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**MEDICAL REQUIREMENTS INTEGRATION
DOCUMENTS
(MRID)**

The MRID Book

**SPACE MEDICINE AND HEALTH CARE SYSTEMS
OFFICE**

Revision A

March 2005

The MRID Book Revision and History Page

Revision	Date	Originator	Description
Baseline	March 2000	SD/ Medical Sciences Division	Requirements and Implementation defined
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MEDICAL REQUIREMENTS INTEGRATION DOCUMENTS (MRID)

March 2005

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1.0 INTRODUCTION

This book defines integration activities to support the medical requirements (MR) for both short-duration and long-duration human space flight for the Space Shuttle/International Space Station (ISS) programs. The Medical Requirements Integration Documents (MRID), contained herein, reflect the MR documented in the Astronaut Medical Evaluation Requirements Document (AMERD), JSC 24834, the ISS Medical Operations Requirements Document (ISS MORD), SSP 50260, and the Shuttle Medical Operations Requirements Document (MORD) JSC 13956. Changes to MR are approved by the Space Medicine Configuration Control Board (SMCCB) for both the Shuttle and ISS programs and by the Multilateral Medical Operations Panel (MMOP) for ISS.

1.1 Purpose

MRID serve the following purposes:

Identify and define the integration details associated with each medical requirement into one controlled document. This allows the flight surgeons, laboratories, and integration personnel to work in a more effectively organized manner towards meeting and executing those medical requirements. The MRID facilitate the standardization of methods used to employ a medical requirement.

Address the details associated with implementing medical requirements where the AMERD and Shuttle/ISS MORDs do not. Requirements for test duration, training, data delivery, photo/TV, and the facility are not addressed in the AMERD/MORDs.

Represent a united, predefined position by the NASA flight surgeons, laboratories, and discipline leads on the implementation requirements for each MR. This enables the integration teams to work confidently towards the scheduling and training of these requirements.

As more long-duration experience is gained, the MRID can be revised to capture the “lessons learned” with training and implementing the medical requirements. The MRID will provide a vast amount of information to new personnel who have not had the benefit of past experience.

