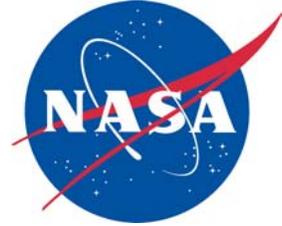




SEE *BULLETIN*



NASA'S SPACE ENVIRONMENTS AND EFFECTS PROGRAM

MAY 2004

NASA'S NEW EXPLORATION SYSTEMS ENTERPRISE (CODE T) – *HOW DOES THIS AFFECT SEE?*

BY: BILLY KAUFFMAN
NASA's Space Environments and Effects Program

Wow! That's all I could say that late Friday afternoon in January. I called the Headquarters' sponsor of the SEE Program to discuss a small situation only to find out that the SEE Program had been moved to the new Exploration Systems Enterprise (Code T). I was floored and it never crossed my mind that the President's announcement would have such an effect on the SEE Program. My mind starting racing with questions: How will this affect us? Will SEE be considered relevant or possibly be cut? If determined relevant, what changes will occur? That was in January and we still do not completely know the full impact of what's happened. What has been determined is that SEE is relevant in the new vision and is working hard to show that we can play a larger role if the opportunity should arise. To date, the SEE Program's baseline operating procedures have not changed but this may change as the formulation process continues to evolve.

The Exploration Systems Enterprise has been through many reviews and organizational developments. Although SEE has not received anything official, preliminary indications locate us in the Code T organizational structure as follows:

- Exploration Systems Enterprise
 - Development Programs Division
 - Human and Robotic Technology
 - Advanced Space Technology
 - Advanced Materials & Structural Concepts

Currently, office personnel are continuing to work hard on the challenge of managing 25-30 activities, including some in support of the new initiative. We are working closely with those PIs whose efforts are winding down to ensure that no communication problems exist and no questions are unanswered on the expected products and delivery dates. We are very pleased with the progress of all activities.

A draft NASA Research Announcement (NRA) has been written and submitted through the preliminary approval process. Currently, it is not known if we will be able to issue an NRA specific to space environments. This, and other unknowns, should be answered in the coming months. If an NRA is released, the start of awarded contracts will be aligned with the Federal budget cycle, meaning the NRA would be released around September 3, 2004. Please check the SEE Program website for any major changes and updates.

Oh! And by the way, we want to announce an addition to the SEE Program Office. Dr. Dale Ferguson, formally of NASA's Glenn Research Center (GRC), has joined our office at the Marshall Space Flight Center. Dale brings an encyclopedia of knowledge, experience and technical expertise. He will be instrumental in helping the SEE Program maintain efficiency in bringing space environment engineering products to the community and formulating how the SEE Program supports the lunar and Mars initiatives.

As always, if you have any questions, please feel free to contact me at 256-544-1418 or billy.kauffman@nasa.gov.

SATELLITE CONTAMINATION AND MATERIALS OUTGASSING KNOWLEDGEBASE - *SURVEY RESULTS* -

**BY: JODY MINOR
NASA's Space Environments and Effects Program**

As users of the Satellite Contamination and Materials Outgassing Knowledgebase already know, the last year has seen changes to the Knowledgebase, some of which were beyond our control. The biggest change was the conversion from an on-line format to a stand-alone product, which is now run from a CD on the user's local machine. This change was mandated by NASA Headquarters and the on-line option will no longer be offered. In some cases, these changes have caused unexpected problems for the users, which was not our intent. To help alleviate these problems, SEE commissioned a survey of the Knowledgebase users to determine what changes had caused the most problems. Specifically, SEE wanted to know about:

- Any IT security problems associated with running Microsoft's Internet Information Service (IIS), which was used during the quick conversion to a stand-alone product. Some organizations do not allow the use of IIS, due to the security risk. Other organizations have not mentioned any problems.

- Any concerns or issues regarding the change to a DVD format, from the current CD format. Version 2.0 of the Knowledgebase has far surpassed the storage capability of a CD.

The results, although relatively few in number, were pretty much evenly split among the problems and the proposed solutions. Therefore, the SEE Program has decided the following:

- Version 2.0 of the Knowledgebase will be converted to DVD format. We do apologize if this causes anyone harm, which, once again, is not the intent. Two reasons dictated this result: (1) The DVD storage capability will be sufficient for the foreseeable future, (2) SEE's budgetary resources have been squeezed and we are forced to move to a more efficient and cost effective distribution format. It will be much easier for SEE to support the single DVD format rather than a multiple-CD alternative. Because of the format change, and the fact that some users may not want to make this change, **each user who wants Version 2.0 will be required to specifically request this version from Sopo Yung at sopo.yung@msfc.nasa.gov.** This will keep us from distributing unwanted DVDs. Version 2.0 adds approximately 250 data files to the database, as well as contaminant optical effects data, bringing the total number of data files to 600+. Version 3.0 is currently being developed with the inclusion of round-robin test data. Its release will come sometime in 2005.

Version 2.0 is now available and contains:

200+ additional material outgassing data sets from NASA/GSFC, NASA/MSFC and OSI;

Optical properties for cryogenic contaminant films deposited at temperatures between 20K and 77K:

- condensed from gases - pure and mixtures;
- condensed from material outgassing products;
- condensed from propellants - pure materials and rocket engine firings;

CALCRT Optical Code for calculating contaminant effects on optical surfaces.

- For the near-term, the Knowledgebase will continue to use the IIS platform; however, SEE recognizes the problems caused by this decision. Therefore, a long-term strategy will be developed to convert the Knowledgebase into a format that does not utilize IIS. This conversion is subject to programmatic and budgetary constraints. Obviously, a completion date cannot be established at this point. Updates regarding this effort will be periodically issued through the SEE Bulletin.

