

1. NSPIRES External Reviews

External reviews play a vital role in ensuring fair and diverse proposal selections by allowing program officers to cast a wider net among the research community for reviewers. Ensuring an adequate supply of external reviews enables participation of reviewers who may be unable to travel yet can supply needed expertise, particularly for interdisciplinary areas. A key step in obtaining thorough and complete external reviews is to ensure that reviewers have adequate time to write their reviews. External review quality can be addressed through making the following suggested improvements.

PAC Observations:

- 1. There is often a delay (more than a week) between the time that an external reviewer is identified by a Group Chief (GC) and the time that an external reviewer is asked for a review in NSPIRES. This delay decreases the chances that a request for review will be accepted and/or completed by the external reviewer.
- 2. A concern is that the current NSPIRES system does not always provide reviewers (including external reviewers) notification when new proposals are assigned to them. Although the first review that is assigned results in an automated notification from the system, subsequent reviews that are assigned at a later time do not result in an automated notification. Thus, reviewers may not realize that they have additional assignments, resulting in inadequate time to either prepare a thorough review or notify the GC that they have declined some or all of the reviews. Without adequate time, GCs cannot find replacement reviewers.
- 3. External reviews that have been completed and submitted to NSPIRES are not always available to the panelists at the start of a panel review. However, the limited amount of time to discuss proposals may necessitate that the panel reviews are conducted without external reviews, which constitutes a missed opportunity for incorporating a resource that would enrich the overall peer-review process.
- 4. The amount of information that a GC or panelist can access through NSPIRES is not consistent among all R&A programs. At minimum, the GC needs to access the proposals and reviews for all of the proposals within his or her subpanel so that he or she can identify any potential problems with missing reviews prior to the panel meeting. A panelist should be able to access all reviews for any proposal they have reviewed once their review is submitted. Homogenizing this process across all R&A programs will help to streamline the panel-review process and ensure sufficient external reviews are available when sufficient expertise is not available on a subpanel.
- 5. NSPIRES does not give the GC the ability to see a comprehensive status of all reviews, so GCs are unable to see when external reviewers decline, accept, access proposals, or complete reviews. GCs thus have a more difficult time assessing the status of external reviews.

PAC Recommendations:

- PAC recommends that external reviewers must be notified within 48 hours that they have been officially selected as a reviewer.
- PAC recommends that NSPIRES be modified to provide automated notifications to external reviewers whenever any review is assigned.
- PAC recommends that NSPIRES be modified such that all panelists who have completed their reviews can see all external reviews as soon as they are completed.
- PAC recommends that NSPIRES be modified such that group chiefs can always see the status of all reviews for the panel (i.e., accept/decline, not logged in, in progress, completed).

2. Post 2020 Mars Sample Return

NASA's Lean Sample Return strategy does not include collecting a contingency sample, whereas returning any sample has been a mission success criterion for past sample return missions.

PAC recommends collecting a simple, contingency grab sample with a curation plan.

3. Mercury Assessment Group

Mercury is not currently represented in any of the Analysis or Assessment Groups.

PAC recommends that NASA starts a new assessment group for Mercury, rather than add it to an already existing Assessment/Analysis Group.

4. Radioisotope Power Systems (RPS) in the Discovery Program

NASA's information announcement regarding the 2019 Discovery AO stated that the use of radioisotope power systems (RPS) will not be allowed in Discovery mission proposals.

PAC recognizes that there currently exist liens against the supply of plutonium (Pu-238) to provide power for other Solar System missions already in development. PAC encourages the continued restarted production of Pu-238.

PAC would like to see the Discovery Program open to all destinations and targets, regardless of power supply requirements. The Discovery Program should allow the use of RPS if the supply of Pu-238 is sufficient to support a Discovery mission that requires RPS.

[Obsolete as of March 17, 2018 when PSD Director stated that NASA will reconsider use of RPS in the Discovery Program.]

5. Venus Opportunities in Discovery and New Frontiers Programs

Although NASA selected Venus missions as finalists in the most recent Discovery mission opportunity and Venus missions were proposed to the New Frontiers Program, none was selected for flight.

PAC recognizes that Venus remains an important and under-investigated target and recognizes its connections to exoplanets and habitability.

6. NASA's Early Career Fellowship (ECF) Program

The NASA Early Career Fellowship (ECF) Program was created to help early career planetary scientists acquire their first faculty position. The ECF Program was not solicited in ROSES 2017 and the New Early Career Fellowship Program is TBD in ROSES 2018. At the National Science Foundation (NSF), the CAREER program is intended to enhance the promotion case of junior faculty to fully tenured positions.

PAC recommends the revision and restoration of NASA's ECF Program. PAC recommends dividing the way the ECF program is administered for tenure-track (or tenure-track equivalent) and non-tenure track researchers. For early career planetary scientists that do not yet have a tenure-track or tenure-track equivalent position, the ECF could be modeled after NASA's Postdoctoral Program awards or Hubble Fellowships. For those that already have faculty positions, the NSF's CAREER program could be the model for those that are on the tenure track or have tenure-equivalent positions.

7. Standardization of Planetary Data Formats and Definitions

The use of standard data formats ensures data interoperability, reduces redundant efforts, and can maximize the scientific return from planetary spacecraft missions.

PAC recommends that NASA make a concerted effort to facilitate the development of standard formats and definitions for planetary data (i.e. Geographic Information System (GIS) and spatial data).

8. Report to the PAC from the Planetary Defense Coordination Office

Given the importance of planetary defense to NASA and the public, PAC recommends that NASA's Planetary Defense Coordination Office makes regular reports to the PAC on the progress and plans being made in regards to meeting the George E. Brown survey objective of detecting and tracking >90% of Near Earth Objects (NEOs) larger than 140m, and smaller NEOs.