

6/22/11 PSS Decadal Survey Telecon

Committee Members Present: Jim Green (HQ), Sarah Noble (HQ), Ron Greeley (chair), Jim Bell, Julie Castillo, Tom Cravens, John Grant, Will Grundy, Greg Herzog, Jeff Johnson, Sanjay Limaye, Bill McKinnon, Louise Prockter, Anna-Louise Reysenbach, Chip Shearer, Paul Steffes, Dawn Sumner, and Mark Sykes

Goal of the meeting:

The main purpose of this telecon was to discuss and provide feedback on the PSD response to the Decadal Survey. In addition, we discussed, and quickly dispensed with, the notion of realigning the AGs to match the DS structure, provided grades for this year's GPRA, and considered a proposal from Max Bernstein for a pilot study to assess a 2-step proposal review process.

The next PSS meeting will be held in Washington, DC November 2nd and 3rd.

Opening Comments:

Jim Green began with some comments about the recently passed House Appropriations Water/Energy bill (House only, has not passed the Senate). This version of the bill cuts the DOE FY12 budget by \$5.9B compared to the President's request. It also provides no money for the Pu₂₃₈ restart, along with language that suggests the costs of the restart should be more closely aligned by agency to the benefits they will receive. There is also a provision that requires the "termination of underperforming projects" in which basic R&A projects across industry, gov't, university, non-profits, etc are to be ranked and the lowest ranking projects terminated to recoup about \$25M (this is only DOE not NASA). Whether any of this language will survive to the final bill is unknown, but it is clearly a "sign of the times". In the meantime, regarding Pu₂₃₈, despite the full year CR, we can begin studying the restart in FY11 and our discussions with DOE so far have been very productive.

Realigning AGs to match the Decadal Survey:

There was no formal proposal to do this, but Ron was asked to discuss it with the committee. While the committee agreed that there is no perfect way to structure the AGs, the consensus was that this would not be an improvement. In particular, Sanjay pointed out that it is not practical to try to combine Venus with Mercury and the Moon as they have different communities and different needs. Louise pointed out, however, that in the current structure, the Mercury community has no home. It was suggested that they could join LEAG, however, Chip pointed out that while the two bodies share many things in common scientifically and there is substantial overlap in their communities, the Mercury community is not interested in commerce, resource utilization, or the other exploration aspects that LEAG is involved in. Jim G. noted that with MESSENGER in full swing and the upcoming BepiColombo mission, this is a community that is going to grow over the next few years and they should have a voice. Jim asked Louise to poll the Mercury community and come back to the next meeting with suggestions.

In other AG news, SBAG and MEPAG are on track to be jointly chartered (like LEAG) to incorporate human exploration. The new charters are being put together now.

PSD draft response to the Decadal Survey:

The Planetary Science Division has put together a draft response to the DS with 41 specific comments. While all members of the committee were asked to look and comment on the entire document, to help facilitate the discussion, Ron assigned each committee member 5 or 6 comments to focus on.

1. (9-4) **Cost analysis**

Tom Cravens suggested adding a note about encouraging longer Phase A and/or B, Jim G. noted that this has worked out really well for Juno and he liked it. Jeff Johnson suggested adding “delay” as an option in addition to “descope, cancel, or move forward.

2. (9-6) **Portfolio Funding Strategy**

Sanjay noted that international cooperation may lower the price tag, Jim G agreed that this is an important perspective and the upcoming Mars 16 and 18 missions will mature our relationship with ESA as we enter a new era of collaboration as 50/50 partners.

3. (9-7 & 9-8) **Discovery Program**

Jim Bell noted that the response only mentioned remote observations of solar system bodies by a space-based telescope and he wondered about extrasolar planets. Jim G. explained that currently, extrasolar planet finding falls under the domain of the Astrophysics Division. Jim B. asked Jim G. to clarify this in the response.

