NASA Organization

Office of the Chief Technologist

Office of the Chief Scientist

Office of the Administrator

Robert Lightfoot
Acting *Administrator*

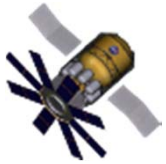
10 NASA Centers

Aeronautics Research Mission Directorate

ARMD

Science Mission Directorate

SMD

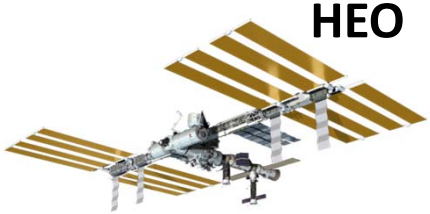


Space Technology Mission Directorate

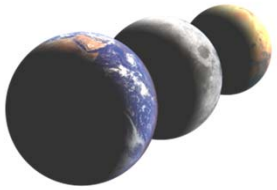
STMD

Human Exploration and Operations

HEO

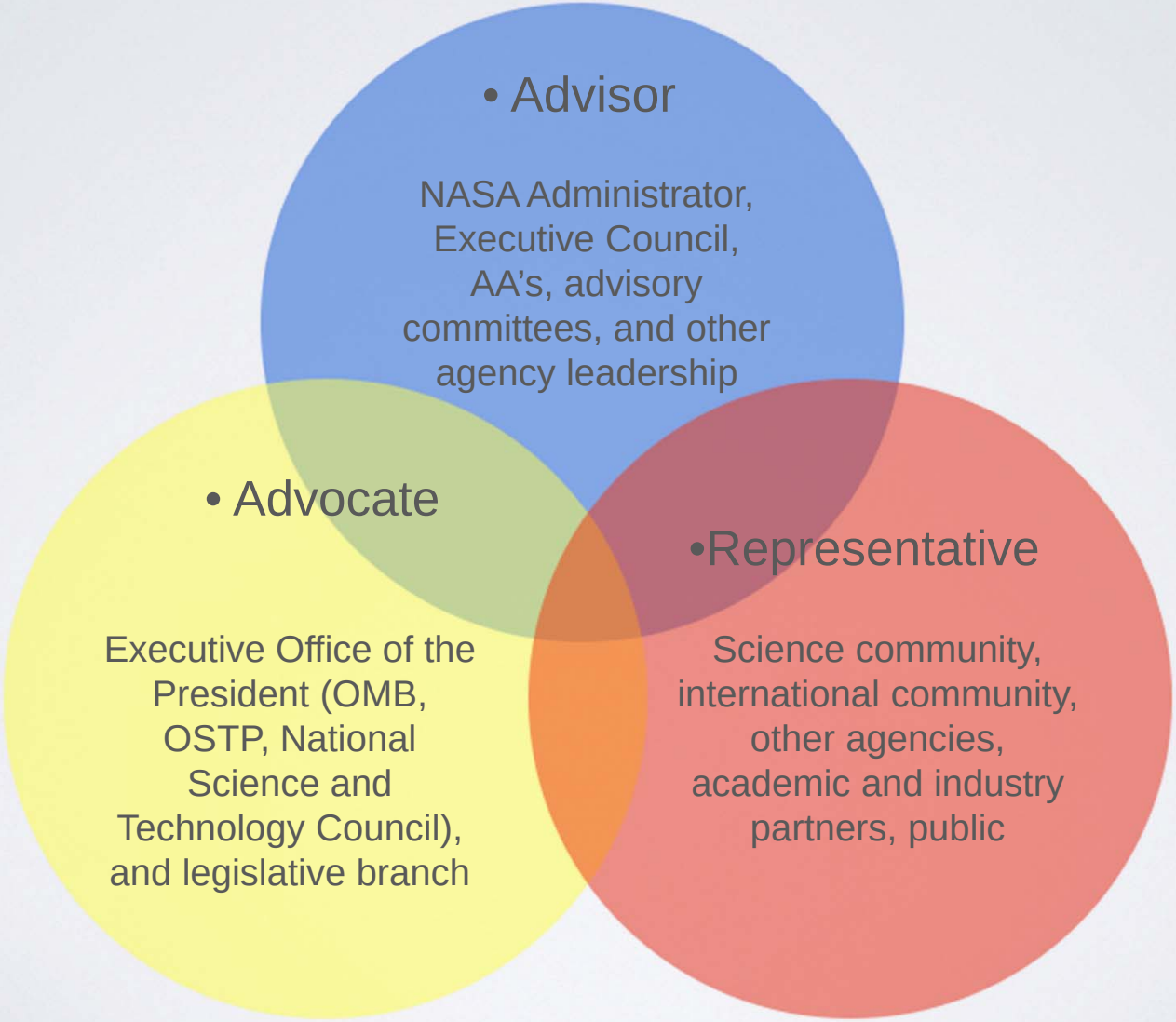


Space Operations Mission Directorate



Exploration Systems Mission Directorate

Role of the Chief Scientist



INTERDEPENDENCE
- INTERNAL -

• Working with Office of the Chief Technologist to ensure science requirements and technology development are tightly coupled

• Working with center and HQ leadership to preserve scientific integrity across all NASA funded research

• Working across directorates to ensure opportunities for leveraging dollars across all science disciplines are identified and implemented

