

NATIONAL NEEDS & OBJECTIVES

Monday, August 13, 2001

3:15 p.m. - 5:00 p.m.

Chair: Colonel James "Mouse" Neumeister, USAF

- SSC01-I-1** **433 Eros Landing - Development of NEAR Shoemaker's Controlled Descent Sequence**
Presenter: R. L. Nelson - Applied Physics Lab
- SSC01-I-2** **TopSat - High Resolution Imaging From a Small Satellite**
Presenter: P. Brooks - Space Department, DERA
- SSC01-I-3** **TechSat 21 and Revolutionizing Space Missions Using Microsatellites**
Presenter: M. Martin - USAF AFRL
- SSC01-I-4** **A Novel Concept for Monitoring of Maritime Traffic by Micro-Satellites**
Presenter: B. Narheim - Norwegian Defense Research Establishment
- SSC01-I-5** **Pleiades High Resolution Satellite**
Presenter: P. Damilano - Astrium
- SSC01-I-6** **An EO Constellation Based on the TO SAT Microsatellite: Global Daily Revisit at 2.5 Metres**
Presenter: J. Harrison - Surrey Space Centre
- SSC01-I-7*** **Design of a High Performance Earth Imaging Microsatellite**
Presenter: H. J. Chun -
SaTReC Initiative, Co. Ltd.
- SSC01-I-8*** **MYRIADE: CNES Micro-Satellite Program**
Presenter: M. Thoby - CNES

* Alternate

COMMERCIAL APPLICATIONS

Tuesday, August 14, 2001

8:30 a.m. - 10:15 a.m.

Chair: David Goldstein, AeroAstro, Inc.

- SSC01-II-1** **Low Cost Hyperspectral Imaging from a Microsatellite**
Presenter: A.Phipps - Surrey Space Centre
- SSC01-II-2** **Encounter 2001: Sailing to the Stars**
Presenter: J. Rogan - AeroAstro, Inc.
- SSC01-II-3** **Demonstration of the COBRA Teardrop Concept Using Two Smallsats in 8-Hour Elliptic Orbits**
Presenter: J.E. Draim - Space Resource America Corp.
- SSC01-II-4** **The First Large Small-Satellite Commercial Mission**
Presenter: J. Smith - One Stop Satellite Solutions
- SSC01-II-5** **The Small Payload ORbit Transfer (SPORT™) Vehicle & The Business Environment for the Next Generation of Piggyback Launch Options**
Presenter: Dr. Arshad - Astronautic Technology SB
- SSC01-II-6** **Satellite Imaging Service Analysis Using Queueing Theory**
Presenter: Y. Mai - Surrey Space Centre
- SSC01-II-7*** *Withdrawn*
- SSC01-II-8*** **Frequency Licensing Options for Small SAT Missions**
Presenter: K. Ryan - Comsearch

SCIENCE AND EXPLORATION

Tuesday, August 14, 2001

10:45 a.m. – 12:30 p.m.

Chair: Dr. Amnon Ginati, ESA/ESTEC

- SSC01-III-1** *Withdrawn*
- SSC01-III-2** **The Montana State University NASA
Space Grant Explorer-1 Science Reflight
Commemorative Mission**
Presenter: M. Obland - Montana State University
- SSC01-III-3** **Single Injection Earth Return Trajectory
Options for Small Spacecraft
Reconnaissance Missions to the Moon,
Comets, and Asteroids**
Presenter: C. Ocampo - The University of Texas
- SSC01-III-4** **Spacecraft System Design for an Advanced
X-Ray Monitor (AXM) Mission**
Presenter: M. Socha - The Charles Stark
Draper Laboratory
- SSC01-III-5** **“Mars Scouts: An Overview”**
Presenter: S. Matousek - Jet Propulsion Lab
- SSC01-III-6** **Development of KAISTSAT-4 Expanding
the Role of Small Satellite for Scientific
Research**
Presenter: W-K Lee - Korea Advanced
Institute of Science and Technology (KAIST)
- SSC01-III-7*** **CRAFTI: A Canadian Asteroid Mission**
Presenter: A. Beattie - University of Toronto
Institute for Aerospace Studies
- SSC01-III-8*** *Withdrawn*

**BOLD NEW MISSIONS USING CUTTING
EDGE TECHNOLOGIES**

Tuesday, August 14, 2001

2:00 p.m. – 3:45 p.m.

