



NAVAIR ISSC Wins 2016 FLC Far West Regional Award

NAVAL AIR STATION NORTH ISLAND - Naval Air Systems Command's (NAVAIR) In-Service Support Center (ISSC) North Island, Advanced Aircraft Technologies Team recently earned a 2016 Federal Laboratory Consortium for Technology Transfer (FLC) Far West Regional Award.

Located at Fleet Readiness Center Southwest, the NAVAIR ISSC won the award in the "Outstanding Technology Development" category for its F/A-18 Hornet Landing Gear Strut Operational Readiness Monitoring (STORM) System.

The FLC is comprised of more than 300 federal laboratories, research facilities and their parent commands. Its goal is to streamline partnership prospects for federal labs, and to promote resulting federal technologies in the marketplace.

STORM acts as a pressure gauge for F/A-18 landing gear, which endures about 150,000 pounds of force when landing, and was created in view of aircraft mishaps attributed to faulty or improperly serviced shock absorbers.

As an engineering representative to the Naval Safety Center's Aircraft Mishap Board, NAVAIR aerospace engineer Chrys Starr has analyzed numerous incidents where shock absorbers were suspect catalysts in mishaps.

Starr also serves as the landing gear advisor to a Small Business Innovation and Research (SBIR) program targeting airframe and landing gear fatigue damage to multi-mission P-8 Poseidon aircraft.

The SBIR encourages private business participation in federal research and development projects that may have the potential for commercialization. The P-8 SBIR project is held in conjunction with ES3, a small San Diego-based engineering firm.

STORM is a portion of the P-8 SBIR.

Starr realized that STORM could be adapted to other existing military and civilian airframes, and formed a team of other aerospace engineers to develop the system for F/A-18 use.

The team collaborated with the P-8 technical point of contact, NAVAIR SBIR, the F/A-18 Program Office and Science and Technology Lead to establish another SBIR with ES3 to develop STORM for the Hornet airframe.

Monitoring landing gear strut oil levels cannot be performed while an aircraft is sitting "weight on wheels." Consequently, aircraft need to be removed from service for an extended period while maintenance is performed.

To avoid taking the aircraft out of service, the maintenance plan had been to pump nitrogen



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into the strut system. An inert gas, nitrogen does not corrode or react with landing gear components. However, its use in place of oil has become a leading cause of landing gear mishaps.

STORM will work much like the oil light in a car, providing a simple means of monitoring the landing gear oil levels of the Hornet. A red-yellow-green lighting system positioned in the wheel well of the aircraft will allow maintenance personnel easy access during routine inspections.

The system will measure temperature and pressure of the shock absorber while the aircraft is in flight, at landing and stationary. Its software is based upon "Boyle's law," which states that the pressure and volume of gases are inversely proportional under constant temperatures.

The relationship with SBIR and FRCSW began about one year ago; the project is in Phase 2 of its development where the software is being optimized for the F/A-18 application. SBIR is projected to have a proto-type ready for Phase 3, an implementation phase, by early 2018.