NEWS FROM WHITE SANDS

John Griffin and his crew lead testing of the Improved Auxiliary Power Unit for the Space Shuttle Orbiter

This is the first in a series of articles on the men and women who support the Space Shuttle at the White Sands Test Facility.

By Cheerie R. Patneaude

John Griffin has been checking his Improved Auxiliary Power Unit (IAPU) every weekday morning and afternoon for the past five years.

He walks out of the 300 Area Propulsion Engineering Building at the White Sands Test Facility (WSTF) and out across the paved area to the test stand where the system resides. As the IAPU project leader for Honeywell Technology Solutions Inc., Griffin writes safety procedures to ensure the well-being of his crew and the system. The crew takes pride in the safety of the system and boasts no injuries or damage in the past six years.

The Space Shuttle Orbiter IAPU is a hydrazine-fueled gas turbine that provides power to a hydraulic pump, which in turn generates the hydraulic energy required for throttling the main engine valves. The IAPU also:

- ***Operates the main engine vector control***
- ***Moves and controls aerodynamic surfaces, such as the elevons, rudder and speedbrake, and body flap***
- ***Operates the external tank umbilical plate retraction actuators***
- ***Deploys the landing gear***
- ***Steers the nose wheel***
- ***Brakes the landing gear wheels***

There are three IAPUs installed on each orbiter.

The IAPU sits in Test Stand 303 and undergoes simulated environment testing, which includes not only space environments but also the humid, salty air of the Kennedy Space Center. These effects on the IAPU are studied for the safety of the shuttle and its crew.

"The IAPU Program is, in effect, an effort to increase the reliability and maintenance of the APU, and to extend the lifetime of the IAPU," Griffin said. "The IAPU is removed and serviced after 50 hours of use on the Shuttle. We are working on extending the IAPU lifetime to 75 hours, which will reduce costs and safety concerns."

The importance of the IAPU should not be underestimated. "The name IAPU is a misnomer and a carryover from the military where the IAPU system is an auxiliary one," Griffin said. "For the Space Shuttle, however, it is the primary hydraulic system."

The crew members of the IAPU are: Raul Estrada, Coye Wallace, Leo Hernandez, Robert Robinson, Matt Cover, Helm Zander, Rachael Aguirre, Joe San Filippo, Jim Douglas, Tim Blowers, Gary Cruz, Geraldo Mendoza, Brian Galvan and Darwin Peebles.

In addition to paying attention to the wear and tear on the IAPU, Griffin is looking at a new electric APU (EAPU), which will be battery operated.

"Hydrazine is toxic and explosive," Griffin said. "The EAPU will be safer with no gases, no leaks and a smaller risk mitigation."

Griffin thinks his job as Project Leader is interesting. He said his team enjoys their work and finds it challenging. "It's neat to have your own system that you can take pride in," he said.

He knows his crew also takes pride in the system by making suggestions for improvement and smoother operations.

Griffin said: "We would like to think of ourselves as experts on the IAPU. We've compiled a large data base, published many external and internal test reports, prequalified the system and are working hard in looking at new technologies for the system."

In addition to taking care of a primary Shuttle system, Griffin takes care of his two sons, wife Victoria and writes science fiction. His latest novel is "The Realm of the Gateway." ■

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>
> - John Griffin

John Griffin (top right photo) is the project leader for the Improved Auxiliary Power Unit (IAPU) at the White Sands Test Facility. The IAPU (center photo) is a hydrazine-fueled gas turbine that serves the Space Shuttle Orbiter. At left, the IAPU undergoes simulated environmental testing.