



National Aeronautics and
Space Administration

EXPLORE MARS SAMPLE RETURN

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NASA HQ

Presentation to the PAC

June 14, 2021

PAC = NASA
Planetary Science
Advisory
Committee





Phase A Status

- MSR entered Phase A in December following Independent Review Board and Standing Review Board Review of mission concept and technology plans
- Program has been staffing up
 - Have benefited from staff transitioning from M2020
- Partnership with ESA established
 - Second Joint Steering Board planned for June 17th
 - Review of Proposal for Sample Transfer Arm
- Review Status
 - ESA Earth Return Orbiter (ERO) – PDR 4/15
 - ESA Sample Fetch Rover (SFR) SRR – 4/29
 - Capture, Containment, and Return System (CCRS) SRR – 4/22
- Focusing on developing and refining architecture
 - Ensure alignment with Class A mission requirements
 - Mission Timeline (LRD and Sample Return date)
 - One vs Two landers

Review dates are shown for parts of the project that are making progress. Should we be concerned to see no review date for the MAV?

One vs Two landers (for delivering MAV and fetch rover to Mars) is all about how heavy the MAV ends up being, still a significant unknown.

Phase A Status, cont'd

- Agency Delta Acquisition Strategy Meeting, 5/13
 - Consistent with IRB Recommendations, MAV, SRL Cruise Stage, and EEV will be system procurements
- Near Term Strategic Procurements:
 - SRL/EEV Thermal Protection System (TPS) material, Contractor: FMI
 - ➔ • MAV Solid Rocket Motors, Contractor: Northrup Grumman
 - Aeroshell, Contractor: Lockheed Martin
 - EEV
 - ➔ • MAV
 - SRL Cruise Stage

The MAV will be a “system procurement.”

Mr. Gramling explained that industry will build the whole MAV as the Independent Review Board recommended in mid-2020 (versus NASA-MSFC as previously expected). He noted that the solid rocket motors from Northrop-Grumman (the old Thiokol plant in Maryland) will be furnished to the company that builds the whole MAV, and he noted that NASA is now working on putting together the system contract. He did not name a contractor or indicate a start date.

MSR Budget Status

President's FY22 Budget request

Budget Authority (in \$ millions)	Op Plan FY 2020	Enacted FY 2021	Request FY 2022	FY 2023	FY 2024	FY 2025	FY 2026
Total Budget	0.0	246.3	653.2	772.3	800.0	700.0	600.0

- We are pleased that the President's FY22 Budget request funds us at levels consistent with the recent IRB recommendations and the presentations made to the Planetary Science and Astrobiology Decadal Survey
- Program Cost Commitment established at KDP-C, following completion of Phase B

MSR total spending above sums to about \$3.5 billion. Considering that the Mars helicopter project cost \$85 million, and the MAV solid rocket motor contract is a similar amount, the whole MAV could easily be ten times more work, about a quarter of U.S. spending for MSR. Does that seem about right?