• Working with the Communications Coordinating Council to communicate the value of NASA science, and build bridges to ensure all science disciplines are highlighted

• Partnering with the Office of Human Capital Management to research options for providing agency-wide developmental opportunities for emerging science communicators at NASA

INTERDEPENDENCE
- EXTERNAL -

• Working with OSTP on issues related to public access to federally funded scientific research data and results, digital data management, and government-wide science policies

• Participating on National Science and Technology Council committees on topics including federal use of ISS, synthetic biology, and scientific collections

• Interfacing with the science community to communicate and listen to concerns regarding NASA's plans toward implementation of decadal surveys

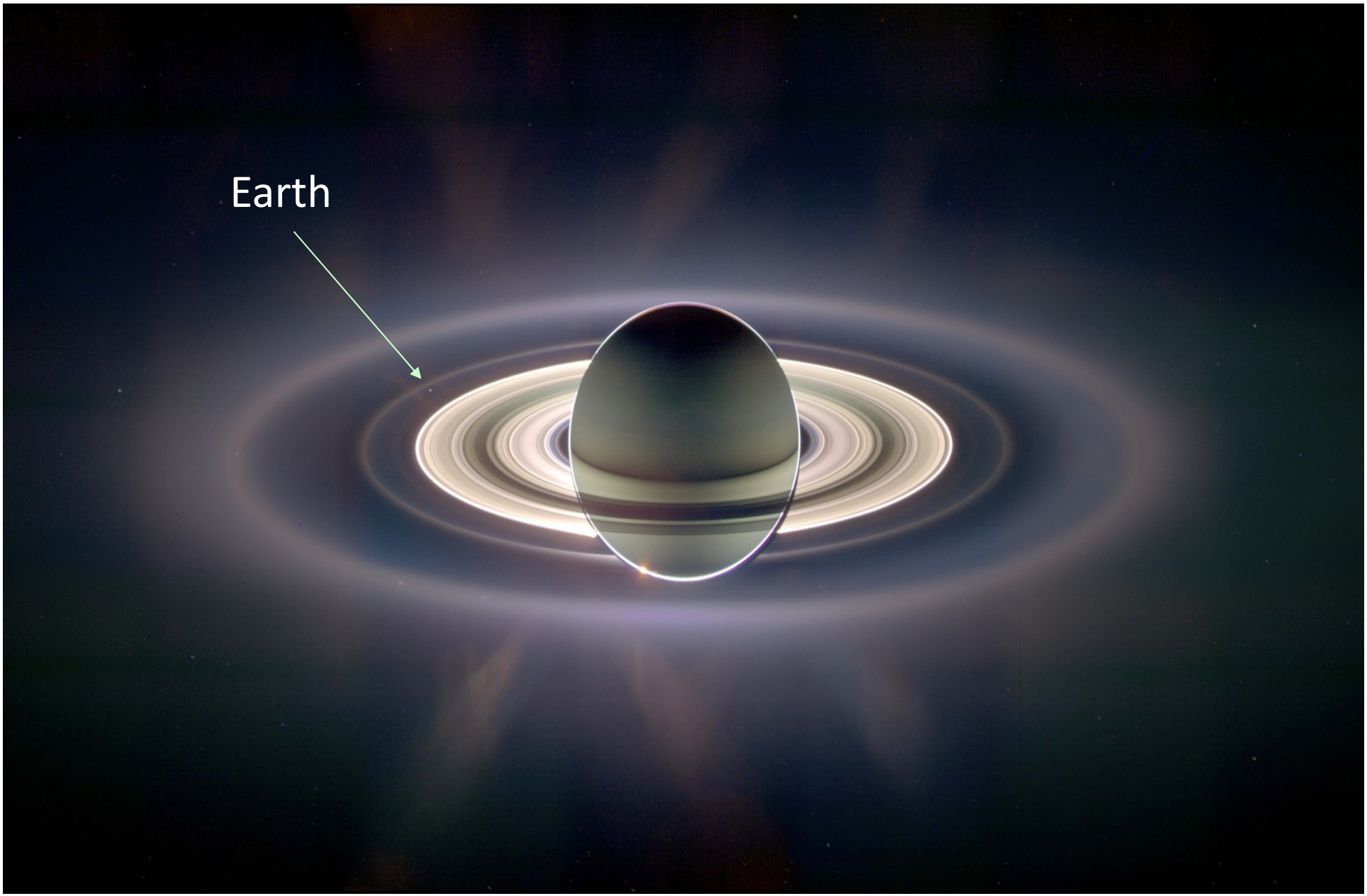
• Interfacing with the international community to communicate NASA's overall science strategy and encourage collaboration

