

TECHNICAL SESSION I

EXISTING MISSIONS - STATUS

Monday, August 21, 2000

1:00 p.m. - 2:45 p.m.

Chair: Dennis McCarthy, Swales Aerospace

- SSC00-I-1** **Demonstration of a New Smallsat Launch Vehicle: The Orbital/Suborbital Program (OSP) Space Launch Vehicle Inaugural Mission Result**
Presenter: S. Schoneman - Orbital Sciences Corp.
- SSC00-I-2** **MightySat II: On-Orbit Lab Bench for Air Force Research Laboratory**
Presenter: J. Freeman - Air Force Research Lab
- SSC00-I-3** **The Design, Development and Testing of a propulsion system for the SNAP-1 Nanosatellite**
Presenter: J. Ward - Surrey Satellite Technology, Ltd.
- SSC00-I-4** **In-Orbit Estimation of the Inertia Matrix & Thruster Parameters of the UoSAT-12 Minisatellite**
Presenter: R.El-Bordany - Surrey Space Centre
- SSC00-I-5** **SCISAT-1 Ace Mission C&DH Unit Development**
Presenter: I. Walkty - Bristol Aerospace, Ltd
- SSC00-I-6** **Initial Mission Status Analysis of 3-Axis Stable Tsinghua-1 Microsatellite**
Presenter: Y. Zheng - Tsinghua Space Center
- SSC00-I-7** **Countdown to Launch of the First Microsatellite Qualified for Launch on Ariane-5 ASAP**
Presenter: N. Wells - DERA
- SSC00-I-8*** **Advancing Small Satellite Earth Observation: Operational Spacecraft, Planned Missions, and Future Concepts**
Presenter: A. Wicks - Surrey Satellite Technology, Ltd.

* Alternate

TECHNICAL SESSION II

FUTURE MISSIONS - CONCEPTS

Monday, August 21, 2000

3:15 p.m. – 5:00 p.m.

Chair: Gabriele Belle, United States Air Force Academy

- SSC00-II-1** **“NESS”: Using a Microsatellite to Search for and Track Satellites and Asteroids”**
Presenter: K. Carroll - Dynacon Enterprises Ltd.
- SSC00-II-2** **Nanosatellites Technology Demonstration**
Presenter: A. Martinez - INTA
- SSC00-II-3** **Denmark’s Second Small Scientific Satellite**
Presenter: L. Thomsen - Danish Space Research Institute
- SSC00-II-4** **The Orion Microsatellite Mission: A Testbed for Command, Control, and Communications for Formation Fleets**
Presenter: B. Engberg - Stanford University
- SSC00-II-5** ***Withdrawn (see 1st Alternate)***
- SSC00-II-6** ***Withdrawn (see 2nd Alternate)***
- SSC00-II-7*** **Breadboard Model for Nanosatellite Mothership - Daughtership Experiment**
Presenter: S. Satori - Hokkaido Institute of Technology
- SSC00-II-8*** **Low Cost Planetary Exploration: Surrey Lunar Minisatellite and Interplanetary Platform Missions**
Presenter: J. Ward - Surrey Space Centre

* Alternate

TECHNICAL SESSION III

ADVANCED SENSOR CONCEPTS

Monday, August 21, 2000

6:00 p.m. – 7:45 p.m.

Chair: Melinda Tolle, Thiokol Propulsion

- SSC00-III-1** **Intelligent Star Tracker**
Presenter: N. Clark - Air Force Research
Laboratory
- SSC00-III-2** **A Global Greenhouse Gas Monitor**
Presenter: P. Teague - Vipac Engineers &
Scientists Ltd.
- SSC00-III-3** **The Orbital Pointing Servo: A
Miniature Pan/Tilt Mechanism**
Presenter: P. Bandera - Moog, Inc. a Schaeffer
Magnetics Division
- SSC00-III-4** **MEMS Technology Based Sensors for
Payload Instruments and Attitude Control
for Small Satellites**
Presenter: A. Doctor - Barnes Engineering
(a subsidiary of BF Goodrich Co.)
- SSC00-III-5** **Thermal Reflector System Design and
Testing for the Microwave Anisotropy Probe**
Presenter: H. Neubert - Programmed
Composites, Inc.
- SSC00-III-6** **The SNAP-1 Machine Vision System**
Presenter: R. Lancaster - Surrey Satellite
Technology, Ltd.
- SSC00-III-7*** **Pose Estimation of Target Satellite
for Proximity Operations**
Presenter: P. Palmer - Surrey Space Centre
- SSC00-III-8*** ***Withdrawn***