Chair: Colonel Jack Anthony, USAF

- SSC01-IV-1 A Feasibility Study of Micro-Satellites for
Earth Observation**
Presenter: J. Levi - Department of Aerospace
Engineering, University of Michigan
- SSC01-IV-2 *Withdrawn***
- SSC01-IV-3 The Small Payload Access to Space
Experiment (SPASE): Using Non
Traditional Aerospace Technology to Enable
a New Generation of Low-Cost Missions**
Presenter: L.E. Aamot - AeroAstro, Inc.
- SSC01-IV-4 First Experimental Demonstration of
Full-Duplex Optical Communications on
a Single Laser Beam**
Presenter: T. Shay - University of New Mexico
- SSC01-IV-5 Efficient Satellite Structural Design
Optimized for Volume Production**
Presenter: A. Tsinas - School of Engineering,
Kingston University, U.K.
- SSC01-IV-6 Starshine Missions in 2001**
Presenter: G. Moore - Project Starshine
- SSC01-IV-7* The Little Probe That Could (A Story of
Mission Impossible Engineering)**
Presenter: T. Adams - Design_Net Engineering
- SSC01-IV-8 *Withdrawn***

EXISTING MISSIONS - WHAT'S FLYING

Tuesday, August 14, 2001

4:15 p.m. – 6:00 p.m.

Chair: Dr. Ahmad Sabirin Arshad, Astronautic Technology SB

- SSC01-V-1 In-Orbit Attitude Performance of the 3
Axis Stabilized SNAP-1 Nanosatellite**
Presenter: A. da Silva Curiel - Surrey Space
Centre
- SSC01-V-2 Multispectral Thermal Imager Satellite
Hardware Status, Tasking and Operations**
Presenter: M. Decker - Sandia National Labs
- SSC01-V-3 In-Orbit Modeling and Calibration of the
Sun Sensors on UoSAT-12 and Tsinghua-1
Satellites**
Presenter: S-F Wu - Surrey Space Centre
- SSC01-V-4 A Small Satellite as an Attached Payload on
ISS -The Merger of "Small" and "Very Large"**
Presenter: G. Murphy - Design_Net Engineering
- SSC01-V-5 *Withdrawn***
- SSC01-V-6 Earth Observing 1**
Presenter: M. Perry - Swales Aerospace
- SSC01-V-7* Operational Experiences with the Petite
Amateur Navy Satellite - PANSAT**
Presenter: R. Phelps - Space Systems
Academic Group, Naval Postgraduate School
- SSC01-V-8* Status of CHIPS: A NASA University
Explorer Astronomy Mission**
Presenter: W. Marchant - Space Sciences
Laboratory, University of California, Berkeley

Technical Session VI

ADVANCED TECHNOLOGIES, SUBSYSTEMS, COMPONENTS & SENSORS (I)

Wednesday, August 15, 2001

8:30 a.m. – 10:15 a.m.

Chair: Steve Matousek, Jet Propulsion Laboratory

- SSC01-VI-1 *Withdrawn*
- SSC01-VI-2 **High-Accuracy Ranging Using Spread Spectrum Technology**
Presenter: G. Mitchell - AeroAstro, Inc.
- SSC01-VI-3 *Withdrawn*
- SSC01-VI-4 **A CCSDS Software System for a Single Chip On-Board Computer of a Small Satellite**
Presenter: A. da Silva Curiel - Surrey Space Centre
- SSC01-VI-5 **A Systems Engineering Tool for Small Satellite Design**
Presenter: A. McInnes - The Aerospace Corporation
- SSC01-VI-6 **Multiple Quantum Well Retromodulators for Autonomous Spacecraft Acquisition, Rendezvous, and Formation Flying Operations**
Presenter: Dr. G. Creamer - Naval Research Laboratory
- SSC01-VI-7* **SNAP-1 A Low Cost Modular COTS - Based Nanosatellite, Design, Construction, Launch and Early Operations Phase Results**
Presenter: A. da Silva Curiel - Surrey Space Centre
- SSC00-VI-8* **Advance Power Technology Experiment for the Starshine 3 Satellite**
Presenter P. Jenkins - Ohio Aerospace Institute

*Alternate

Technical Session VII

STUDENT SCHOLARSHIP COMPETITION

Wednesday, August 15, 2001

10:45 a.m. - 12:30 p.m.

