



JSWAG Conferences

The next full-attendance JSWAG/JFOWG Meeting is scheduled for March 21-24, 2011 in Virginia Beach, Va.

The JSWAG working meeting is scheduled to take place in Aug. 15-18, 2011.

For updates on these meetings, keep watching the JSWAG Web site for updates, registration opportunities, and the Lu Roberts award voting. Visit www.navair.navy.mil/jswag.

Other Conferences

- Reliability & Maintainability Symposium -- Orlando, Fla.
Jan. 24-27, 2011
- Dixie Crow Symposium -- Warner Robins, Ga.
March 20-24, 2011
- MRO -- Miami, Fla.
April 12-14, 2011
- Quad A -- Nashville, Tenn.
April 17-20, 2011
- AA&S -- San Diego, CA
April 18-21, 2011
- AUSA Sustainment Symposium -- Richmond, Va.
May 10-12, 2011

Newsletter Contacts

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NAVAIR Makes Wire Splicing Cool

The NAVAIR Wiring Systems Team is bringing Navy and Marine Corps maintenance professionals an innovative way to perform electrical splices. The team recently approved the use of cold splicing to apply an environmental seal to spliced electrical wires.

According to findings from the Wiring Systems Team, cold splicing requires few tools and fewer steps to complete. This makes the maintainer's job easier. In addition, one of the advantages of cold splicing is that it is a safer procedure in certain environments. The absence of heat increases the safety factor when performing splices on fueled aircraft on the flight deck or flight line as compared to the conventional splicing method with a heat gun.

"There are only a few types of heat guns approved for use on a fueled aircraft," said Brian Vetter, a Wiring Systems Branch electrical engineer. "Two types of heat guns that are approved for use require a nitrogen cart or compressed air, which are rather large and cumbersome pieces of equipment. It's a rather inconvenient piece of gear to perform a simple splice."

In addition, all approved heat guns require a 110 volt AC power source which can be a challenge on the flight deck or flight line, said Oliviu Muja, a Wiring Systems Branch logistician. The ability to perform cold splicing on the flight deck or flight line without the additional logistical footprint and authorization required for heat-applied splices greatly increases the safety factor as well as the speed at which such maintenance can be completed.

The cold-splice has a similar crimp barrel as the old splice but it has integrated in the jacket a gel material that creates an environmental seal once the conductors are pushed in. The gel is not an epoxy or a silicone sealant, which means its consistency doesn't change over time.

"No activation is needed, and there is no hardening of the gel," Vetter said. "It's more akin to Jell-O wherein if you push your finger in it, the material simply wraps around the inserted object. And once the object is removed the material self-seals."

During initial testing of the cold-splice devices, a question arose about how the gel material would hold up over time, so

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the Wiring Systems Branch test team performed additional tests to prove its airworthiness over a specific duration. Vetter said that the gel held up during extreme heat tests, saltwater immersion tests, altitude tests, hot and cold cycling tests, fluid resistant tests, and more. Additionally, the test team performed an operational evaluation where they applied a cold-splice to a Coast Guard H-60's outboard tail rotor where the splice is constantly exposed to sea water for a period of one year with episodic assessments. They tried to place the test splices in areas where they would be treated to the worst possible environment. The test team pulled and tested the samples approximately every three months and not one demonstrated any failures.

"These new cold-splice devices were exposed to the same test treatments as the current splices and more, and it passed them all," Vetter said. "We have a high level of confidence that these cold-splice devices are going to perform out in the field the way they need to."

While these are new devices that maintenance professionals will have to get used to using, the learning curve is relatively low as compared to previously introduced tools. The cold-splices come in three colors – Red, Yellow, and Blue – which are standard nomenclatures maintainers are used to seeing. There is only one change, Vetter said.

The old crimp barrels used an overlapping gauge range where a 16 gauge wire could be used in the blue or yellow barrels. In the cold-splice crimp devices, yellow is for 12-14 gauge wires, blue 16-18 gauge wires, and red 20-24 gauge wires. A cold splice install tool will be available soon for maintenance shops everywhere.

The main benefit for the warfighter is that he will take less parts out to the aircraft on the flight deck reducing the potential for item loss because there is but one part to keep track of, Vetter said.



New Crimp tool for pre-insulated devices M22520/44.

The biggest benefit, though, is that the maintainer will not have to lug a heat gun out to the aircraft which should result in a huge timesaving.

The good thing about these new crimp devices is that there is virtually no room for error as with heat-applied splices. The cold-splice crimp barrels have a little inspection window so that the maintainer can see immediately if the job is done correctly. In addition, the crimp tool specifically designed for the cold-splice crimp barrels will not release until the proper crimp is applied. Using the proper tools is imperative for correct results, Vetter said.

The new crimp tool will look different from the current crimp tool so that the two will not be mistaken for each other. And, along with the new crimp tools, a new go/no-go gauge will be issued to help ensure proper splicing techniques are applied.

"Rough estimates point to approximately \$30 million in labor savings alone by simply moving from the current splicing techniques to the new cold-splice devices," Vetter said. "These figures take into account the nominally extra charge for the cold-splice devices versus the current

splice barrels. We are not getting rid of the current splices; these cold-splice devices are simply an alternate to what's available."

Both Brian Vetter and Oliviu Muja have recently been recognized for their efforts for the development of the cold splice with this year's NAWCAD Innovation Award under the Logistics Life Cycle Support category. This innovation affects and improves not only Naval Aviation processes, but impacts how wiring systems are repaired on all military, commercial, manned and unmanned aircraft. 🛩️



Cold Splice M81824/12