*Alternate

TECHNICAL SESSION IV

COST / SCHEDULE / QUALITY / RISK

Tuesday, August 22, 2000

1:30 p.m. – 3:15 p.m.

Chair: Todd Mosher, The Aerospace Corporation

- SSC00-IV-1** ***Withdrawn (see 1st Alternate)***
- SSC00-IV-2** **LEOSTAR: Lessons Learnt & Perspectives**
Presenter: C. Roux - Astrium
- SSC00-IV-3** **Leonid Meteor Observer in LEO:
A University Microsatellite to Observe
a Meteor Shower**
Presenter: K. Yoshida - Tohoku University
- SSC00-IV-4** **ISC (Integrated Spacecraft Controller):
Case Study of a Proven, Viable Approach to
Using COTS in Spaceborne Systems**
Presenter: D. Lahti - General Dynamics
Information Systems
- SSC00-IV-5** ***Moved to Session VIII - Replaced with
SSC00-IX-8***
- SSC00-IV-6** **Small Payload ORbit Transfer (SPORT™)
System: An Innovative Approach to Lowering
Missions Costs Without Increased Risk**
Presenter: R. Fleeter - AeroAstro, Inc.
- SSC00-IV-7*** **Microsatellites and Improved Acquisition
of Space Systems**
Presenter: M. Bille - ANSER

TECHNICAL SESSION V

LESSONS LEARNED - IN SUCCESS & FAILURE

Tuesday, August 22, 2000

3:45 p.m. – 5:30 p.m.

Chair: Cary Pao, Orbital Sciences Corporation

- SSC00-V-1 Recovery of the Wide-Field Infrared Explorer Spacecraft**
Presenter: D. Everett - NASA/GSFC
- SSC00-V-2 ASUSat1: Low-Cost, Student-Designed Nanosatellite**
Presenter: B. Underhill - Arizona State University
- SSC00-V-3 A Study of GPS Data Tracking Method for KOMPSAT Spacecraft Orbit Control**
Presenter: Y. Chang - Korea Aerospace Research Institute
- SSC00-V-4 The JAWSAT Mission: Final Report and Lessons Learned**
Presenter: J. Smith - One Stop Satellite Solutions and Center for Aerospace Technology
- SSC00-V-5 CubeSat: A New Generation of Picosatellite for Education and Industry Low-Cost Space Experimentation**
Presenter: R. Twiggs - Stanford University
- SSC00-V-6 CHIPS: Status of the First NASA University of Explorer Astronomy Mission**
Presenter: W. Marchant - University of California
- SSC00-V-7* Minimizing Risk Associated with Imaging Payloads: Lessons Learned from CCD Experiment Gone Awry**
Presenter: T. Goforth - Maxwell Technologies

*Alternate

TECHNICAL SESSION VI

ENABLING NEW TECHNOLOGIES AND METHODS (I)

Wednesday, August 23, 2000

8:30 a.m. – 10:15 a.m.

Chair: Rick Fleeter, AeroAstro, Inc.

- SSC00-VI-1** **Intelligent Reconfigurable Integrated Satellite Processor**
Presenter: N. Clark - Air Force Research Laboratory
- SSC00-VI-2** **Design and Development of Miniature Mechanisms for Small Spacecraft**
Presenter: B. Huettl - Starsys Research
- SSC00-VI-3** **“NEGASAR” (NEW GENERATION Satellite ARchitecture)**
Presenter: B. Fabrizio,
NEGESAT di Boer Fabrizio & C.s.n.c.
- SSC00-VI-4** ***Withdrawn (see 1st Alternate)***
- SSC00-VI-5** **A Fast Prediction Algorithm of Satellite Passes**
Presenter: P. Palmer - Surrey Space Centre
- SSC00-VI-6** **Lightweight Optical Wavelength Communications Without a Laser in Space**
Presenter: T. Shay - New Mexico State University
- SSC00-VI-7*** **Rocket Propulsion Engineering Company Small Utility Launch Vehicle (SRV)**
Presenter: J. Grote - Rocket Propulsion Engineering Company
- SSC00-VI-8*** **GPS Micro Navigation and Communication System for Clusters of Micro & Nanosatellites**
Presenter: R. Zenick - AeroAstro, Inc.

