23rd ATS Session Descriptions
"New Dimensions"

Test Efficacy, Philosophies and Standards, Including Recent Lessons Learned
Aerospace testing is under constant pressure to provide the optimum balance between effective testing and reduced cycle time, while addressing system size, maturity, complexity, resource availability and limitations, and customer requirements.. This session will present anomaly experience from ground test through on-orbit operation, analysis and lessons learned to increase test perceptiveness and effectiveness and form a basis for our industry testing standards. Potential topics include "New Dimensions" in processes and techniques to produce perceptive and effective test programs, the value of various functional and environmental tests, "test like you fly" strategies and how industry standards ensure uniformity and success. Metrics to monitor and improve test programs, adequacy assessment techniques and comparisons to applicable standards, and introduction to new and revised standards are also included.

Ground Segment Test
This session addresses test planning, strategies and implementation of ground segment testing used by the aerospace community. Discussion areas include topics such as new processes and techniques to produce an effective ground segment test program and ground segment test program implementation, including integration and test at lower levels such as subsystem, element, segment and system integration. Also included are planning and scheduling approaches, the value and approaches used to qualify ground segment software, compatibility testing, approaches for integration between the space segment and ground segment (including lessons learned).

Strategies and Methodologies
Test strategies are often used to balance cost and schedule while still maintaining test discipline and proper test sequence. This session invites papers that address "New Dimensions" in this area. Discussion areas include topics such as test fixtures, facility availability, trade-offs, processes, lower level versus assembly testing with management and planning for the most robust program strategy. Optimization of key resources in the planning and execution of a test program may also be considered as a topic of discussion. "New Dimensions" in testing strategies should include past, present and future programs as well as methods used to incorporate lessons learned to mitigate risk.

Innovations in Test Facilities and Equipment
This session will include unique test planning, test performance, and supporting applications for new test facilities and related equipment. Discussions on recent innovations and techniques are invited. Issues such as non-recurring or recurring tests and selection of new and/or adaptation of existing test facilities and equipment may be addressed. Topics include recent concepts, unique breakthroughs and advances in testing methodology, test optimization, increased perceptiveness, equipment, control, data acquisition, and reduction capabilities.

Instrumentation, Data Acquisition and Evaluation
This session invites papers that address a wide range of issues dealing with the measurement and evaluation of test data as well as flight and on-orbit data pertinent to testing and verification. The scope of topics is intended to include instrumentation, data acquisition, validation, post-processing and interpretation. Examples of invited topics are: new methods and techniques for instrumentation for aerospace testing and flight data acquisition; application of new technologies in sensors and data acquisition, such as the use of wireless technology, smart sensors, and new types of sensors enabling greater perceptivity in test and flight; effective and innovative use of conventional technologies; characterization and control of data measurement and processing error.

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Modeling, Analysis and Simulation

Tremendous advances in the power and pervasiveness of computational tools continue to add "New Dimensions" to the nature of aerospace testing. This session will provide an opportunity to gain insight into the latest advances in modeling, analysis and simulation that may motivate, integrate, or optimize a wide range of physical simulation capabilities used to qualify launch vehicles and spacecraft. The process of validating computer models and simulations through experiment will also be discussed. Modeling of "un-testable" environments is an especially intriguing dimension of the close interplay between analysis and testing.

System Integration and Test Using Flight Software

This session invites papers that focus on the impact of flight software on space systems integration and testing. Possible topics can range from impacts discovered during system hardware integration and test due to flight software defects, monitoring and reporting methodologies utilized to effect updates, concepts and techniques for uncovering hard to find mission critical flight software defects, software reliability using "test like you fly" and rare condition scenarios, and advances in quantifying "when to ship". Papers that address reliability of flight software and the particular challenges invoked during system hardware integration and test are especially encouraged.