The total number of Knowledgebase users has exceeded 125; the total number of responses to the survey was 12. We assume that all users who did not respond do not have any problems. We regret any inconvenience these decisions may cause; however, SEE remains committed to providing quality products and will continue to consider the needs of its customers.

FIRST ANNOUNCEMENT
9TH SPACECRAFT CHARGING
TECHNOLOGY CONFERENCE
(9TH SCTC)

4-8 APRIL, 2005 - TSUKUBA, JAPAN
(Registration reception on Sunday evening 3 April 2005)

The Japanese Aerospace Exploration Agency (JAXA) cordially invites you to attend the 9th Spacecraft Charging Technology Conference to be held from 4-8 April, 2005 in Tsukuba City, Japan. The conference (hosted by JAXA's Institute of Space Technology and Aeronautics (ISTA) and co-sponsored by NASA's SEE Program (pending)) will be devoted to technological and scientific topics related to spacecraft charging.

Topics will include:

- 1. Ground testing techniques**
- 2. Modeling, databases and numerical simulation**
- 3. Interaction between spacecraft and the space environment**
- 4. Satellite on-orbit investigations**
- 5. Plasma propulsion and tethers**
- 6. Space environment specifications**
- 7. Material characterizations**

The organizing committee will soon release a detailed schedule of topics, along with abstract submission guidelines.

JAXA encourages your attendance and hopes that you will distribute this announcement among colleagues. Abstract submission, registration, accommodations and travel information will be provided in mid-April 2004, along with the release of the second announcement for the conference. The conference website contains additional information; the agenda, abstract forms, registration forms, and conference logistics will be added in due course - <http://www.ista.jaxa.jp/info/event/9thSCTC.html>

Information:

Local Organizing Committee: Tateo Goka (chair), Masao Nakamura
Program Committee: Mengu Cho (chair), Koji Tanaka, Haruhisa Fujii
General Conference Information: Masao Nakamura
Phone: +81-29-868-4177, Fax: +81-29-868-5969
E-mail: nakamura.masao@jaxa.jp

Links:

Japan Aerospace Exploration Agency (JAXA): http://www.jaxa.jp/index_e.html
Epochal Tsukuba: <http://www.epochal.or.jp/>
Tsuchiura Tsukuba Convention Bureau: <http://www.intio.or.jp/ttcb/english/index.html>

NEW ACTIVITIES

David Edwards/NASA MSFC

Historical Archive Data Mining : Apollo Era Literature Search for Materials, Environments, and Lessons Learned – will serve as a starting point for space environmental effects to assess “what is known” relative to space environments, materials and lessons learned.

Katharine Harine/Raytheon

Mars Atmosphere Radiation Transport Properties – transmission of radiation through Mars’ atmosphere needs to be calculated to determine the radiation characteristics at the Martian surface.

Dale Ferguson/NASA GRC

Paschen Discharge Design Guidelines for Manned Moon and Mars Missions – high-voltage power management and distribution systems for the manned Moon and Mars missions may lead to Paschen discharges that damage materials and systems.

Mike Xapsos/NASA GSFC

Solar Particle Risk Assessment Tool (SPRAT) – accurate risk assessment tool, which provides confidence-level parameterizations for assessing radiation effects for missions to Moon, Mars and other planets.

Keith Albain/NASA MSFC

Contamination Mitigation Technologies Development – identify mechanisms for cleaning/containing lunar dust and other surface contaminants from surfaces such as EVA suits and tools.

Joe Minow/NASA MSFC

Lunar-Charged Particle Environment (Lunar-CPE) – update L2-Charged Particle Environment (L2-CPE) model to include outer magnetosphere (>6 Re), through lunar (60 Re), and lunar to -100 Re environments.

SEERS WORKSHOP UPDATE...

BY: JODY MINOR

NASA's Space Environments and Effects (SEE) Program

The Surveying and Examination of Eroded Returned Surfaces (SEERS) Project held its Stardust Mission Workshop on April 20-21, 2004 in Huntsville, Alabama. The goal of the workshop attendees was to identify and compile the ideas regarding proposed investigations on Stardust's non-primary science hardware once the spacecraft returns to Earth in January 2006.

The workshop was very successful. The attendees identified all major areas that they would like to investigate. What hardware will be available for investigation won't be determined until after Stardust returns; however, we'll be ready once it does.

The workshop participants also reviewed the proposed investigations for the Genesis non-primary science hardware in preparation for Genesis' return this September.

Memorandums of Agreement (MOAs) between NASA's Discovery Program and the SEERS Project for both Genesis and Stardust missions are being developed to detail responsibilities regarding each organization.

Data from these proposed investigations will be used to develop a future SEE Program NRA to support products to help NASA and industry spacecraft better endure the space environment, reduce development costs and extend their mission lifetimes.



The SEE Program is working with NASA Headquarters regarding the potential release of a NASA Research Announcement (NRA) in FY04. More information will be released as it becomes available.

UPCOMING EVENTS

National Space and Missile Materials Symposium (NSMMS)
Seattle, Washington/June 21-25, 2004

IEEE Nuclear and Space Radiation Effects Conference (NSREC)
Atlanta, Georgia/July 19-23, 2004

9th Spacecraft Charging Technology Conference (SCTC)
Hosted By: Japanese Aerospace Exploration Agency (JAXA)
Tsukuba, Japan, April 4-8, 2005
For more info: <http://www.ista.jaxa.jp/info/event/9thSCTC.html>

CONTACT INFORMATION

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NOTE: If there are problems with your subscription or if you want to be added/removed from the distribution list, please contact Gayle Brown at gayle.brown@msfc.nasa.gov.

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IN-SITU PROPERTIES MONITOR...

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TIME AND RESISTIVITY OF SPACECRAFT
INSULATORS...