

## **Learning from Propulsion System Failures**

### **OVERVIEW**

This class will go over notable and lesser-known spacecraft propulsion system failures and the principal lessons learned from these failures. Open to US Government employees only.

### **LEARNING OBJECTIVES**

By the end of this course participants will be able to:

- Describe the basic theory of root cause analysis
- Describe the findings from the Apollo, Challenger and Columbia investigation boards and other programmatic failures
- Describe notable historical propulsion system failures

### **WHO IS THIS FOR?**

All space professionals who want to learn from spacecraft propulsion system failures.

### **INSTRUCTORS**

Eric Cardiff is the founder of Virtucon Earth and Space, LLC, and former chief engineer for propulsion at NASA Goddard Space Flight Center. He received his Ph.D. in propellants from Penn State University in 2002, and has over 20 years of experience in design, build, test, and flight of spacecraft propulsion systems. Dr. Cardiff has worked on multiple high-profile mishap investigations and spacecraft anomalies, and has expertise in propellant handling. He has also contributed to the development of both ASCENT and HyperFlex propellants and propulsion systems.

### **COURSE FEES**

\$300 per person for local onsite training

\$450 per person at JANNAF Conference

Current university student rate at JANNAF \$300, for local onsite \$150

### **HOURS**

Classroom Hours: 2 classroom hours