*Alternate

TECHNICAL SESSION VII

STUDENT SCHOLARSHIP COMPETITION

Wednesday, August 23, 2000

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

Co-Chair: Doug Freesland, Orbital Sciences Corp.

Co-Chair: Dana Polites, Boeing North America

- SSC00-VII-1 Digital CMOS Cameras for Attitude Determination**
Presenters: D. Meller - University of Washington, P. Sripruetkiat - Utah State University, and K. Makovec - Virginia Polytechnic Institute
- SSC00-VII-2 Development of a Drag-Free Control System**
Presenter: R. Haines - University of Birmingham
- SSC00-VII-3 Command and Data Handling Subsystem Design for the Ionospheric Observation Nanosatellite Formation (ION-F)**
Presenter: J. Jensen - Utah State University
- SSC00-VII-4 OPAL: Smaller, Simpler, and Just Plain Luckier**
Presenters: J. Cutler; G.Hutchins - Stanford Univ.
- SSC00-VII-5 The Design and Feasibility Study of Nanosatellite Structures for Current and Future FSI Micromissions**
Presenters: D Shannon; B. Shirgur - University of Central Florida
- SSC00-VII-6 The Kyushu/US Experimental Satellite Tether (QUEST) Mission, a Small Satellite to Test and Validate Spacecraft Tether Deployment and Operations**
Presenters: J. Carlson - Arizona State University
Y. Nakamura - Kyushu University
- SSC00-VII-7* Effects of a Distributed Computing Architecture on the Emerald Nanosatellite Development Process**
Presenters: B. Palmintier; J. Townsend; E. Allison
Stanford University

* Alternate

TECHNICAL SESSION VIII

ADVANCED SUBSYSTEMS AND COMPONENTS (I)

Wednesday, August 23, 2000

2:00 p.m. – 3:45 p.m.

Chair: Jay Smith, One Stop Satellite Solutions

- SSC00-VIII-1 **AeroAstro's X-Band Transponder--Meeting the Communication Needs of Tomorrow's Small Spacecraft**
Presenter: R. Zenick - AeroAstro, Inc.
- SSC00-VIII-2 ***Withdrawn (see 2nd Alternate)***
- SSC00-VIII-3 **Real-Time Attitude and Orbit Control of Small Leo Satellite with Parallel-Processing Approach in Ground Station**
Presenter: R. Johnson - Florida Space Institute
- SSC00-VIII-4 ***Withdrawn - Replaced with *****
- SSC00-VIII-5 **Systematic Design of Attitude Control Systems for a Satellite in a Circular Orbit with Guaranteed Performance and Stability**
Presenter: R. Hull - Coleman Aerospace Company
- SSC00-VIII-6 **Modular Attitude Control System for Microsatellites with Stringent Pointing Requirements**
Presenter: S. Grocott - Dynacon Enterprises Limited
- SSC00-VIII-7* ***Withdrawn***
- SSC00-VIII-8* **An Attitude Control System and Commissioning Results of the SNAP Nanosatellite**
Presenter: W.H. Steyn - Surrey Satellite Technology Ltd.
- SSC00-IV-5** **K-1 Small Satellite Missions**
Presenter: G. Lai - Kistler Aerospace Corp.

* Alternate

TECHNICAL SESSION IX

ADVANCED OPERATIONS CONCEPTS

Wednesday, August 23, 2000

4:15 p.m. – 6:00 p.m.