Chair: Doug Freesland, Applied Systems Engineering

Chair: Ben Boyle, Boeing North America

- SSC01-VII-1** **Low Thrust Trajectory Design for CRAFTI**
Presenter: Eric Morrow, University of Toronto
- SSC01-VII-2** **The Design of the Communication and Telemetry System used by the Ionospheric Observation Nanosatellite Formation Mission**
Presenter: Anuradha Chandrasekaran, Utah State University
- SSC01-VII-3** **A Ground-Based Prototype of a CMOS Navigational Star Camera for Small Satellite Applications**
Presenter: Brian Shucker, University of Arizona
- SSC01-VII-4** **Design of a Long-Distance Martian Rover**
Presenter: Elizabeth J. Butt, Washington University
- SSC01-VII-5** **APTUS: Application of Tether United Satellites**
Presenter: Meredith Fitzpatrick, University of Texas at Austin
- SSC01-VII-6** **The Design and Development of a Terminal Node Controller and GPS/Telemetry Beacon for Space and Ground Applications**
Presenter: James Gutshall, Utah State University
- SSC01-VII-7*** **AquaGSat - A Sun Pointing Picosatellite Powered by a Regenerative Fuel Cell**
Presenters: Thomas Lowery and Kyle Ottinger, Texas A&M University

*Alternate

**INNOVATIVE MISSION OPERATIONS
CONCEPTS**

Wednesday, August 15, 2001

2:00 p.m. – 3:45 p.m.

Chair: Gwynne Gurevich, Microcosm

- SSC01-VIIIa-1** **ImPredict: A Fast Image Prediction Software and Its Application in the SSTL Off-Axis Image Scheduling System**
Presenter: S-F Wu - Surrey Space Centre
- SSC01-VIIIa-2** **Development of Formation Flight and Docking Algorithms Using the SPHERES Testbed**
Presenter: Prof. D. Miller - MIT Space Systems Laboratory
- SSC01-VIIIa-3** **Design of a Distributed Ground Support System for Small Satellites**
Presenter: R.M. Barry - University of Stellenbosch Electronic Systems Laboratory
- SSC01-VIIIa-4** **A Virtual Ground Station Based on Distributed Components for Satellite Communications**
Presenter: S. Bernier - Communications Research Centre
- SSC01-VIIIa-5** **Use of Hibernation Modes for Deep Space Missions as a Method to Lower Mission Operations Costs**
Presenter: E. Reynolds - Applied Physics Lab
- SSC01-VIIIa-6** **Use of an Operations Simulator for Small Satellites**
Presenter: S. Saraf - Canadian Space Agency
- SSC01-VIIIa-7*** **A Nanosatellite Mission to Investigate Equatorial Ionospheric Plasma**
Presenter: L.Krause - USAFA
- SSC01-VIIIa-8*** *Withdrawn*

CUBESAT MISSIONS
Wednesday, August 15, 2001
2:00 p.m. – 3:45 p.m.

Chair: Professor Robert Twiggs, Stanford University

- SSC01-VIIIb-1 The APRS Satellite Mission and CUBESAT DESIGN Notes**
Presenter: B. Bruninga - Naval Academy Satellite Laboratory
- SSC01-VIIIb-2 Nihon University CubeSat Program**
Presenter: Y Miyazaki - Nihon University, Japan
- SSC01-VIIIb-3 CubeSats: A Technology and Science Mission Low-Cost Test Bed**
Presenter: V. Aguero - SRI International
- SSC01-VIIIb-4 TU-Sat 1 CubeSat**
Presenter: Dr. H. Voss - Taylor University
- SSC01-VIIIb-5 CubeSat: The Development and Launch Support Infrastructure for Eighteen Different Satellite Customers on One Launch**
Presenter: R. Twiggs - Stanford University
- SSC01-VIIIb-6 Getting Started: Using a Global Circumnavigation Balloon Flight to Explore Picosatellite (CubeSat) Technology**
Presenter: K. Bennett - Washington University
- SSC01-VIIIb-7* University of Tokyo's CubeSat Project -Its Educational and Technological Significance**
Presenter: Y. Tsuda - University of Tokyo
- SSC01-VIIIb-8* YamSat: The First Picosatellite Being Developed in Taiwan**
Presenter: A. Lin - National Space Program Office, Taiwan

Technical Session IX

ADVANCED TECHNOLOGIES, SUBSYSTEMS, COMPONENTS & SENSORS (II)

Wednesday, August 15, 2001

4:15 p.m. – 6:00 p.m.