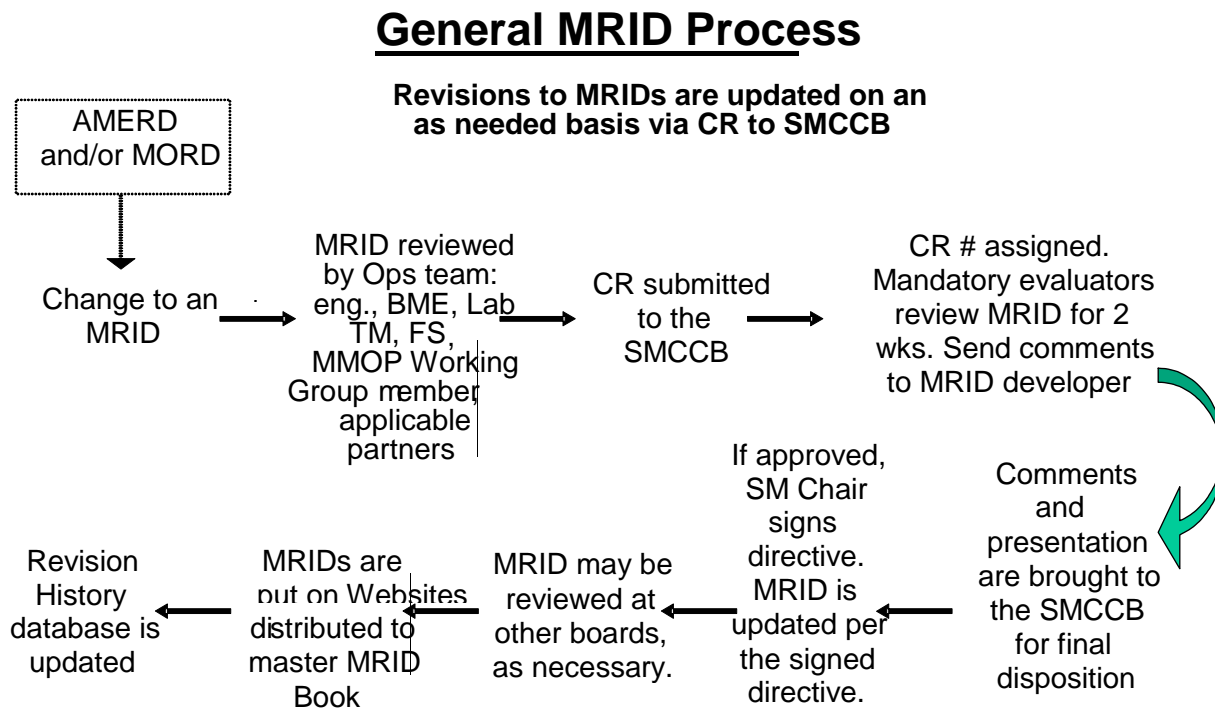
1.2 Authority

The MR will be implemented by the contractor supporting the Space Medicine Office in accordance with the requirements defined in the MRID. Any mission or crew-specific deviation from these requirements shall be at the written direction with rationale from the attending NASA flight surgeon. The MRID shall reflect the requirements found in the AMERD and or Shuttle/ISS MORDs or from changes approved via CR through the SMCCB.

1.3 Change Policy

Changes to MR are approved by the SMCCB for Shuttle/ISS and the MMOP for ISS. Changes to MRID are processed through the SMCCB (see Figure 1.0 MRID Change Process), and should reflect only the requirements approved by the SMCCB and MMOP for ISS. Changes to all MRID are documented in a revision history which is maintained by the MRID Book Manager.

Figure 1.0 MRID Change Process



1.4 Roles and Responsibilities

The following personnel are responsible for the integration of MR, adhering to the methods defined in the MRID. Some roles may overlap, especially on a per mission basis. However, these individuals operate as a team to ensure that all aspects of the implementation are successfully accomplished.

- **Crew Surgeon** – responsible for the health and medical care of all crew members assigned to a particular mission.
- **Biomedical Flight Controller (BME)** – primary liaison between crew surgeon and medical operations teams. Coordinates, implements, and supports all in-flight MR activities and their associated hardware.
- **Medical Operations Instructor** – responsible for coordinating and/or training the crew and other relevant personnel on in-flight MR.
- **Laboratory Representative** - provides technical expertise, supports training, testing, and analysis of medical results.

- **Mission Integration Coordinator** – primary interface between crew surgeon, laboratory representatives, and crew. Supports, manages, integrates, and implements all pre- and postflight medical assessment tests (MATs) including familiarizations and postflight medical debriefs.
- **Flight Hardware Engineer**- supports any training, operations and/or integration activities relative to Crew Health Care System (CHeCS) or other Medical Operations hardware/software support.

1.5 MRID Format

The purpose of the MRID format is to standardize the Shuttle/ISS MR into a single, integrated document (see section 3.0: MRID FORM). The MRID are assigned a number by the MRID book manager as they are approved by the SMCCB. An “S” for short duration or “L” for long duration is added to that number to denote mission length. The S and L are an important part of the MRID numbering system since protocols and schedules affect each MRID differently.

The MRID format is grouped into eight sections:

- | | |
|----------------------------------|--------------------------|
| 1. Instructions | 5. In-Flight Activities |
| 2. Medical Requirements Overview | 6. Postflight Activities |
| 3. Preflight Training | 7. Summary Schedule |
| 4. Preflight Activities | 8. Appendix (as needed) |

The table format provides an easy-to-read, convenient reference that allows the user prompt access to MR information.

All acronyms are to be spelled out the first time they are used in the text of the test or evaluation. [Example: Medical Requirements Integration Document (MRID)]

Budget

For each MRID that is added or revised a budget impact must be provided to the SMCCB for their consideration. Detailed budget information is considered sensitive and should only be presented to the SMCCB core board members and not be included in the CR distribution.