Chair: Christopher Kitts, Santa Clara University

- SSC00-IX-1 **Internet Access to Spacecraft**
Presenter: K. Hogie - Computer Sciences Corp.
- SSC00-IX-2 ***Withdrawn (see 1st Alternate)***
- SSC00-IX-3 **Effects of Networking Configurations on
Space Channel Throughput**
Presenter: S. Horan - New Mexico State Univ.
- SSC00-IX-4 **Infrastructure for Internet-Based Operations**
Presenter: J. Cutler - Stanford University
- SSC00-IX-5 **Autonomous Operations Experiments for the
Distributed Emerald Nanosatellite Mission**
Presenter: C. Kitts - Santa Clara University
- SSC00-IX-6 **Autonomous Control System for Precision
Orbit Maintenance**
Presenter: M. Aorpmai - Surrey Space Centre
- SSC00-IX-7* **Analysis of Spectrum Band Sharing Between
CDMA Systems and Other Systems**
Presenter: J. Ward - Surrey Space Centre
- SSC00-IX-8* **Access to Space Interactive Mission Design
Web Site **(Moved to Session IV)**
Presenter: J. Leon - NASA/GSFC

Alternate*

TECHNICAL SESSION X

ENABLING NEW TECHNOLOGIES AND METHODS (II)

Thursday, August 24, 2000

8:30 a.m. – 10:15 a.m.

Chair: Jim Wertz, Microcosm, Inc.

- SSC00-X-1** **Prototype Development of a Solid Propellant Rocket Motor and an Electronic Safing and Arming Device for Nano-Satellite (Nanosat) Missions**
Presenter: W. Boughers - Thiokol Propulsion
- SSC00-X-2** **MEMS Mega-Pixel Micro-Thruster Arrays for Small Satellite Stationkeeping**
Presenter: D Younger - Honeywell Technology
- SSC00-X-3** **Micromachining - Function in a Small Package**
Presenter: D. Fox - Remmele Engineering
- SSC00-X-4** **Modular and Reusable Miniature Subsystems for Small Satellites - An Example Describing Surrey's Nanosatellite S-Band Downlink**
Presenter: J. Wahl - Surrey Satellite Technology, Ltd
- SSC00-X-5** **Highlights of Nanosatellite Propulsion Development Program at NASA-Goddard Space Flight Center**
Presenter: M. Rhee - NASA/GSFC
- SSC00-X-6** ***Withdrawn (see 1st Alternate)***
- SSC00-X-7*** **WAP via ORBCOMM**
Presenter: A. Cardoza - University of Stellenbosch
- SSC00-X-8*** **A Technique for Thermal Analysis of Articulating Spacecraft Spartnik**
Presenter: P. Shatdarshanam - San Jose Univ.

Alternate*

TECHNICAL SESSION XI

ADVANCED SUBSYSTEMS AND COMPONENTS (II)

Thursday, August 24, 2000

10:45 a.m. – 12:30 p.m.

Chair: Amnon Ginati, OHB-System

- SSC00-XI-1** **Cost Effective Propulsion Systems for Small Satellites: Corners to Cut, Corners to Honor**
Presenter: O. Morgan - PRIMEX Aerospace Co.
- SSC00-XI-2** **Microspacecraft Platform with Bipropellant Propulsion System and 3-Axis Stabilization for Missions in Earth and Beyond LEO**
Presenter: P. Eckert - Technical University of Munich
- SSC00-XI-3** **Universal Small Payload Interface**
Presenter: S. Aziz - AeroAstro, Inc.
- SSC00-XI-4** **Designing Command and Telemetry Systems Using MIL-STD-1553 and CCSDS**
Presenter: R. Killough - Southwest Research Institute
- SSC00-XI-5** **Development and Transition of Low Shock Release Devices for Small Satellites**
Presenter: A. Peffer - Jackson and Tull
- SSC00-XI-6** **Surrey Research on Nitrous Oxide Catalytic Decomposition for Space Applications**
Presenter: V. Zakirov - Surrey Space Centre
- SSC00-XI-7*** **CPM Neural Network Based Receiver for LEO Satellites**
Presenter: A. Martinez - Universidad Politecnica de Madrid
- SSC00-XI-8*** **Design and Test of an Economical Cold Gas Propulsion System**
Presenter: J. Cardin - VACCO Aerospace Products