4. (9-9) **Extended Missions**

Jim B. noted that having a senior review where all extended missions are examined together may cause timing problems for some, i.e. forcing an active mission team to develop and defend an extended mission proposal during a critical time of the mission and there should be some room for flexibility. Jim G. noted that this has already been an issue with MESSENGER, and yes, flexibility is called for, he will modify the statement.

5. (9-10) **SALMON**

No comments

6. (9-10) **Mars Trace Gas Orbiter**

No comments

7. (9-10) **Scientific priorities**

John Grant noted that we may be limiting ourselves by forcing a tie to the questions delineated in Ch 3; Jim G. concurred, we can reword that and make it broader.

8. (9-11 & 9-12) **New Frontiers**

Will Grundy suggested adding language about managing launch vehicle costs; Jim G. concurred, noting “we are not going to buy any old thing at any old price.”

9. (9-12 & 9-13) **New Frontiers Candidates**

John recommended taking a second look at the NF candidates at a midterm review in light of possible new discoveries in the intervening years. Jim G. noted that a midterm review is required and he would be willing to look at it then.

10. (9-14 & 9-16) **Mars Flagship Mission**

John noted that we can't impose the descope requirements on ESA, they may have their own constraints. Jim G. firmly believes that if we stay focused on the goal of the start of sample return and we have a shared interest, then we should be able to move forward together.

Jeff provided an update that the Joint Science Working Group (JSWG) is now being formed.

11. (9-16 & 9-17) **Jupiter Europa Orbiter Flagship**

Bill McKinnon felt that the language at the end of the response left him with a bad feeling that something very special had to happen to start this; "NASA will consider implementing the mission if funds become available either via a budgetary new start (a budget enhancement) or possibly due to the loss of the NASA/ESA partnership for the Mars 2018/MSR mission." Jim G. will replace the text to simply say "as funds allow."

12. (9-17) **Potential Flagship Missions**

Sanjay suggested that we should consider studies of both the Enceladus and Venus missions, Jim G. agreed, we should have studies. Will also suggested more optimistic language: "should money become available."

13. (9-21) **Priorities under increased budgets**

Sanjay said again that international collaborations might allow us to move forward with missions we couldn't afford on our own and we should support international study teams. Jim G. noted that we generally try to align ourselves with others that are interested, and said that despite the lack of language, don't assume that we aren't working on this, we support international partnerships. He will add a line to the response.

14. (9-17) **Deferred Flagship Missions**

No comments.

15. (9-21) **Priorities under reduced budgets**

No comments.

16. (9-22) **Titan Saturn System Mission**

Bill noted that the phrase "somewhat unique" is unnecessary, Jim G. agreed to wordsmith.

17. (9-22) **Future Flagship technology development**

Sanjay noted that tech development for other extreme environments, like Venus, is important, Jim G. agreed, he will wordsmith. The sentence fragment on JEO's use of ASRGs needs to be fixed.

18. (9-26) **Plutonium-238 Restart**

Jeff noted that Pu²³⁸ use isn't limited to deep space, there are other missions, like a lunar polar mission or long-lived geophysical missions that might require Pu²³⁸, Jim agreed and will reword.

19. (10-3) **R&A funding**

Bill suggested adding a statement that if funds go up, we can implement the DS's recommended increase, Jim G. agreed and will add. Mark asked about the \$200M figure, is that the right amount? Jim G. regrets that he hasn't yet had a chance to look at those numbers carefully and see what it all adds up to after moving tech development around and whatnot, but he will, and that number is not meant to be a hard and fast limit, it will be looked at every year and PSD will continue to consult with the PSS. Jim G. will change the wording to "maintaining" rather than "capping".

20. (10-6) **Planetary Data System**

Louise didn't understand the last sentence of the first paragraph regarding providing funding for operating missions that do not have a contractual requirement to develop high-level data products. Jim G. explained this was grandfathering in Cassini, but he will reword to make clearer. Louise also suggested adding to paragraph 3 that we will continue to do this (work with the international data community), Jim G. agreed. Mark suggested adding a sentence to require future missions to provide data in archival formats as required by PDS, Jim G. agreed.

