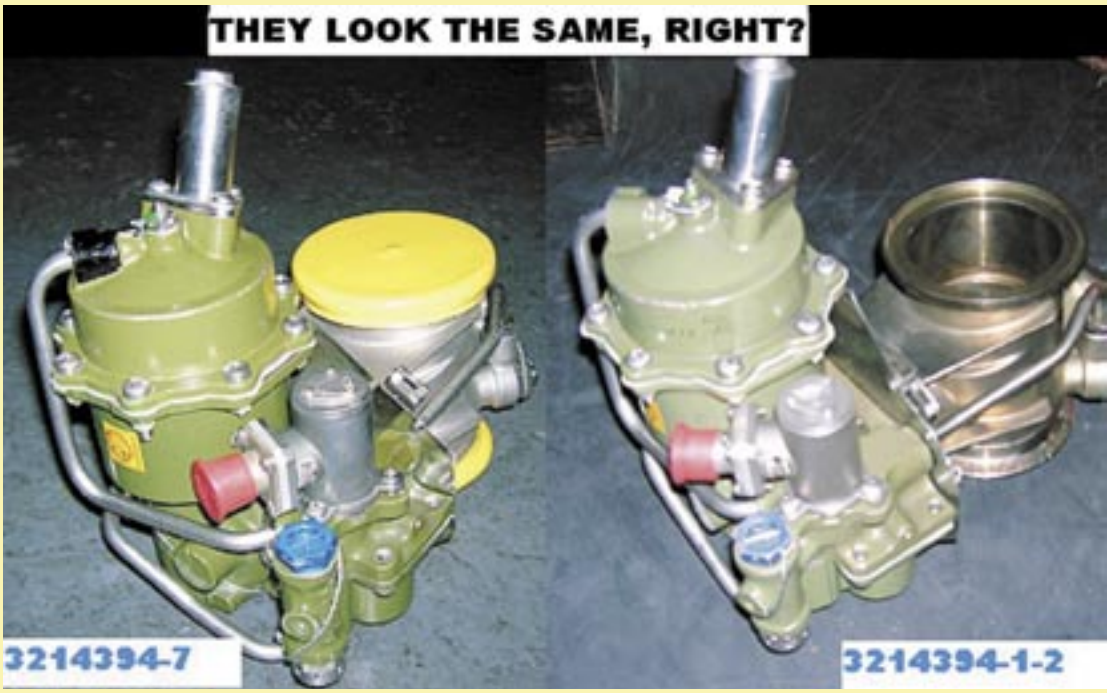
Part Numbers Can Bite You

By AD1(AW) Kenneth Manuel



Our FA-18 squadron was deployed aboard USS *Enterprise* (CVN-65) and was flying combat missions in support of Operations Enduring and Iraqi Freedom when an article in the summer issue of *Mech* caught our attention. That story pointed out an aircraft with an MSP 833 (secondary bleed-air over-pressure) that had resulted in dual bleed-off cautions. Coincidentally, we soon found ourselves elbow-deep in a similar problem, with quite different results and lessons learned.

As Knighthawk 311 launched off the pointy end on its scheduled mission, the aircrew immediately received dual bleed-off cautions. In accordance with NATOPS procedures, the pilot checked for MSP codes 831 and 833 but found neither (MSP 831 pops for either a bleed-air leak or a bleed-air-leak-detector [BALD] failure). Since NATOPS does not cover the specific case, where neither MSP is present, the pilot discussed a course of action with the squadron representative in pri-fly. He opted to cycle the bleed-air knob, restoring ECS flow. The caution reset with no further adverse indications. Upon the aircraft's return, the AME troubleshooters debriefed the aircrew on what had occurred. Following the troubleshooting procedures in the MIMs, the AMEs started to work with the AE shop to read out the associated wiring. All wiring checked 5.0, and the secondary bleed-air-pressure switch was changed in accordance with the bleed-air-troubleshooting tree in the publications. While doing a functional check during a low-power turn, the AMEs also found the secondary bleed-air-pressure and regulating valve leaking, and replaced it, as well. All systems checked 5.0 on deck during a low-power engine run.

