

Following the clues

‘Detective’ work by Boeing engineers helps keep the space shuttles flying **by Ed Memi**

When *Atlantis* flew to the Hubble Space Telescope for a servicing mission in May 2009, one of the space shuttle’s elevons (used to control the shuttle’s side-to-side and up and down movement) short-circuited. The circuit worked as expected right up to the day of launch, but once the main engines fired and the boosters were lit, the problem surfaced.

Fortunately for the crew, critical flight systems are redundant and the mission went on as planned. But the electrical short got everyone’s attention.

On the shuttle’s return to Earth, a team of Boeing, United Space Alliance and NASA engineers began troubleshooting the nearly 170 miles (275 kilometers) of wiring throughout *Atlantis*. Among them was Nick Utley, a Boeing wiring subsystem engineer.

“It’s detective work,” Utley said. “You have to take what you know, collect any new information, dig deep and just follow the clues.”

Digging for clues is what Utley loves. As a kid, he was always disassembling or tinkering with electronics to see how they work. Now, he gets to carry out that childhood passion in and around the space shuttle.

In troubleshooting the problem with *Atlantis*, Utley and the rest of the wiring team zeroed in on a damaged wire harness buried inside the right wing. The harness had rubbed on an adjacent structural fastener that, over time, damaged the wire insulation and exposed the conductor within. Contact between the exposed



conductor and a fastener during the vibration of launch resulted in the short circuit.

Although his job is largely behind the scenes and routine, Utley said it’s all worth it on the day of launch. “When you watch the shuttle fire up and successfully rocket into space, and then remember that you and your teammates—crawling around in one of the compartments to locate and fix a problem—played a part ... that makes the launch personal and special.”

Utley and his team know the Space Shuttle program will soon be retired. “Doesn’t matter,” Utley said. “This is about doing your best day by day in the smallest details. That kind of attitude is transferable to anything you do.” ■

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PHOTO: Boeing Space Shuttle wiring experts Dario Garcia (left), K. Nick Utley (foreground) and Ryan Smith, inside a space shuttle at Kennedy Space Center. INDYNE