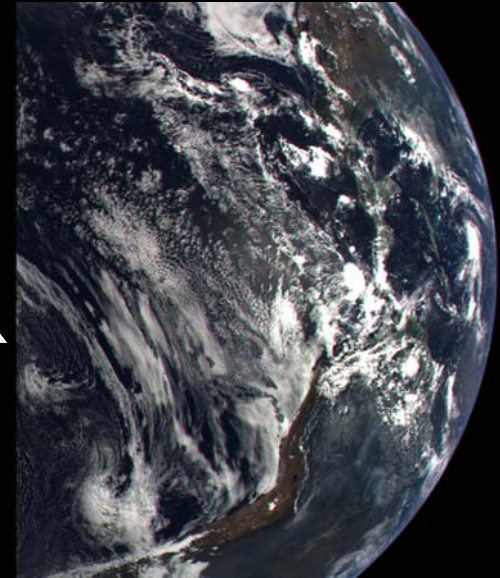


Discovery Program Lessons Learned:

MESSENGER



2 August 2005
MDIS wide-angle image of Earth

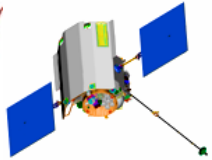
Principal Investigator
Sean C. Solomon

Department of Terrestrial Magnetism
Carnegie Institution of Washington

Discovery 2006 Pre-Proposal Conference
Washington, D.C.
2 February 2006

3 August 2004
2:15:56 EDT





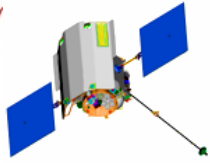
MESSENGER



Some Obvious Lessons for PIs



- Budget ample reserves: cost, schedule, and mass
- Learn project management and systems engineering
- Assemble the best possible team
- Accomplish as much in Phase B as possible



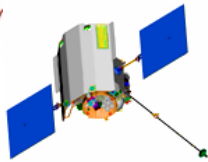
MESSENGER



Faced Broad Challenges



- Demanding limits to mass growth
- Hazardous thermal environment
- Complex mission design with limited launch opportunities and a long cruise phase



MESSENGER

Anticipate Technical Challenges



MESSENGER Solar Array



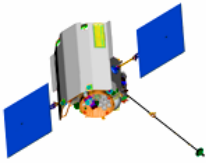
MESSENGER IMU

A challenge anticipated: Solar arrays

- Multiple vendors engaged
- Thorough testing program
- Final vendor selection after all prototype testing

A challenge not anticipated: Inertial Measurement Unit (IMU)

- Expertise resided with a single vendor
- That vendor was bought out by a new vendor, who closed a key facility and had to reinvent expertise



MESSENGER



Anticipate Management Challenges



Max Peterson
MESSENGER PM
1998 - January 2003



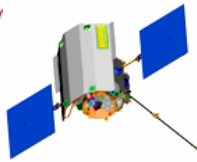
Richard Huebschman
MESSENGER DPM
June 2001 - October 2002



Dave Grant
MESSENGER PM
February 2003 - present

During Phases B and C/D:

- MESSENGER had two Project Managers and two Deputy Project Managers
- The NASA Solar System Exploration Division had four Directors
- The Discovery Program had three Program Managers and added the position of Program Director in 2004
- There were five successive Discovery Program management organizations



MESSENGER

“We’re from the Government and ...”



- Plan for NASA’s tolerance for risk to change between your selection and launch
- Plan for more reviews than were initially specified
 - View them as learning opportunities
 - Learn to assess their cost and negotiate accordingly
- Learn about ITAR and its impact on team member access, hardware acquisition, and publication approval procedures

This is not the correct ITAR