21. (10-6) **Funding for derived data products**

Louise noted, and Anna-Louise concurred, that "derived products" is very vague and wide open. Jim G. suggested that the intent of the Decadal is to create those products that will be most useful to the community, he will wordsmith a little.

22. (10-8) **Education and Outreach Funding**

No comments.

23. (10-12) **Ground based observations**

The text needs to be fixed to say the IRTF is funded through PSD, not astrophysics.

24. (10-12) **Suborbital platforms**

Sanjay was uncomfortable with the statement that planetary has little use for balloons. Jim G. explained that that was meant to be relative to Helio and Astro, he will clarify the language.

25. (10-15) **Deep Space Network**

Paul was concerned that the DS did not address the role that DSN plays in mission science goals (radio science, etc). He will email suggested wording for this to Jim G.

26. (10-16) **Advisory group for returned samples**

This response needs to be extensively reworked. Chip and Mini will work with Jeff Grossman to come up with acceptable language for both this response and #28.

27. (10-17) **Inclusion of sample curation costs**

No comments.

28. (10-17) **Technology development for Mars Sample Return Facility**

Chip noted that the emphasis should be on the quickest pathway for releasing the samples to the community. Also, we need to think about the post-MSR future of the MSRF.

29. (11-2) **Substantial Technology Development Program**

No comments.

30. (11-13) **Develop through TRL 6**

No comments.

31. (11-4) **Incentivize Technology**

No comments.

32. (11-4) **Technology Program**

It was suggested that the Office of the Chief Technologist (OCT) should be mentioned in this response, Jim G. agreed.

33. (11-5) **Advanced Stirling Radioisotope Generator (ASRG)**

No comments on the response, but Jim G. noted that there will be a celebration for the 50th Anniversary of Nuclear Space Power at the National Air & Space Museum on June 29th.

34. (11-5) **Fundamental Technology**

No comments.

35. (11-5) **Systems investments**

Dawn didn't understand the response on this one. Jim agreed it was too vague, he will reword.

36. (11-6) **Facilitating insertion of new technology**

Mark suggested removing "flagship and" (no need to call out flagship specifically), Jim G. agreed.

37. (11-7) **MSR technology development**

Mark worried that we may not have yet identified all the technology we need. Jim acknowledged that, yeah, we have to have a plan.

38. (11-7) **Technology for High Radiation Environments**

Mark suggested it would be useful to expand this to include some statement regarding where we are currently and where we might expect to go with level of investments likely available over the next decade. Jim G. felt that was a good idea.

39. (11-8) **Balanced Program**

No comments.

40. (11-10) **Instrument Technology Development**

Sue Smrekar requested that “highest” be changed to “high”, Jim G. agreed to do so.

41. (11-10) **Expanding the applicability of instruments**

Mark asked if this included only missions already defined, or also new concepts. Jim G. clarified that we will invest in low TRL development to do both of those things.

PSD will make revisions based on this discussion and provide a new draft (with changes tracked) to the committee within two weeks (by July 6th).

GPRA

The committee was provided a draft of the GPRA report compiled by PSD. We are asked to produce this document annually to assess how well we are meeting our objectives:

1. Inventory solar system objects and identify the processes active in and among them
2. Understand how the Sun’s family of planets, satellites, and minor bodies originated and evolved
3. Understand the processes that determine the history and future of habitability of the environments on Mars and other solar system bodies
4. Understand the origin and evolution of Earth life and the biosphere to determine if there is or ever has been life elsewhere in the universe
5. Identify and characterize small bodies and the properties of planetary environments that pose a threat to terrestrial life or exploration or provide potentially exploitable resources

The committee was asked to grade the community’s progress on these 5 objectives using a color scale where:

Green = Expectations for the research program fully met in context of resources invested.

Yellow = Some notable or significant shortfalls, but some worthy scientific advancements achieved.

