



Mission and System Engineering Aspects of Hall Effect Thrusters for Orbit Transfer and Orbit Raising

Hall Effect Thrusters (HETs) have been in the satellite system engineer's arsenal of orbit maintenance, orbit adjust, and attitude control options for a number of years. Until now, however, the advantages of using the Hall Effect thrusters in a tailored, system engineered propulsion subsystem for orbit raising have not been demonstrated. Using the mission trade space, the rocket equation, and the recently tested 10KW HETS with special gas dynamic flow valves, engineers are now able to make the trade off of being able to boost communications satellites from GeoStationary Transfer Orbit to Operational Altitudes in 45 to 60 days at a nominal payload weight savings of 2000 lbs per spacecraft. Dr. Ned Britt of Pratt and Whitney's Space Propulsion San Jose Site will be accompanied by Mr. Chris McLean to describe the operational characteristics of the HETS, the physics behind their operation, and the requirements and design tradeoffs. Come and hear how this exciting new propulsion technology can be part of the aerospace system engineering trade space."

Presenters: Christopher McLean, Propulsion Research Engineer Specialist Chris, obtained both BS and a Masters of Science in Aerospace Engineering at the University of Washington. He had a important role in the development and qualification of arc jet propulsion systems for satellites, while employed at Primex (now acquired and renamed by General Dynamics). Chris also was employed by TRW in Redondo Beach to set up a large vacuum test facility and to perform tests and thrust measurements of HET engines. Chris became a key member of the staff at Space Power, Inc. before it was acquired by P&W. Incidentally, Chris is an accomplished musician in both popular and classical music.

Edward J "Ned" Britt, Chief Scientist Electric Propulsion at P&W Space Propulsion, is a graduate of the University of Arizona in Tucson: BS in Engineering Physics and Ph.D. in Nuclear Engineering. He recently joined P&W. As an entrepreneur, he is a co-founder of 5 companies. The last of these was Space Power, Inc. He was the CEO when P&W acquired SPI. Areas of technical specialty include energy conversion, plasma physics, space power and propulsion.



<http://www.incose.org/sfbac>

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Next Meeting is Tues, December 11

<i>Tues, Nov. 13:</i>	5:30 PM Social Half-Hour (hors d'oeuvres). Lobby closes promptly at 6 p.m. 6:00-7:00 Talk followed by Questions. Networking and sidebars to 8 PM.
<i>Place:</i>	Lockheed Martin Missiles & Space Operations , Sunnyvale, Bldg 157 Conference Room. Third & Mary (take the Mathilda exit of Highway 101) {Map on back. North on Mathilda, past the Blue Cube, and left on Third Ave. to parking lot at corner of Mary Ave. Parking is across the street from Building 157.}
<i>Donation:</i>	Attendance at this meeting is FREE for members; \$4 for non-members
<i>Registration:</i>	Lew Lee (TRW), 408-743-6474. <i>E-mail</i> lew.lee@pacbell.net

Please Pre-Register to Facilitate Check-In
Note: To expedite entry, please bring a photo ID (Driver's License, etc.).

Visit www.incose.org/sfbac for more information.

Driving Directions:

Hwy 101, North - exit at Mathilda. Proceed north on Mathilda to 3rd Ave. Left on 3rd to Mary.

Hwy 101, South - take Highway 237 exit to Mathilda. Follow instructions for Hwy 237 below.

Hwy 237, West or East - exit at Mathilda. Proceed north on Mathilda to 3rd Ave. Left on 3rd to Mary.

Highway 85, North - take Highway 237 exit to Mathilda. Follow instructions for Hwy 237 above.

Area Map to Sunnyvale, California