The next day, Knighthawk 311 was back on the schedule. An hour into the flight it once again popped dual bleed-off cautions, this time with an associated MSP code 833. The pilot cycled the bleed-air knob, clearing the caution, but it returned every time he increased power from flight idle to military. The pilot returned to the ship uneventfully and downed the aircraft for the dual bleed-off cautions.

The AEs were called to read out all the wiring again, but they couldn't find anything to isolate or duplicate the discrepancy. The process of elimination led us to try replacing the secondary bleed-air-regulator relay to fix this perplexing discrepancy. During a low-power turn the bleed-off cautions returned. The AME and AD shops put our heads together to figure out

what to do next. A little brainstorming and out-of-the-box thinking led us to believe that perhaps one of the primary bleed-air-pressure regulating and shutoff valves might have malfunctioned. Maybe the valve was not regulating bleed-air pressure correctly. This analysis led to an alarming discovery.

Any FA-18 technician knows that different lot Hornets often use different part numbers for the same or similar system. In the case of the bleed-air system, lot-13-and-above Hornets operate at different pressure than lot-12-and-below do.

Upon removing the port and starboard primary bleed-air-pressure regulators (PBARs), we discovered that the starboard PBAR had a part number of 3214394-7 and the port PBAR had a part number of 3214394-1-2. Without even realizing the error, we had reordered the same part numbers for both PBARs! The part number for the port side was correct for our lot-10 Hornets, but the starboard side was a high-lot PBAR. We didn't even know which part number was wrong until we received the new starboard PBAR and the AMEs showed us in the publication that P/N 3214394-7 was incorrect for our squadron's aircraft.

The F-18 aircraft can be very lot-sensitive on certain items, and usable-on codes must be verified when ordering parts. Somehow we had installed the wrong part during a previous maintenance action on the PBARs. We returned the incorrect PBAR, installed the correct part-number valve, did a leak check, and completed an operational check during a low-power turn. The discrepancy did not return.

Looking back on the situation, we did some research and traced the problem to maintenance completed just before cruise. Although, at first glance, the previous discrepancies seemed unrelated to the final outcome. The bottom line is the wrong part number had been ordered and installed on the aircraft, and no one had ever bothered to check the usable-on code to verify its lot compatibility. Inattention to detail cost the squadron 161.4 man-hours, and kept an otherwise full-mission-capable aircraft down for about a week.

The shop and the maintenance department learned a valuable lesson: Take time to check the usable-on codes, and teach junior Sailors how to use the pubs. Specifically, we need to show them what to look for when ordering parts. And most of all, pay attention to those small details that can prevent a major waste of time, money, and even the possibility of the loss of the aircraft or aircrew.

Petty Officer Manuel works in the power plants shop at VFA-136.

Flight, Flight-Related, and Ground Class A Mishaps
12/14/2006 to 02/25/2007

Date	Type Aircraft	Command
01/26/2007	MH-60S	HSC-23

Aircraft entered water during plane-guard operations. Four fatalities.

Class B Mishaps

Date	Type Aircraft	Command
12/16/2006	FA-18C	VMFA-251

Aircraft aborted takeoff because of engine FOD.

01/06/2007	AH-1W	HMLA-367

During prelaunch procedures, aircraft had main-rotor overspeed on deck.

01/11/2007	SH-60F	HS-3

While enroute to ship, two helos collided in flight. No injuries.

01/17/2007	FA-18C	VFA-97

Hornet's left horizontal stabilizer departed aircraft.

02/05/2007	FA-18F	VFA-106 Det A

Engine FODed after a basket slap during FRS in-flight refueling sortie.

02/08/2007	FA-18E	VFA-143

Tailhook struck turtleback during carrier bolter making tailhook unusable.

02/11/2007	P-3C	VP-92

The No. 1 aircraft engine ingested FOD during maintenance turn.

Printed as a supplement to *Mech* from
Naval Safety Center Data
Cdr. Ed Hobbs
For questions or comments, call Dan Steber
(757) 444-3520 Ext. 7247 (DSN 564)

www.safetycenter.navy.mil/wess/default.htm

WESS

The Web-enabled safety system is the primary method for reporting aviation hazards and mishaps. WESS is an evolving program with lots of features that can make your job easier. Visit our WESS webpage to view the quick links to the online system, set up an account, and find the users' guides, training, and FAQs.