Red = Major disappointments or shortfalls in scientific outcomes, uncompensated by other unusually positive results.

The committee rated the community’s progress as GREEN for all 5 objectives; however, they felt that the document, as currently stands, does not necessarily reflect those grades and needs to be expanded to better

highlight some of the great work done by the community in the last year. Many committee members agreed to send in specific references, and Ron encouraged the other members to try and think of science highlights they could pass along as well and to send those to PSD by the end of the week.

Max's suggestion for a 2-step proposal process

Max would like to try a pilot program for a different proposal review process that may save time for both proposers and reviewers.

Under this process, an NOI would be required, and longer than the current NOIs (~3 pages). These NOIs would be quickly reviewed by a panel from the community (for example, the group chiefs from the eventual panel, or the previous year's panel). Those that ranked near the bottom (lowest 20-25%) would be sent a letter strongly discouraging them from submitting a full proposal (could make it binding, but that seems harsh, particularly for a pilot study). The full proposals would be reviewed as normal.

One drawback, Max noted, would be that those at the bottom would get little feedback.

Julie liked the idea and noted that this type of process had been suggested by several people in the community survey. Mark also thought the idea was "worth taking out for a spin". Paul was concerned that it really wouldn't reduce panel workloads that much. John agreed that it should be non-binding.

Max would like to try it with one or two programs in ROSES12. He is looking for volunteers, particularly programs which have large numbers of proposals and expect to have a low selection rate next year.

Ron asked what the success criteria would be for the pilot study. Max is still thinking about this, but looking at the number of step 1 vs step 2 (were people really discouraged?), getting a sense from the panelists, if they felt it was less work than previous years. Ron suggested asking the community for feedback as well.

John suggested doing a controlled study first, requiring the NOIs, but not actually sending out the letters and seeing where those proposals end up. The committee generally liked that idea, but it does push things out, if you do a controlled test in 12, then the pilot in 13...

There was no consensus on doing a controlled test vs a pilot study. Ron suggested that maybe we could do some combination of both. Max agreed to put a more formal plan in writing and circulate it to the PSS and the program officers.

Other issues

Ron mentioned that the PSS has several times talked about providing a table of dates for R&A. Max agreed to take on that task and will get it out next week.

Louise asked for a brief update on Mars 18. Jim G. noted that there had been significant technical progress and they had come a long way in delineating roles and responsibilities. The next important date for the mission is next Wed (June 29th) when ESA's IPC (Industrial Policy Committee) meets to discuss ESA's commitment for both Mars 16 and 18. In the meantime, the MEPAG meeting in Europe was highly successful.

Actions:

Louise will poll the Mercury community about how they might fit into the AG structure. She will report back at the next PSS meeting in November.

Jim Green (and **PSD staff**) will provide updated language for the Decadal Survey response, preferably in tracked changes, within 2 weeks (I missed the actual date we decided on, can someone help me out?)

Also, the text for response #26 and #28 need to be heavily reworked, **Jeff Grossman** will work with **Chip** and **Mini** to improve those.

Paul will provide some wording to Jim Green on response #25, relating to the role the DSN plays in mission science goals.

Everyone will send Phil Crane Philippe.Crane-1@nasa.gov (cc. J. Rall and Ron) suggestions for inclusion in the GPRRA report, particularly things that involve pretty pictures, due by end of the week. In particular:

Bill will send examples for obj 1, including recent Eneledus results.

Dawn will send example for obj 3 on discovery of carbonates.

John will send example for obj 3 on gully formation.

Chip will send examples for obj 5 on lunar polar resources

Max will put together a formal plan for his proposed pilot study and circulate to PSS and the program officers.

Max will look at the estimated selection rates across the program elements for next year as well as a detailed R&A budget breakdown and bring that back to the PSS.

Max will provide the much talked about table of review panel dates (by month), and anticipated selection dates for each program. Due by end of next week.

Everyone who hasn't already done so should provide written comments to Ron on the DS response by the end of this week.