Chair: Fuat Ynce, Turkey

- SSC01-IX-1** **Design & Development of a Compact Magnetic Bearing Momentum Wheel for Micro and Small Satellites**
Presenter: M. Scharfe - Precision Engineering
- SSC01-IX-2** **Micro Digital Solar Attitude Detector and Imager**
Presenter: S. Jaskulek - John Hopkins University, Applied Physics Laboratory
- SSC01-IX-3** **Flight Demonstration of Electrostatic Thruster Under Micro-Gravity**
Presenter: S. Satori - Hokkaido Institute of Technology
- SSC01-IX-4** **Revolutionary Propulsion Concepts for Small Satellites**
Presenter: S. Wassom - Space Dynamics Laboratory
- SSC01-IX-5** **Design and Performance Evaluation of an Intelligent Star Tracker**
Presenter: N. Clark - Air Force Research Laboratory
- SSC01-IX-6** *Withdrawn*
- SSC01-IX-7*** **An RF Plasma Thruster for Use in Small Satellites**
Presenter: Dr. L.B. Olson - New England Space Works, Inc.
- SSC01-IX-8*** **A Study on Thermal Modeling and Heat Load Mitigation for Satellite Electronic Components**
Presenter: Y. Chang - Korea Aerospace Industries

Alternate*

DELIVERY SYSTEMS

Thursday, August 16, 2001

8:30 a.m. – 10:15 a.m.

Chair: Allan McDonald, Thiokol

- SSC01-X-1** **Whole Spacecraft Vibration Isolation
Flown on the Minotaur Launch Vehicle**
Presenter: P. Wilke - CSA Engineering, Inc.
- SSC01-X-2** **Re-Injecting Innovation Into the Space Test
Program**
Presenter: B. Horais - Schafer Corporation
- SSC01-X-3** **Universal Small Payload Interface (USPI) - A
Design to Ensure Cost-Effective Small
Satellite Access to Space**
Presenter: L.E. Aamot - AeroAstro, Inc.
- SSC01-X-4** **Demonstrating Low Cost Access to
Space For Small Satellites: The DoD Space
Test Program Medium Launch Vehicle
2005 Mission**
Presenter: Capt. M. Mocio - Space & Missile
Systems Center, Kirtland AFB
- SSC01-X-5** **New Launch Methodologies for the Micro-
Millennia**
Presenter: C. Singh-Derewa - Starhunter Corp.
- SSC01-X-6** **Evolved Expandable Launch Vehicle
Secondary Payload Adapter - A New
Delivery System for Small Satellites**
Presenter: Lt. J.S. Goodwin - USAF Space
Test Program
- SSC01-X-7*** **Pegasus Equatorial Launch Capability -
Pegasus/HETE-2 Launch from the
Kwajalein Atoll, RMI**
Presenter: M. Bitzer - Launch Systems Group,
Orbital Sciences Corporation
- SSC01-X-8*** **Cluster Launches of Small Satellites on
Dnepr Launch Vehicle**
Presenter: V. Kainov - International Space
Company Kosmotras

ORBITAL MANEUVERING

Thursday, August 16, 2001

10:45 a.m. – 12:30 p.m.

Chair: Warren Ferster, Space News

- SSC01-XI-1 Low Cost Butane Propulsion Systems for Small Spacecraft**
Presenter: M. Meerman - Surrey Space Centre
- SSC01-XI-2 Surrey Research Update on Nitrous Oxide Catalytic Decomposition for Space Applications**
Presenter: V. Zakirov - Surrey Space Centre
- SSC01-XI-3 Small Orbit Transfer Vehicle (OTV) for On-Orbit Satellite Servicing and Resupply**
Presenter: J. Collins - Microcosm, Inc.
- SSC01-XI-4 Suitable Strategies for In-Plane Orbit Acquisition Using Microthrusters**
Presenter: N. Nagarajan - Nanyang Technological University, Singapore
- SSC01-XI-5 AFRL's Multi-Satellite Deployment System (MSDS)**
Presenter: Lt. C.E. Bracket - AFRL
- SSC01-XI-6 Specifics of Small Satellite Propulsion: Part I**
Presenter: V. Zakirov - Surrey Space Centre
- SSC01-XI-7* Development of a Reusable, Low-Shock Clamp Band Separation System for Small Spacecraft Release Applications**
Presenter: D. Downen - Starsys Research Corp.
- SSC01-XI-8* Aerobraking to Lower Apogee in Earth Orbit with the Small Payload Orbit Transfer (SPORT™) Microsatellite Vehicle**
Presenter: T. Robinson - AeroAstro, Inc.