

**NOTES – VENUS TOWN HALL MEETING  
LUNAR AND PLANETARY SCIENCE CONFERENCE (LPSC) MEETING  
THE WOODLANDS, TEXAS –THURSDAY, MARCH 20, 2014**

**Welcome and Introduction – Lori Glaze**

Lori welcomed the attendees and noted that this was going to be very pertinent meeting as this is would be the final rollout of the Venus Exploration Analysis Group (VEXAG) *Goals, Objectives, and Investigations*, *Venus Road Map*, and *Venus Technology Plan* documents. Lori also noted that the key VEXAG and Venus Exploration items are:

- Venera-D Science Definition Team selected (five U.S. team members); now through spring 2015
- Venus Express: End of routine science mission planned for May 17; Aerobraking campaign will be in May, June, and July (with some more science until later in 2014)
- Akatsuki on schedule for 2015 fly-by, and orbit insertion in 2016

Upcoming VEXAG Meetings include:

- Venus Exploration Targets Workshop, May 19–21, 2014, Lunar Planetary Institute (LPI), Houston, Texas
- Laboratory Measurements and Instrument Technology Workshop, August 2014 (Langley Research Center) *[now rescheduled to January 2015]*
- Venus Geodynamics and Geophysics Workshop, Spring 2015 (Pasadena, California)
- 2<sup>nd</sup> Comparative Climatology of Terrestrial Planets – NASA Ames Research Center, July 7–10, 2015

Updates to VEXAG's Venus Exploration documents in final draft form for this meeting were:

- *Goals, Objectives, and Investigations for Venus Exploration*
- *Roadmap for Venus Exploration*
- *Venus Technology Plan*

The final drafts of these documents were available as CD/memory stick/hard copy at the meeting as well as on the VEXAG website (<http://www.lpi.usra.edu/vexag/>).

As these are being generated for the upcoming Discovery Announcement of Opportunity (AO), we are looking for community endorsement of Venus exploration either via the VEXAG Web site that has greater than 60 previous endorsements and endorsement here at the meeting via the sign-in sheet.

Lori acknowledged that the development of the three documents has been a large group effort. Special thanks to Robbie Herrick, Bob Grimm, Ellen Stofan, Doug Stetson, Marty Gilmore, Pat Beauchamp, and Jim Cutts.

In closing, Lori gave a special thank you to Stephanie Johnston for serving on the Executive Committee, and welcomed Lynnae Quick as the incoming lead of the VEXAG's Early Career Scholars Focus Group.

## **NASA's Planetary Science Division Report to VEXAG - Jim Green**

Jim provided an update on Planetary Research and Analysis (R&A) Restructuring, Venera-D, and other possible Venus opportunities

An overview of NASA Planetary R&A restructuring is that:

- ROSES13 has 20 calls, while ROSES14 has 19 calls with 7 remaining the same.
- ROSES14 will be funded out of FY15 funding.
- All calls address NASA Planetary Science Division science goals supporting NASA's strategic plan.

The R&A proposal submissions will be a two-step process with Step-1 Proposals due in March through November 2014; and Step-2 Proposals due in May 2014 through January 2015.

Jim noted that Joint U.S.–Russian Science Definition Team (JSDT) was just getting underway. On December 2013 a bilateral dialogue took place between the Russian Space Research Institute (IKI) and the NASA Headquarters Planetary Science Division (PSD). It was agreed to have a JSDT for Venera-D. As a follow-up, NASA released a *Letter for Application Call* for U.S. Venera-D JSDT members. In January 2014, NASA received 39 applicants. In February 2014, NASA and IKI jointly selected five U.S. members for JSDT. In March 4, 2014 a Venera-D JSDT kick-off video-com took place. Four “face-to-face” meetings were being scheduled. The JSDT will provide guidance on research objectives to be pursued by Roscosmos/IKI and NASA's future science flight missions for Venus including:

- Science objectives
- Develop an operations concept
- Mission design architectures & spacecraft concept
- Science instrument conceptual payload & traceability matrix
- Identification of any required new technology

VEXAG's *Goals, Objectives, and Investigations for Venus Exploration* document will be an important input for the JSDT.