2.0 APPLICABLE DOCUMENTS

JSC 13956	Medical Operations Requirements Document for Shuttle (Shuttle MORD)
JSC 24834	Astronaut Medical Evaluation Requirements Document (AMERD)
JSC 28289	ISS Medical Operations Data and Communication Concepts and Requirements
SMCCB WI	Space Medicine Configuration Control Board Work Instruction
NPD 8900.1	Medical Operations Responsibilities for Human Space Flight Programs
SSP 541XX	Increment Definition and Requirements Document (IDRD) for Increment X, Annex 4: Medical Operations and Environment Monitoring
SSP 50260	ISS Medical Operations Requirements Document (ISS MORD)
SSP 50470	Crew Health Care System (CHeCS) GFE Specification

3.0 MRID FORM

3.1 Instructions

3.2: Medical Requirements Overview

MRID# and Title: List the medical requirement number and corresponding title.

Discipline: Select the discipline associated with the medical requirement (if none apply, record N/A):

Behavior, Health and Performance	Infectious Disease and Immunology
Bone, Muscle, Exercise	Neurological Function
Cardiovascular	Nutrition
Environmental Health	Radiation
EVA Bone, Muscle, Exercise	Therapeutics and Clinical Care

References: Identify the references in the STS MORD, ISS MORD, and/or AMERD used in the development of the MRID.

Purpose/Objectives: Brief description of the goals of this medical requirement

Measurement Parameters: What is the element being evaluated, e.g., “formaldehyde levels in the air”, “radiation exposure at the tissue level”, “heart rate,” etc.

Deliverables: Identify the final product that will be generated from evaluation of preflight, in-flight and/or postflight MR data, typically a written report and/or data for archiving.

Flight Duration: Select between short-duration flights (less than 30 days) or long-duration flights (30 days or more)

Number of Flights: This should define which flights require the medical requirement; it could be “all flights” or flights starting with a particular mission, e.g., “5A and subsequent flights.”

Number and Type of Crew Members Required: This should list which crews are required to participate in the medical requirement and define whether international crew members are included with the U.S. crew members. Select appropriate category: U.S. only, all crew members, EVA crew, CMOs only.

Other Flight Characteristics: Identify any unique characteristics related to a mission, i.e., EVA, inclination, etc.

3.3: Preflight Training

Preflight Training Activity:

Description: Briefly describe the training protocol for the medical requirement. If preflight training is not required for this MR, record N/A.

Schedule: List the schedule of activities including duration (in minutes or hours), schedule (e.g., L-4 months), flexibility (L-4 months +/- 2 weeks), and personnel required (instructors, lab staff, physicians, and crew). Record N/A if a category does not apply.

Ground Support Requirements

Hardware/Software: Include the hardware and software necessary to perform the preflight training protocol. List the names of the hardware, software, and the location where it is to be used, e.g., "U.S. or Russia." If none, record N/A.

Training Facilities: Define in the subheadings what is required to complete the training. If none, record N/A.

Constraints/Special Requirements: List restrictions or special criteria for conducting the training, e.g., "Training must be conducted on consecutive days." List test termination criteria if applicable to the MR. If no restrictions or special requirements, record N/A.

Launch Delay Requirements: Identify how many days of delay would cause retraining of the crew if the launch were postponed. If none, record N/A.

Notes: Include information that will clarify or expedite the performance of the training. References other than the AMERD, Shuttle MORD, and ISS MORD may be included here. If none, record N/A.

3.4: Preflight Activities

Preflight Activity:

Description: Briefly describe the preflight protocol for the MR. If preflight activity is not required for this MR, record N/A.

Schedule: List the schedule of activities including duration (in minutes or hours), schedule (e.g., L-4 months), flexibility (L-4 months +/- 2 weeks), blood volume, and personnel required (instructors, lab staff, physicians, and crew). Record N/A if a category does not apply.

Ground Support Requirements

Hardware/Software: Include the hardware and software necessary to perform the preflight activity. List the names of the hardware, software, and the location where it is to be used (e.g., "U.S. or Russia"). If none, record N/A.

Testing Facilities: Define in the subheadings what is required to complete the activity. If none, record N/A.

Constraints/Special Requirements: List restrictions or special criteria for conducting the activity, e.g., "crew member fasting." List the test termination criteria if applicable to the MR under this section. If no constraints or special requirements, record N/A.

Launch Delay Requirements: Identify how many days of delay would cause retesting of the crew if the launch were postponed. If none, record N/A.

Notes: Include information that will clarify or expedite the completion of the activity. References other than the AMERD, Shuttle MORD and ISS MORD may be included here. If none, record N/A.

