

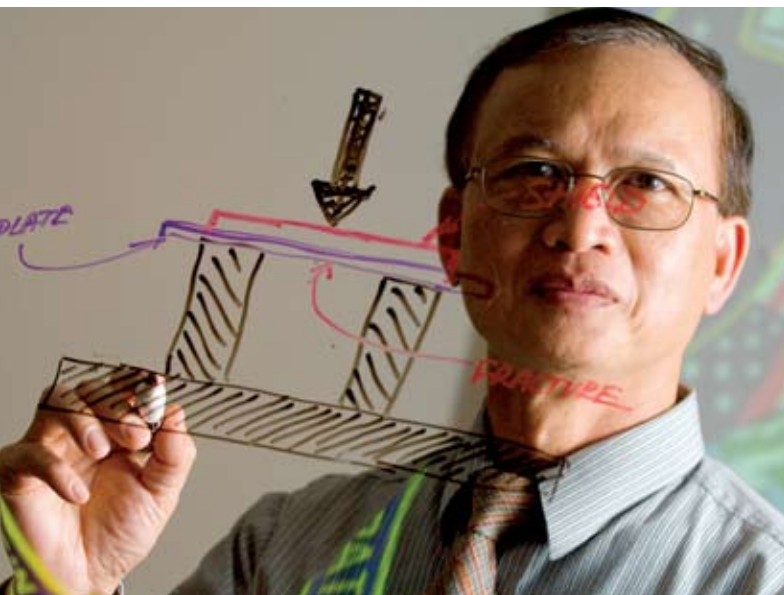
# No substitute for hard work

NASA recognizes Boeing engineer for his role in making space vehicles safer

By Ed Memi

**D**uke Tran knows the value of hard work and its rewards. The Boeing engineer's expertise in space shuttle structure and his contributions toward making space vehicles safer has earned him the highest award for a non-government worker from the U.S. National Aeronautics and Space Administration.

Tran received the NASA Exceptional Public Service Medal last month for his work as a principal on a prestigious NASA study that examined how to improve the design of future spacecraft by using the lessons of the Space Shuttle *Columbia* tragedy.



During the study, NASA's Spacecraft Crew Survival Integrated Investigation Team report, Tran worked side-by-side with noted forensic doctors, astronauts and experts from other fields as they examined shuttle debris at Kennedy Space Center, Fla. The team performed a multidisciplinary analysis of the *Columbia* accident that focused on the crew, crew equipment and the crew module.

Tran used his knowledge as a subsystem manager on the shuttle's forward fuselage and crew module to help reconstruct how the orbiter broke up on re-entry in 2003. Impressed with his expertise and his scenario for how the breakup occurred, the team asked Tran to author a major section of the 400-page report released in December.

Tran immigrated to the United States from Vietnam in 1975 after the fall of Saigon (now known as Ho Chi Minh City) with a degree in electrical engineering. After a series of odd jobs, he went back to school and earned a bachelor's degree in mechanical engineering and joined Rockwell International in 1979. When

the orbiters were built, Tran was the lead engineer for the forward fuselage on three of the five spacecraft.

Tran has spent most of his Boeing career in California and Houston supporting the forward fuselage and the pressurized crew module, which is suspended inside the forward fuselage. He was the lead engineer on the external airlock on the space shuttle so it could dock to the Russian Mir space station and later to the International Space Station. Tran also designed the lightweight composite lockers used on the mid-deck of the shuttle. After the *Challenger* accident in 1986, he helped design the new crew escape system, which added pyrotechnics and beefed up structures around the side hatch.

Tran began helping the *Columbia* team in 2004 part-time, while continuing to perform his Boeing engineering duties on the space shuttle's forward fuselage, crew module and crew transfer subsystems. "A NASA subsystem engineer had mentioned that a team was studying how the crew cabin broke up and what happened to the crew, and asked me to put together a briefing to talk about the crew module structures," he recalled.

As part of the study team, Tran made a number of recommendations to improve the spacecraft. "Making major changes to the shuttle and its structure might not be worth the added expense, since it will be retired, but [understanding] the breakup scenario will help us to design the next generation of spacecraft to perhaps strengthen sections so it breaks in a planned manner," he said.

Tran said he hopes to work on the space shuttle program until it stops flying and to continue improving the vehicle. He said the forthcoming Space Shuttle *Discovery* mission includes a new modification that improves the safety of the crew module.

Tran, who's wanted to be an engineer since he was a child, said he feels fortunate to work on the shuttle team and to be honored by NASA: "In the United States, you just have to do good work, and you will likely have success." ■

[edmund.g.memi@boeing.com](mailto:edmund.g.memi@boeing.com)

**PHOTO:** Boeing space shuttle structures and payload design engineer Duke Tran last month received the NASA Exceptional Public Service Medal—the agency's highest award for a non-government worker. **PAUL PINNER/BOEING**