Jim Green also noted that there are some important opportunities for Venus observations using suborbital assets such as stratospheric balloons. These would be similar to the Venus Spectral Rocket Experiment (VeSpR) completed in November 2013 by John Clarke (Boston University). That experiment investigated the present day escape of water from the atmosphere of Venus in order to establish the past abundance of water on Venus. Jim also noted that Solar Probe (to be launched in 2018) will have seven Venus gravity assists (fly-bys) providing an opportunity to observe Venus with Solar Probe instruments.

Jim Green then entertained a number of questions from the audience. These concerned:

- Expectations for this year's Discovery Announcement of Opportunity
- Continued U.S. participation in Venera-D via a targeted Salmon solicitation, U.S.-Russian Memorandum of Understanding and possibilities for U.S.-supplied hardware
- Participating Scientists for Akatsuki and continuing support of the Venus Express Participating Scientists

## **Venus Exploration Targets Workshop - Buck Sharpton**

A Venus Exploration Targets Workshop will be held at the Lunar and Planetary Institute (Houston, Texas) on Monday–Wednesday, May 19–21, 2014 under the sponsorship of the Universities Space Research Association (USRA), LPI, VEXAG, and NASA. Primary goals of this workshop are to identify and evaluate key locations, transects, and regions (on the surface or in the atmosphere) for future exploration of Venus based on returned science potential of:

- Science goals and objectives (VEXAG GOIs)
- Measurement requirements (resolutions, sensitivities, observational duration, etc.)
- Risk management strategy

Workshop Format will be:

- Day 1: Invited overview presentations followed by an evening poster discussion.
- Day 2: Breakout sessions (on the surface, within the atmosphere, and from orbit).
- Day 3: Morning: continue breakouts; Afternoon: Plenary

Student participation is encouraged. The student with best poster will receive travel assistance to a future workshop/conference. In addition, there will be a reduced registration fee for students of \$75 (professional registration is \$150). A Whitepaper Report will be generated after the workshop.

The Organizing Committee consists of Ben Bussey, Larry Esposito, Marty Gilmore, Lori Glaze, Robbie Herrick, Stephanie Johnston, Christopher Lee, Buck Sharpton (chair), and Christophe Sotin.

## **VEXAG Documents**

Lori noted that at the VEXAG meeting in November 2013, it was resolved to update the scientific priorities and strategies for Venus exploration. To achieve this goal, three major tasks were defined:

- (1) Update the document prioritizing *Goals, Objectives, and Investigations for Venus Exploration*,
- (2) Develop a *Roadmap for Venus Exploration* that is consistent with VEXAG priorities as well as *Planetary Decadal Survey* priorities, and
- (3) Develop a white paper on technologies for Venus missions.

The current draft versions of the three documents have been posted on the VEXAG Web-Site for community review. The near-term goal is to complete this community review and finalize the documents so they can provide support the Discovery Announcement of Opportunity late this year.

These three documents are:

- 1 - *Goals, Objectives, and Investigations for Venus Exploration*
- 2 - *Roadmap for Venus Exploration*
- 3 - *Venus Technology Plan*

In parallel with these three documents, a *Venus Exploration Themes* document has been prepared in order to preserve important extracts from previous versions of VEXAG's Venus Exploration Goals and Objectives documents

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**VEXAG**  
**Venus Town Hall Agenda**

**Lunar and Planetary Science Conference**  
**Thursday, 20 March 2014**  
**Waterway 6 Room**

12:00 - Welcome & Status of VEXAG activities for 2014 – Lori Glaze (VEXAG Chair)

12:05 - PSD Overview, Budget, Venera-D SDT updates - Jim Green

12:20 - Q&A

12:35 - Venus Exploration Targets Workshop – Buck Sharpton

12:45 - Discussion of VEXAG Documents – Lori Glaze

- *Venus Exploration Goals, Objectives, and Investigations* - Robbie Herrick
- *Venus Exploration Roadmap* - Marty Gilmore
- *Venus Technology Plan* - Pat Beauchamp

1:05 - Wrap-Up – Lori Glaze

1:15 - Adjourn

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**Attendees: VEXAG Town Hall Meeting at Lunar and Planetary Science  
Conference (LPSC) Meeting, Thursday,  
March 20, 2014**

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