Preflight Data and Report Delivery

Data/Report to Designated Recipients (Nominal/Contingency): Define the delivery dates of the preflight report to the appropriate recipients, e.g., “Activity report will be delivered to crew surgeon after 24 hours of activity completion.”

3.5: In-Flight Activities

Table 3.5.1:

Description of Activity:

Description: Briefly describe the in-flight activity. If in-flight is not required, record N/A.

Schedule: List the schedule of activities including duration (in minutes or hours), schedule (e.g., FD6), flexibility (FD6 +/- 2 days), blood volume, and personnel required (all crew, CMO only, etc.). Record N/A if a category does not apply.

Procedures: Identify the location and appropriate reference of the in-flight procedures.

Constraints/Special Requirements: List restrictions or special criteria for conducting the in-flight activity, e.g., “crew member fasting,” “monitors must be deployed for 24 hours,” or “CBT required before the MR.” List the test termination criteria if applicable to the MR under this section. If no constraints or special requirements, record N/A.

Photo/TV Requirements: If still photographs or video of in-flight activity is required, record how often and where. If none, record N/A.

Cold Stowage: List cold stowage requirements here. If none, record N/A.

Mission Extension Requirements: Identify any special requirements for retesting as a result of a mission extension. If none, record N/A.

Landing Wave-Off Requirements: Define any special requirements associated with a wave-off relative to this MR. If none, record N/A.

In-Flight Data and Report Delivery

Data/Report to Designated Recipients (Nominal/Contingency): Define the delivery dates of the in-flight report to the appropriate recipients, e.g., “Data will be downloaded to crew surgeon within 2 hours of in-flight testing.”

Table 3.5.2: Additional hardware details can be found in the CHECS Hardware Database maintained by EB.

Hardware/Software Name: List the name of the hardware and/or software that will be used for in-flight activity. If none, record N/A.

P/N: List the corresponding part number for each piece of hardware.

3.6: Postflight Activities

Postflight Activity:

Description: Briefly describe the postflight activities involving the crew or the testing of the environment, e.g. “blood collection,” “air & surface sampling of Shuttle cabin.” If postflight is not required for this MR, record N/A.

Schedule: List the schedule of activities including duration (in minutes or hours), schedule (e.g., R+0 days), flexibility (R+3 +/- 1 day), blood volume, and personnel required (instructors, lab staff, physicians, and crew). Record N/A if a category does not apply.

Ground Support Requirements

Hardware/Software: Include the hardware and software necessary to perform the postflight activity. List the name of the hardware, software, and the location where it is to be used postflight, e.g., “U.S. or Russia.” If none, record N/A.

Testing Facilities: Define in the subheadings what it takes to complete the activity. If none, record N/A.

Constraints/Special Requirements: List restrictions or special criteria for conducting the activity, e.g., “crew member fasting,” “monitors must be deployed for 24 hours.” List the test termination criteria if applicable to the MR under this section. If no constraints or special requirements, record N/A.

Early Destow/Early Return: Define the time (e.g., R+6 hrs/R+24 hrs) when hardware/software/data must be removed from the orbiter and/or when it needs to be returned to JSC.

Notes: include information that will clarify or expedite the performance of the activity. If none, record N/A.

Postflight Data and Report Delivery

Data/Report to Designated Recipients (Nominal/Contingency): Define the delivery dates of the postflight report to the appropriate recipients, e.g., “Report to crew surgeon within 24 hours after postflight testing.”

Mission Summary: R+30d

Data Archives: Define when and where the archived data will be deposited.

3.7: Summary Schedule

Activity: List all MR activities for each category above. If there is no activity for a given category, record N/A.

Duration of Activity: List the time needed to perform the given activity.

Schedule: List the time when these activities are to be performed, e.g., “L-4 months,” “every 10 days in-flight,” or “R+0, 1, 3 days.”

Flexibility: Give a range of test or training days that the MR could possibly be performed on if the exact day(s) cannot be met, e.g., “L- 4 months +/- 2 weeks,” “FD6 +/- 3 days” or “Sampling time can be 5-10 hours.” If none, record N/A.

