throughout this process we had to keep going back to the [Maintenance] Manual to print out sub-tasks using computers that were exceptionally slow, as well as endure many interruptions...which added to our distraction.*

After installation, we performed the leak check in accordance with the Maintenance Manual, and there were no leaks, so we did not realize our error at the time. During discussion about the project, Supervisors found that we had incorrectly installed the seal. By the time we discovered this fact, it was the following day.... The aircraft [had] lost the oil on the left engine IDG, most likely due to our mistake. The aircraft subsequently had to return to base.

It was easy to misinterpret the diagram in the Maintenance Manual. The interruptions due to slow network access to the online Maintenance Manual and [other] interruptions added to the situation.

When You’re out of O₂, N₂ Won’t Do

The importance of proper color-coding and distinct labeling of gas bottles was highlighted in this Technician’s report on an incident that could have had “noxious” consequences.

■ *[I] received a call...to service oxygen on an [Air Carrier] aircraft. [I] arrived at the scene and opened up the rear tail gate [of the line truck.] I saw one bottle secured to the bed. It was green in color, with no visible warning sign that I can recall. I noticed a steel braided line that was attached to the regulator and wrapped [around] the tail gate, but I did not see the service end. I looked around and found the service kit.... Enclosed was a regulator with a braided line attached. Instead of [switching] regulators, I swapped [the braided] lines and serviced the aircraft with 120 psi of gas.*

On my first day back to work [after scheduled days off], I installed what I thought was a missing bottle of nitrogen [in the line truck]. After further inspection, I found that the bottle

that was already installed in the truck was nitrogen and not oxygen. I immediately notified my manager of the issue.

I believe that when I looked in the tailgate, I saw a green bottle and didn't see any obvious abnormalities. I assumed the steel braided line was the same type we used in the hangar on the oxygen servicing bottle. The bottle didn't have a...regulator like we had on the high pressure bottle, but [it was] the same color and a similar design.

[I recommend] better placards and warning signs around all gas bottles, more color distinctive regulators used for each [gas] type, and servicing stations at [each] gate.

An Abundance of Assumptions

This incident started out with a wrong assumption, which was compounded when the paperwork associated with the job was overlooked. The Inspectors should have caught the error, however they assumed that the initial assumption was correct.

■ I started my service on a B737 aircraft while another Technician...was to start the fuel nozzle replacements. After I completed my initial service, I noticed that the Number 2 Engine Cowlings were opened up, so I figured that must be the engine getting the fuel nozzles. I found one new nozzle at the In-Station for our plane, so I took it into the Lead's office and told the other Technicians that three were missing, as we were to replace four nozzles altogether. Our Lead was notified and more nozzles were ordered. When they arrived, one Technician took the left side of the engine and another took the right side and began removing the fuel nozzles to replace them. I was the third person, so I was handing tools to them and getting whatever they needed. After the nozzles were replaced, I helped to safety all the bolts that had been removed [and reinstalled]. After Inspectors had looked the engine over for safety and security, I closed Number 2 Engine Cowlings....

The next day I was informed that the nozzles were the wrong part numbers and that they were supposed to be installed on the Number 1 Engine. I had never looked at any of the paperwork to verify with the other mechanics what part numbers [we were to use] or which engine we were to work on.

Off with Their Heads!

This Technician found that a less than professional maintenance person had used rather drastic and careless means to cover up a mistake in a maintenance procedure.

■ The Maintenance Technician noticed the Nose Gear Steering Cover was loose and seemed to be drooping. He

checked the cover and found it to be loose. When attempting to tighten it, he discovered that forward attach bracket screws had been deliberately cutoff and a sealant fabricated screw head was used in its place. At the time the loose steering cover was noticed, the bolts had failed.

The event was started by a routine check for a loose steering cover. This is rather common and is simply a hardware tightening process to repair. In this case it turned out to be worse.

The person who installed the steering metering valve missed the step that required the Technician to install the forward attach bracket hardware through the upper steering plate. Apparently after the steering metering valve was installed, the Technician discovered his/her error. Rather than remove the metering valve to correct the error, the Technician opted to cut the screw heads off and use sealant to hold the forward bracket. Note the screw must be installed prior to the steering metering valve installation because there is insufficient clearance with the valve installed.

The aircraft was removed from service. The steering cover was removed and the proper hardware installed. The aircraft was then returned to service.

I suspect that schedule pressure played a role in this event. The Technician, realizing his error, likely feared calling the Inspector to inspect the metering valve reinstallation. The time required to remove and reinstall the valve also would likely need to be explained.

Who's on First?

Perhaps the involvement of too many Technicians led to this propeller mix-up worthy of Abbott and Costello.... If 1 and 3 are on First and 2's on Second,...

■ I was the Lead Mechanic for a propeller build-up during which #2 and #4 Blades were swapped. When the prop was finally put on a plane a month later, the airplane experienced excessive vibration. This is when the prop was inspected and found [to have] blades...installed in the wrong locations.

I think the blades were installed improperly because too many people were involved in the build-up. Blades #1 and #3 were installed first, so I think we just got confused as to which side #2 went on. Inevitably after installing #2 incorrectly, then #4 would also be incorrect. I think we also failed to double-check our work like we did when installing #1 Blade.

ASRS Alerts Issued in March 2017	
Subject of Alert	No. of Alerts
Aircraft or Aircraft Equipment	2
Other	1
TOTAL	3

448

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March 2017 Report Intake	
Air Carrier/Air Taxi Pilots	5,240
General Aviation Pilots	1,216
Flight Attendants	775
Controllers	660
Military/Other	339
Dispatchers	202
Mechanics	173
TOTAL	8,605