• Listening to and interfacing with the public to understand where public interest, concern and support lie for NASA's science investments

U.S. Post Office releasing heat-activated Total Solar Eclipse 2017 stamp

The Great American Total Solar Eclipse 2017 is arriving on August 21 and will be one of the most visible eclipses sweeping across the United States mainland in nearly 40 years. Heat-activated stamp that changes when in contact with the warmth of your finger

Saturn – we are small in a big universe



https://eclipse2017.nasa.gov/

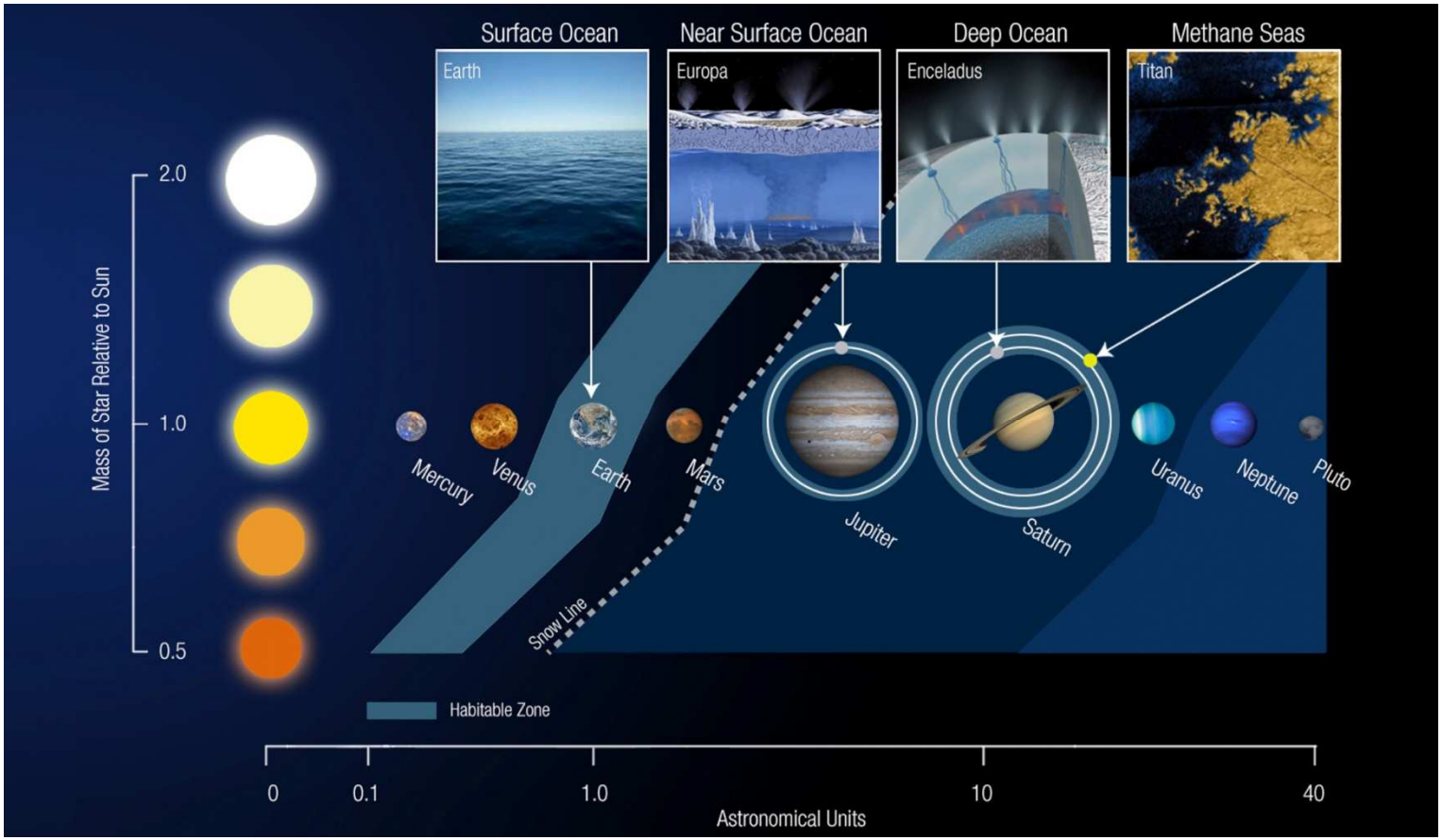
http://www.blastr.com/2017-5-2/total-solar-eclipse-2017-us-post-office-stamps