Blood Volume: List the amount of blood volume needed if the activity calls for blood draws. If none, record N/A

Personnel Required: List the personnel required to perform each activity. Include instructors, lab personnel, physicians, and crew members.

Constraints: List any constraints that should be noted for each given activity. If no constraints, record N/A.

3.2 Medical Requirements Overview

TABLE 3.2: MEDICAL REQUIREMENTS OVERVIEW

MRID# and Title	
Sponsor:	Medical Operations
Discipline:	
References:	
Purpose/Objectives:	
Measurement Parameters:	
Deliverables:	
Flight Duration:	<input type="checkbox"/> <30 days <input type="checkbox"/> ≥30 days
Number of Flights:	
Number and Type of Crewmembers Required:	
Other Flight Characteristics:	

3.3 Preflight Training

TABLE 3.3: PREFLIGHT TRAINING

Preflight Training Activity Description:				
	Duration	Schedule	Flexibility	Personnel Required
Schedule:				
Ground Support Requirements Hardware/Software	Preflight Hardware:		Preflight Software:	Test Location:
Training Facilities	Minimum room dimensions:	Number of electrical outlets:	Temperature requirements:	Special lighting:
	Hot or cold running water:	Privacy requirements:	Other:	
Constraints/Special Requirements:				
Launch Delay Requirements:				
Notes:				

3.4 Preflight Activities

TABLE 3.4: PREFLIGHT ACTIVITIES

Preflight Activity	Description:				
	Duration	Schedule	Flexibility	Blood Volume	Personnel Required
	Schedule:				
Ground Support Requirements Hardware/Software	Preflight Hardware:		Preflight Software:		Test Location:
Testing Facilities	Minimum room dimensions:	Number of electrical outlets:	Temperature requirements:	Special lighting:	
	Hot or cold running water:	Privacy requirements:	Vibration/Acoustic Isolation:	Other:	
Constraints/Special Requirements:					
Launch Delay Requirements:					
Notes:					
Data Delivery	Data/Report to Designated Recipients (Nominal/Contingency):				

3.5 In-Flight Activities

TABLE 3.5.1: IN-FLIGHT ACTIVITIES

In-Flight Activity	Description:				
	Schedule:	Duration	Schedule	Flexibility	Blood Volume
Procedures:					
Constraints / Special Requirements:					
Photo/TV Requirements:					
Cold Stowage Requirements:					
Mission Extension Requirements:					
Landing Wave-Off Requirements:					
Data Delivery	Data/Report to Designated Recipients (Nominal/Contingency):				

TABLE 3.5.2: IN-FLIGHT HARDWARE

Hardware/Software Name	P/N

3.6 Postflight Activities

TABLE 3.6: POSTFLIGHT ACTIVITIES

Postflight Activity	Description:				
	Duration	Schedule	Flexibility	Blood Volume	Personnel Required
	Schedule:				
Ground Support Requirements Hardware/Software	Postflight Hardware:		Postflight Software:		Test Location:
Testing Facilities	Minimum room dimensions:	Number of electrical outlets:	Temperature requirements:	Special lighting:	
	Hot or cold running water:	Privacy requirements:	Other:		
Constraints/Special Requirements:					
Early Destow / Early Return:					
Notes:					
Data Delivery	Data/Report to Designated Recipient (Nominal/Contingency):		Mission Summary Report:		Data Archives:

3.7 Summary Schedule

TABLE 3.7: SUMMARY SCHEDULE

ACTIVITY	DURATION OF ACTIVITY	SCHEDULE	FLEXIBILITY	BLOOD VOLUME	PERSONNEL REQUIRED	CONSTRAINTS
Preflight Training						
Preflight Activities						
In-Flight Activities						
Ascent						
On-Orbit						
Postflight Activities						
Postflight Debrief						

