



A New Look at Wiring Problems

By Ed Taylor

The Naval Air Systems Command has taken a direct path to identify and fix wiring problems: They are sending out teams around the fleet to do material-condition assessments and inspection-techniques training.

These assessment teams are made up of representatives from NAVAIR, the TYCOM, MALS or AIMD, and squadron. Their work is twofold: Inspect aircraft for wiring problems, and give three segments of training. The material condition part looks at wiring, connectors, clamps, and grounding. The team takes photos of all problem areas to aid a command debrief and to provide tools for the training segments. An example of a recent assessment was a West Coast, Marine H-53 squadron. The team spent one week looking at wire-and-cable integrity, connectors and structural-support devices, equipment installations, maintenance issues and repairs, and safety-of-flight issues.

That assessment revealed wiring on the aircraft inspected was in good condition, with a few exceptions. The team found many in-line splices—most were old window type, and some were corroded. They also found the wrong size and type of splices (one connecting two different gauges of wiring). The wrong wire also was found, as were supply issues for ordering replacement rolls. They found wrong-size clamps in the cabin overhead, allowing the harness to lie on structure. Other clamps were attached to fluid lines in “butterfly” technique that could allow clamps to slip from their original positions and chafe the wires. Many block, strap or zip ties were broken. NAVAIR suggests using approved string tie (lacing) to replace broken strap ties used for secondary support to hold open wire harnesses together. Connectors were corroded,

had loose wires, or were strap-tied to hydraulic lines, which can induce chafing. Connectors not being used were found “bagged” in plastic bags, which promotes condensation [Read the story and look at the photos in the article, “Smokin’!,” in the winter 2002/2003 issue.—Ed.]

The team at this squadron also found two engineering issues: wire routing and chafing that cause the harness to be pulled into the structure at several flight stations (522, 544, and 566) and an AFCS closet near the No. 2 generator that is a natural stepping spot for maintainers. The problem with this item is the harness, connectors and hardware are pushed down onto the underlying servos and hydraulic tubing.

Three segments of wire-inspection-technique training are done in conjunction with the material assessment. This opportunity allows the squadron maintainers to see the problems found, learn how to prevent them in the future, and produce a more reliable and safe aircraft.

The first segment explains MIL-W-5088: how it relates to the aircraft and to the NAVAIR 01-1A-505 manual. It also gives examples of discrepancies to look for while doing maintenance or zonal inspections, as well as the benefits of these steps and preventive maintenance.

The second segment shows the photos taken during the assessment, allowing maintainers to identify and discuss the problems found. They get a “What’s wrong with this picture?” approach.

The third segment is a “hands on” session to show maintainers correct techniques to do a thorough wiring inspection.

Critique sheets are handed out after every session,



and that feedback has shown that the training “opened their eyes.” Most feel the photos that show problems in their own aircraft were effective tools and made a big impression. One pilot who attended the training said, “This was one of the best and only presentations I’ve seen on how to preflight electrical wiring.” 

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For more info...

Call Mark Thomas at (301) 342-0885 or Mike Bingham at (301) 757-2502. Another POC is Nancy Heisley, AIR-3.2.6, at (301) 757-3084 or nancy.heisley@navy.mil. A material condition assessment and training visit just might fix some problems and open your eyes.



Connector properly wrapped but not stowed correctly. The taped end should be attached with string tie, and connectors never should be zip tied to lines. The connector could have been clamped in the circled area.



An old-style window splice (middle one) is green from corrosion. Zip ties should not be used over splices because they induce strain. Many old splices recently were used.



Oversized clamps allow the wire harness to droop and rub on the structure. This one wasn't damaged, but the right clamp keeps the harness centered through the hole.

**Flight, Flight-Related, and Ground
Class A Mishaps
06/01/2004 to 08/31/2004**

Aircraft	Command	Date	Fatalities
C-130T	VMGR 452	06/01/2004	0
C-130T	VR-62	06/01/2004	0
Severe storm and winds damaged aircraft at a Navy field.			
FA-18A	VMFA-115	06/27/2004	1
Aircraft lost at sea during night carrier operations.			
FA-18C	VMFA-122	06/28/2004	1
Aircraft departed runway on landing and overturned. Pilot did not eject.			
T-45C	VT-7	07/12/2004	0
Student pilot on solo departed runway on landing and ejected.			
FA-18A	VMFA-134	07/21/2004	2
FA-18B	VMFA-134	07/21/2004	2
Midair collision during unit-level training. Two aircraft destroyed.			
S-3B	VS-35	08/10/2004	4
Aircraft crashed into terrain on WestPac island.			
MH-53E	HC-4	08/10/2004	0
Helo became airborne during stop on taxiway and struck the ground.			
CH-53E	HMM-166	08/11/2004	0
Helo crashed (destroyed) during night combat-logistics run. Two crew MIA.			
CH-53D	HMM-265	08/13/2004	0
Helo crashed near MCAS while landing. Aircraft destroyed. Three major injuries.			
FA-18C	VFA-151	08/26/2004	0
Aircraft departed end of runway. Pilot successfully ejected.			

**Class B Mishaps
06/01/2004 to 08/31/2004**

Aircraft	Command	Date
FA-18F	NWTS CHINA LAKE	06/16/2004
Canopy closed on hand-held radio.		
MV-22	VX-21	06/28/2004
Engine nacelle blower failed during shipboard wind-interaction testing.		
FA-18C	VFA-25	06/28/2004
Aircraft had multiple AMAD related cautions after catapult shot.		
SH-60B	HSL-47	07/24/2004
SH-60B	HSL-47 SEA COMP	07/24/2004
Overhead AFFF deluge system discharged on helos and equipment in hangar.		
E-6B	VQ-4	07/31/2004
During engine turn, ramp pavement collapsed aft of engines and damaged aircraft.		
FA-18F	VFA-2	08/02/2004
Left main landing-gear door departed aircraft in flight.		
F-14D	VF-101	08/09/2004
During aircraft ground checks, port engine ingested an MLG down-lock pin.		
T-44A	VT-31	08/20/2004
Intentional gear-up landing because port MLG tire had departed aircraft.		



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