

Mars 2020/MSR Sample Depot Science Community Workshop

Second Announcement

September 28th and 30th 8am-12pm PDT / 11am-3pm EDT / 5pm-9pm CEST

Workshop Summary Statement of Purpose

A depot of samples acquired by the Perseverance Rover in Jezero Crater needs to be established in the near future for risk management and other strategic reasons along the Jezero Delta Front. The goal of this workshop is to inform and solicit input from the science community on the potential for the samples in this proposed depot to sufficiently satisfy Mars Sample Return science objectives and thus, constitute a scientifically return-worthy (SRW) sample set.

Workshop Information

As the Perseverance rover explores the Jezero Delta Front and continues to enhance its on-board sample collection, NASA and ESA are further advancing their planning for the retrieval and transportation of the samples to Earth.

Mission risk managers have determined that the probability of success is maximized if the collected samples are divided into two subsets, with “success” defined as the delivery of one of those two groups of samples to Earth.

The strategy is based upon Perseverance forming an initial depot within Jezero Crater within the rover’s qualified lifetime (1.5 Mars years), using one member of each of the paired samples it has collected. The second of each of the paired samples would then be retained on board, and this group of on-board samples would be augmented by additional future samples, potentially over multiple years (depending on Perseverance’s future state of health).

However, this strategy depends on each of the two sample groups being independently scientifically return-worthy (SRW); we will not know in advance which of the two sample sets would be returned. The intention is to return the most promising sample set, presumably the second sample collection that should include the same lithologies as the first collection and could include additional samples from inside and outside Jezero Crater.

The timing, location, and constituent cache of the first sample depot to be placed on the martian surface are currently under consideration, to ensure that there is an SRW set to be returned, and feedback from the scientific community is being sought. A location referred to as Three Forks (along the western Jezero delta front) has been identified as a high-potential site for the placement of the first sample depot from both a Mars 2020 (M2020) and Mars Sample Return (MSR) Program perspective due to the favorable terrain, the proximity to the planned M2020 traverse, and the number and diversity of samples that will have been collected at the time of the first depot formation.

The output from this workshop will be considered as critical input for the final decision on depot placement. This decisional meeting is expected in mid-October.

Logistics

The MSR Campaign Science Group (MCSG) is the primary organizer of this meeting. This workshop will be held virtually from **8am-12pm PDT / 11am-3pm EDT / 5pm-9pm CEST on Wednesday, September 28th and Friday, September 30th**, with the intervening Thursday being an “off” day to allow the participants to consider and develop their thoughts and feedback.

Further information on the agenda and virtual connection information are provided below. We will also distribute a preparatory information package with the final announcement. The science community is an important stakeholder in the decisions about the formation of the first depot, and we encourage broad participation in this discussion.

Sample Caching Science Workshop, Sept. 28 & 30, 2022: Working Agenda		
As of August 22, 2022		
Day 1: Wednesday, Sept. 28, 2022		
Start	End	Topic
Introduction		
8:00 AM	8:05 AM	Welcome, role of MCSG, and introduction of co-chairs
8:05 AM	8:25 AM	Purpose of workshop, history (CSSC), and introduction of agenda
8:25 AM	8:35 AM	Discussion regarding what is the question being asked?
What is the offer on the table that we need to react to?		
8:35 AM	9:05 AM	M2020 & 1st Depot: Depot placement strategy, scenarios, and leading to initial depot placement
9:05 AM	9:45 AM	M2020 & 1st Depot: Sample Acquisition progress, and proposal of what would go in the first depot; cover paired samples and witnesses
9:45 AM	10:00 AM	Break
Inputs to a science response		
10:00 AM	10:20 AM	Scientifically Return-Worthy (SRW) Assumptions/Definition
10:20 AM	11:05 AM	Proposed Traceability Matrix of Objectives and Samples for possible 1st depot (SSTM)
11:05 AM	11:50 AM	Discussion/Q&A
11:50 AM	12:00 PM	Expectations for Day 2

Day 2: Thursday, September 29, 2022		
Off day, discussion encouraged		

Day 3: Friday, September 30, 2022		
Start	End	Topic
8:00 AM	8:30 AM	Recap of Day 1 (with discussion time)
Formulating a science response		
8:30 AM	9:40 AM	Discussion: SRW, Traceability Matrix of Objectives and Samples (SSTM)
9:40 AM	10:05 AM	Discussion: Decision guidelines regarding the paired samples
10:05 AM	10:30 AM	Discussion: Decision guidelines regarding witnesses
10:30 AM	10:45 AM	Break
10:45 AM	11:45 AM	Concluding discussion leading to a science response, including documentation process
11:45 AM	12:00 PM	Final remarks, next steps

Connection Info

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- Meeting number (access code): 2764 486 2819
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