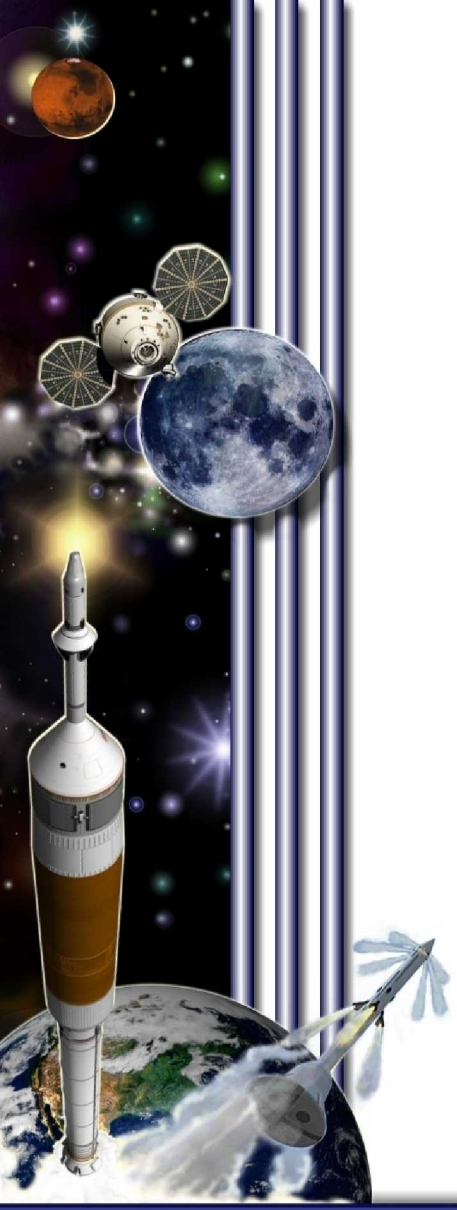

Topics on Test Methods for Space Systems and Operations Safety: Applicability of Experimental Data

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Technical Interchange Meeting on Aerospace Materials Flammability
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Agenda

- Perception of reality through experimentation and analysis
- Measurements, methods, and correlations with real life
- Correlating laboratory aerospace materials flammability data with data in spacecraft environments

Perception of Reality through Experimentation and Analysis

- Phenomenological reality
- Truth
- Fact

Measurement Methods and Correlations with Real Life

- Measurement methods
  - Transient phenomena
- Correlations with real life
  - Flash point testing
  - Heat-release testing

Correlating Data

- Correlating laboratory aerospace materials flammability data with data in spacecraft environments
  - NASA WSTF and Glenn Research Center (GRC) proposed approach
  - Ground test conditions and spacecraft environments
  - Parametric effects on flammability
  - Microgravity and reduced gravity testing

Future Correlations

- Only a limited amount of microgravity or reduced gravity data can be obtained
- Correlate the available information with materials characteristics to predict spacecraft extinguishment limits for other materials based on ground test information
- Perhaps use inverse modeling to optimize the parameters of these correlations
  - Inverse modeling is used in geophysics to infer information on Earth's interior from physical surface measurements, not unlike inferring spacecraft materials flammability mostly from 1-g ground test data