https://saturn.jpl.nasa.gov/mission/grand-finale/overview/

Planetary Protection Authority at NASA

Briefing to the NAS Space Studies Board
Planetary Protection Policy Review Committee
May 23, 2017

Introduction and Background



History

2013 History

- Action by the Administrator - Three Chiefs (OCE, OCT, OCS) reviewed the NASA Advisory Council (NAC) structure and charter and made recommendations to increase its relevance and efficiency
- At that time the chiefs flagged the Planetary Protection Officer position and Subcommittee as being unaligned with other functions, committees, and subcommittees in the NAC and recommended a deeper look into the area
- Even though located in Science Mission Directorate (SMD) thus far, Planetary Protection is an Agency-wide function, and the responsibility of the NASA Administrator. In recent years the role has been delegated to the Associate Administrator, Science Mission Directorate, since all missions to planets were SMD related.

Responsibilities of Planetary Protection Officer

- Policy – member of Planetary Protection at COSPAR
- Advisory – Advises the Agency on planetary protection policy
- Regulatory – Determines mission characterization, defines applicable standards and approves techniques
- Standards – approves cleaning/sterilization tools and techniques
- Process Implementation
- Verification/validation - sterility/cleanliness, verification for Flight Readiness
- Research – leads development of life detection tools, and broadly supporting PP decision making
- Education – stakeholders and practitioners

Science Mission Directorate Associate Administrator Request

- SMD AA (Dr. Zurbuchen) requested Office of Chief Scientist (OCS) to review functions of the Planetary Protection Officer (PPO) position and to provide recommendations
  - Is the position aligned appropriately within the Agency to meet current and future needs, especially considering future agency plans?
  - Do the roles and responsibilities as assigned ensure maximum efficiency and effectiveness?

Process

- Team – SMD, OCS, OCE, S&MA, SME Planetary Protection, OCHMO (as needed)
- Reviewed NPD 8020.7 Biological Contamination Control for Outbound and Inbound Planetary Spacecraft
  - Organizational placement
  - Roles and responsibilities of Planetary Protection Officer
- Evaluated Current State of Agency (Robotic and Human Exploration Missions)
- Reviewed and discussed Planetary Protection function residing in a directorate
- Reviewed and discussed Technical Authorities
  - Chief Health and Medical
  - Chief Safety and Mission Assurance
  - Chief Engineer
- Discussed Pros and Cons of each office as they pertained to planetary protection