APPENDIX A - ACRONYMS AND ABBREVIATIONS

AMERD	Astronaut Medical Evaluation Requirements Document
BHP	Behavioral Health and Performance
BME	Biomedical Engineer
CBT	Computer-Based Training
CDMK	Carbon Dioxide Monitoring Kit
CHeCS	Crew Health Care System
CMO	Crew Medical Officer
CR	Change Request
CS	Crew Surgeon
CSA-CP	Compound Specific Analyzer – Combustion Products
DEXA	Dual-Energy X-ray Absorptiometry
EHS	Environmental Health System
EVA	Extravehicular Activity
EV-CPDS	ExtraVehicular – Charged-Particle Directional Spectrometer
FD	Flight Day
FMK	Formaldehyde Monitoring Kit
FS	Flight Surgeon
GFE	Government Furnished Equipment
GSC	Grab Sample Container
HGD	Hand Grip Dynamometer
IP	International Partner
IREDD	Interim Resistive Exercise Device
ISS	International Space Station
IV-CPDS	IntraVehicular – Charged-Particle Directional Spectrometer
JSC	Johnson Space Center
KSC	Kennedy Space Center
L-	Launch Minus
LBNP	Lower Body Negative Pressure
MAS	Microbial Air Sampler
MAT	Medical Assessment Test
MEC	Medical Equipment Computer
MMOP	Multilateral Medical Operations Panel
MORD	Medical Operations Requirements Document
MR	Medical Requirement(s)
MRID	Medical Requirement Integration Document(s)
NASA	National Aeronautics and Space Administration

OCA	Orbiter Communications Adapter
PFC	Private Family Conference
PMC	Private Medical Conference
P/N	Part Number
PPC	Private Psychological Conference
Pre	Preflight
R+	Return Plus
SLSD	Space Life Sciences Directorate
SMCCB	Space Medicine Configuration Control Board
SODF	Systems Operations Data File
SSAS	Solid Sorbent Air Sampler
SSK	Surface Sampler Kit
STS	Space Transportation System
T+	Test Plus
TEPC	Tissue-Equivalent Proportional Counter
TOC	Total Organic Carbon
TOCA	Total Organic Carbon Analyzer
U.S.	United States
VOA	Volatile Organic Analyzer
WMK	Water Monitoring Kit

APPENDIX B

**MEDICAL REQUIREMENTS INTEGRATION DOCUMENTS
(MRID)**

Short Duration:

MRID #	MRID Title	Discipline
MR001S	Operational Tilt Test	Cardiovascular
MR004S	In-flight Radiation Monitoring with Passive Dosimeters	Radiation
MR005S	Radiation Monitoring using Shuttle TEPC for Short-Duration Flights	Radiation
MR009S	Pre-and Postflight Physical Exam for Short-Duration Crews	Therapeutics & Clinical Care
MR010S	Clinical Laboratory Testing for Short-Duration Flights	Therapeutics & Clinical Care
MR013S	Audiometry for Shuttle Crews	Therapeutics & Clinical Care
MR014S	Pre- and Postflight Optometry Examination for Short-Duration Flights	Therapeutics & Clinical Care
MR017S	Private Medical Conferences (PMCs) for Shuttle	Therapeutics & Clinical Care
MR021S	Crew Microbiology	Immunology and Infectious Disease
MR022S	Shuttle Environmental Microbiology	Environmental Health
MR032S	Private Family Conferences (PFCs) for Shuttle	Behavioral, Health and Performance
MR043S	Shuttle Air Quality Monitoring	Environmental Health
MR076S	Photodocumentation of Skin Injuries and Allergic Reactions for Shuttle Crews	Immunology and Infectious Disease
MR087S	EVA Exercise Prebreathe Protocol for Shuttle Crewmembers	EVA
MR089S	Annual Medical Examinations	Therapeutics & Clinical Care

Long Duration:

