

## PTMSS Conference 2004

### TABLE OF CONTENTS

#### ***Plenary Session I***

##### **Planetary Exploration: The New Mining Frontier**

Dr. Alain Berinstain, Canadian Space Agency (CSA)

#### ***Plenary Session II***

##### **The Moon and Beyond: Bridging the Gap**

Louis L. Grenier, Canadian Space Agency (CSA)

William E. Larson, Kennedy Space Center (KSC)

#### **Technical Session I – Commercialization**

##### **Paper 1-1: Commercial Human Space Flight**

*Author* : Jim Benson - SpaceDev Inc

##### **Paper 1-2: Markets for Transportation Fuel in Earth Orbit**

*Author* : Brad R. Blair - Colorado School of Mines,

##### **Paper 1-3: Reliable Networked Autonomy: Letting Space Flight Requirements Drive Commercial Success**

*Author*: Eric Edwards

##### **Paper 1-4: Assistance for Technology Development and Commercialization in Small to Medium Sized Firms**

*Author* : Linda Meret

##### **Paper 1-5: Innovative Technology Reduces NOx and SOx Emissions Commercialization Success**

*Author*: Dr. Clyde Parrish, NASA

#### **Technical Session II – Solid Planetology**

##### **Paper 2-1: Imaging Process Control for Mining and Comminution of Construction Materials**

*Authors*: Norbert Maerz<sup>1,2</sup>, Thomas W. Palangio<sup>1</sup> and Tom C. Palangio<sup>1</sup>

##### **Paper 2-2: Thermal Infrared Spectroscopy of Mineralogy and Bulk Rock Chemistry for the Primary Triage of Core**

*Authors*: Benoit Rivard<sup>1</sup>, Jilu Feng<sup>1</sup>, and Ann Gallie<sup>2</sup>

**Paper 2-3: VectorChrome : Visualization of Triaxial Vector Orientation Data and its Implication in Magnetic Field Visualization**

*Author: Bob Komarechka*

**Paper 2-4 : Development of a Ground Penetrating Radar for Mining**

*Author : Sean Maloney - Origins : MIRARCO Mining Innovation*

**Technical Session III – Resource Extraction and Utilization**

**Paper 3-1: Value Basis for In-Situ Resource Utilization**

*Author: Brad R. Blair*

**Paper 3-2: Propellant Production, Reusability and Risk in a Lunar Exploration Strategy**

*Authors: Michael B. Duke, Javier Diaz, Brad R. Blair, Begoña Ruiz*

**Paper 3-3: Robotic drilling rationale and protocols for penetrating the surfaces of planetary bodies**

*Author: Dr. John Spray*

**Paper 3-4: The Development And Improvement of Diamond Drill Bits Leveraging Technologies Developed For Space**

*Authors: Mike Trent<sup>1</sup>, Dale S. Boucher<sup>2</sup>, Jim Richard<sup>3</sup>*

**Paper 3-5: Development of a Next-Generation Autonomous Robotic Network and - Experimental TestBed**

*Authors: Mustafa Mirza, D M Beach, E J P Earon, G M T D'Eleuterio*

**Paper 3-6: Towards Autonomous Long Range Navigation**

*Authors: Erick Dupuis, Pierre Allard, Joseph Bakambu and Tom Lamarche, CSA*

**Paper 3-7: Autonomous Robotics Toolbox**

*Authors: Regent L'Archeveque, Pierre Allard and Erick Dupuis, CSA*

**Paper 3-8: An Ice Coring Drill for Mars**

*Authors: Erik W Blake<sup>1</sup>, Mark A. Wumkes<sup>2</sup>*

**Paper 3-9: Mechanical Properties of a Composite Backfill Material**

*Authors: Alfred Annor, Kristie Tarr and Daniel Fynn*

**Paper 3-10: Testing Methods for Evaluating Ground Support Materials at the CANMET-MMSL Sudbury Laboratory**

*Authors:* Kristie Tarr, Ian Bedard, Alfred Annor and Daniel Fynn

**Paper 3-11: XTI Q-5 Card's Evolution into Universal Mining Controller**

*Author:* Eric Edwards<sup>1</sup>, Dale S. Boucher<sup>2</sup>, Tom Atwell<sup>2</sup> Jim Richard<sup>3</sup>

**Paper 3-12: Resource Extraction and Data Mining a “Chicken and Egg” Question?**

*Author:* Andrew Dasys

**Paper 3-13 : Lidar Technology for Space Operations and Planetary Exploration**

*Authors:* Robert Richards, Arkady Ulitsky - Optech