Fundamental Aspects of Technical Authority

- Provide an independent view of program/project activities.
- Ensure direction to the program or project reflects the view of the Center or, where appropriate, the view of the NASA Technical Authority community
- Approve changes to and waivers to all Technical Authority responsible requirements
- The Program/Project Manager remains responsible for the safe conduct and successful outcome of the program/project in conformance with governing requirements

Recommendations

- While Planetary Protection can reside anywhere in the Agency (i.e. SCaN and Launch Services)

- Determined that planetary protection function should fall under one of the technical authorities because
  - It is not a customer support function as is SCaN and Launch Services
  - There is an aspect of technical authority (characterization of mission, verification) in the function
  - Requirements are developed and delivered to program/project
  - It will raise visibility and strengthen the role
  - Would fit well with accepted processes (7120.5 including dissenting opinion)

- It could fit in any of the Technical Authorities

- Recommend the function be transferred to Safety and Mission Assurance
  - It will align the role with similar activities (MMOD/Orbital Debris)
  - Recommend the function is separated into two roles:
    - Separate policy/requirements from research (life detection tools and techniques are limited). The plan to send humans to outer regions drives us to develop better life detection techniques

Proposed Functional Structure

Chief, S&MA

- Authority to Accept Risk on Behalf of the Public at Low Levels, Reports all Public Risk to Administrator
- Responsible for PP/CC mitigation policy and oversight consistent with COSPAR planetary protection policy.
- Acts as cognizant Technical Authority:
  - Signs final PP/CC assessment reports
  - Issues formal actions based on PP/CC reviews
  - In consultation with Administrator, adjudicates waiver requests to PP directive and standard.

Director, SARD*

- Oversees execution of Agency-level SMA programs
  - Allocates funding from OSMA budget
  - Conducts programs reviews and assessments
- Maintains SMA NPDs, NPRs and standards

*Safety Assurance Requirements Division

Planetary Protection Officer

- Coordinate with the PP Delegated Program activities;
- Develops standards, procedures, and guidelines
- Ensures P/p is appropriately implementing applicable PP requirements
- Ensures international obligations have been met and implications have been considered
- Certifies to the Chief S&MA flight missions have satisfied applicable PP requirements
- Participates in and leads international activities
- Advises OIIR and OGC on international policies
- Coordinates PPRE reviews

Planetary Protection Research Delegated Program Manager

- Perform gap analysis to identify most critical areas of planetary protection (PP) to mitigate uncertainties and risks
- Perform research needed to improve methods to identify and reduce bioburden contamination
- Perform research needed to improve methods of testing and verification in support of PP requirements
- Identify new and emerging PP risks and uncertainties associated with human exploration missions relevant to PP
- Maintains technical standards on behalf of OSMA

NASA Procedural Requirement 8020.12

- Update in work
  - Plan for reviewing the proposed draft of NPR 8020.12E
  - Review will be chaired by Dr. Gale Allen Acting NASA Chief Scientist. Deputy Chair will be Helen Grant from the Office of Chief Scientist
  - The draft currently in existence will be reviewed first by a Core Team. Changes and updates proposed by the Core Team will be then reviewed by a Red Team. The Red Team will provide feedback to the Core Team. One responsibility of the Red Team will be to ensure NASA's international treaty obligations are appropriately implemented in the NPR.
  - Core Team members
    - Lead: Helen Grant/Perry Stabekis
  - Red Team members
    - Lead: Cassie Conley
  - Draft schedule – To be revised
    - 3/31 Core Team completes review and provides suggested changes and updates to Red Team
    - 4/14 Core Team and Red Team meet to discuss questions
    - 4/28 Core Team and Red Team meet to discuss agree on updates to the document
    - 5/31 updates to the document are complete and ready to feed into NODIS update process
  - _____
  - Planetary Protection Roles and Responsibilities Team
  - This team will review current implementation (governance) of Planetary Protection and make recommendations

    Lead: Gale Allen
    - Office of the Chief Scientist
    - Subject Matter Expert
    - Office of Safety and Mission Assurance
    - Office of the Chief Engineer

Forward Activities

- Advertise for an SL Planetary Protection Officer at HQ/Office of Safety and Mission Assurance
- Establish a Planetary Protection Research Program
- Establish a permanent Planetary Protection directive and standard