MRID #	MRID Title	Discipline
MR001L	Operational Tilt Test	Cardiovascular
MR003L	Radiation Biodosimetry	Radiation
MR004L	In-Flight Radiation Monitoring with Dosimeters	Radiation
MR005L	In-flight Radiation Monitoring with Tissue-Equivalent Proportional Counter (TEPC) for Long-Duration Flights	Radiation
MR006L	Exercise Treadmill Test	Bone, Muscle, Exercise
MR007L	Toxicological Assessment Using the Solid Sorbent Air Sampler (SSAS)	Environmental Health
MR008L	Toxicological Assessment Using Compound Specific Analyzer-Combustion Products (CSA-CP)	Environmental Health
MR009L	Pre- and Postflight Physical Exam for Long-Duration Crews	Therapeutics & Clinical Care
MR010L	Clinical Laboratory Testing for Long-Duration Flights	Therapeutics & Clinical Care
MR011L	Resting ECG for Long-Duration Flights (Pre/Post)	Therapeutics & Clinical Care
MR012L	Dental Exam	Therapeutics & Clinical Care
MR013L	Audiometry for ISS Crews	Therapeutics & Clinical Care
MR014L	Pre- and Postflight Optometry Examination for Long-Duration Flights	Therapeutics & Clinical Care
MR015L	Preflight Imaging Tests	Therapeutics & Clinical Care
MR016L	Clinical Nutritional Assessment	Nutrition
MR017L	Private Medical Conferences (PMCs)	Therapeutics & Clinical Care
MR018L	In-Flight 30-Day Health Status Evaluation	Therapeutics & Clinical Care
MR019L	Heart Rate Monitoring	Bone, Muscle, Exercise
MR020L	In-Flight EVA Medical Evaluations	EVA
MR021L	Crew Microbiology	Immunology and Infectious Disease
MR024L	Body Mass Measurement	Therapeutics & Clinical Care
MR025L	Postflight Medical Status Checks	Therapeutics & Clinical Care
MR026L	Postflight Rehabilitation	Bone, Muscle, Exercise

Long-Duration MRID (continued)

MR027L	Pre- and Postflight Psychological Factors Briefings	Behavioral, Health and Performance
MR029L	Pre- and Postflight Pulmonary Assessment	Therapeutics & Clinical Care
MR030L	Radiation Monitoring Using Charged-Particle Directional Spectrometer (CPDS)	Radiation
MR031L	Private Psychological Conferences (PPCs)	Behavioral, Health and Performance
MR032L	ISS Private Family Conferences (PFCs)	Behavioral, Health and Performance
MR034L	Toxicological Assessment Using Volatile Organic Analyzer (VOA)	Environmental Health
MR035L	Bone Densitometry	Bone, Muscle, Exercise
MR036L	Toxicological Assessment Using Grab Sample Container (GSC)	Environmental Health
MR037L	Toxicological Assessment Using Formaldehyde Monitoring Kit (FMK)	Environmental Health
MR038L	Pre-EVA Fitness Evaluation: Arm Ergometry	Bone, Muscle, Exercise
MR039L	Toxicological Assessment Using Carbon Dioxide Monitoring Kit (CDMK)	Environmental Health
MR042L	Functional Neurological Assessment (Pre- and Postflight)	Neurological Function
MR050L	Microbial Analysis of ISS Surfaces Using the Surface Sampler Kit (SSK)	Environmental Health
MR051L	Microbial Analysis of ISS Water Using the Water Microbiology Kit (WMK) and the Microbiology Water Analysis Kit	Environmental Health
MR052L	Microbial Analysis of ISS Air Using the Microbial Air Sampler (MAS)	Environmental Health
MR054L	ISS Potable Water Quality Monitoring	Environmental Health
MR071L	Holter Monitoring	Cardiovascular
MR076L	Photodocumentation of Skin Injuries and Allergic Reactions	Immunology and Infectious Disease
MR077L	Physical Fitness Evaluation: Agility & Coordination	Bone, Muscle, Exercise
MR078L	Physical Fitness Evaluation: Functional Fitness	Bone, Muscle, Exercise

Long-Duration MRID (continued)

MR079L	Physical Fitness Evaluation: Isokinetic Muscle Function	Bone, Muscle, Exercise
MR080L	Cardiovascular Physical Fitness Evaluation: Cycle Ergometer (Graded Cardiovascular Test-Peak & Submaximal Exercise)	Bone, Muscle, Exercise
MR081L	Physical Fitness Evaluation: Handgrip Dynamometry Testing	Bone, Muscle, Exercise
MR082L	In-Flight Exercise Plan	Bone, Muscle, Exercise
MR084L	Acoustic Monitoring & Countermeasures for Long- Duration Flights	Environmental Health
MR085L	Neurocognitive Assessment with WinSCAT (Spaceflight Cognitive Assessment Tool for Windows)	Behavioral, Health and Performance
MR086L	On-Orbit Hearing Assessment	Neurology
MR087L	EVA Exercise Prebreathe Protocol for ISS Crewmembers	EVA