

**3.2 Medical Requirements Overview****TABLE 3.2: MEDICAL REQUIREMENTS OVERVIEW**

<b>MRID# and Title:</b>	MR013L Audiometry for ISS Crews
<b>Sponsor:</b>	Medical Operations
<b>Discipline:</b>	N/A
<b>Category:</b>	Medical Requirements (MR)
<b>References:</b>	ISS Medical Operations Requirements Document (MORD), SSP 50260 Paragraph 3.0, Medical Evaluation, Certification and Monitoring  Astronaut Medical Evaluation Requirements Document (AMERD), JSC 24834 Appendix A, Section III, Medical Standards/Procedures: 3.1 Hearing Standards Appendix B, Section III Annual Medical Evaluation Requirements: 3.3 Otolaryngology Appendix B, Section V Pre- and Postflight Medical Evaluation Requirements for Long-Duration Flights: 5.1 Preflight and 5.2 Postflight
<b>Purpose/Objectives:</b>	To assess hearing of crewmembers, pre and postflight, and detect any changes in hearing sensitivity.
<b>Measurement Parameters:</b>	Hearing threshold at specified frequencies
<b>Deliverables:</b>	Audiometry report - reviewed by Audiologist and Crew Surgeon.
<b>Flight Duration:</b>	≥30 days
<b>Number of Flights:</b>	All long duration flights
<b>Number and Type of Crew Members Required:</b>	All primary U.S. crewmembers. Back-up crew will only complete preflight MATs greater than L-45 days unless specifically waived by crew surgeon. If crew swap does occur, back-up crew will complete all preflight MATs.
<b>Other Flight Characteristics:</b>	N/A

3.3 Preflight Training – No Preflight Training

3.4 Preflight Activities

TABLE 3.4: PREFLIGHT ACTIVITIES

<b>Preflight Activity</b>	<b>Description:</b>	Crewmember’s hearing will be tested using audiometry during their last rotation (no earlier than L-60 days)..			
	<b>Schedule:</b>	<b>Duration:</b>	<b>Schedule:</b>	<b>Flexibility:</b>	<b>Personnel Required:</b>
		Audiogram Test: 20 minutes	During last rotation (no earlier than L-60 days)	Flexibility in schedule so that test is performed at the JSC Flight Medicine Clinic.	, Audiologist, medical technician, crewmember
<b>Ground Support Requirements Hardware/Software</b>	<b>Preflight Hardware:</b>	<b>Preflight Software:</b>		<b>Test Location:</b>	
	Soundproof hearing chamber Audiometry equipment Note: Hardware provided by JSC Clinic	Audiometry software provided by JSC Clinic		U.S./JSC Clinic	
<b>Testing Facilities</b>	<b>Minimum Room Dimensions:</b>	<b>Number of Electrical Outlets:</b>	<b>Temperature Requirements:</b>	<b>Special Lighting:</b>	
	Approximately 4 ft. X 5 ft.	2	Normal range	N/A	
	<b>Hot or Cold Running Water:</b>	<b>Privacy Requirements:</b>	<b>Vibration/Acoustic Isolation:</b>	<b>Other:</b>	
	N/A	A sound-proof booth is provided by the JSC Clinic	Acoustic isolation is necessary	N/A	
<b>Constraints/Special Requirements:</b>	Test will be conducted in the U.S. at the JSC Flight Medicine Clinic				
<b>Launch Delay Requirements:</b>	N/A				
<b>Notes:</b>	When possible, this test is combined with MR009L (Pre- and Postflight Physical Exam for Short Duration Crews) on L-30/45 days.				
<b>Data Delivery</b>	<b>Data/Report to Designated Recipients (Nominal/Contingency):</b>				
	Results from audiometry will be included in the crewmember’s medical report and electronic medical record.				

3.5 In-Flight Activities – No In-Flight Activities

3.6 Postflight Activities

TABLE 3.6: POSTFLIGHT ACTIVITIES

<b>Postflight Activity</b>	<b>Description:</b>	Crewmember’s hearing will be tested using an audiogram at R+3 days. When possible, this test will be combined with the postflight physical exam on the same day (MR009L). If the crew lands in Russia, then audiometric data obtained in Russian clinics as soon as possible after landing will be used, followed by audiometry at JSC during the next postflight physical exam upon return to the US (if a hearing change was noted in the Russian postflight audiometry).			
	<b>Schedule:</b>	<b>Duration:</b>	<b>Schedule:</b>	<b>Flexibility:</b>	<b>Personnel Required:</b>
		Audiogram Test: 20 minutes	R+3 days	Flexibility in schedule so that test is performed at the JSC Flight Medicine Clinic.	Medical technician, crewmember
<b>Ground Support Requirements Hardware/Software</b>	<b>Postflight Hardware:</b>	<b>Postflight Software:</b>		<b>Test Location:</b>	
	Soundproof hearing chamber Audiometry equipment Note: Hardware provided by JSC Clinic	Audiometry software provided by JSC Clinic		U.S./JSC Clinic	
<b>Testing Facilities</b>	<b>Minimum Room Dimensions:</b>	<b>Number of Electrical Outlets:</b>	<b>Temperature Requirements:</b>	<b>Special Lighting:</b>	
	Approximately 4 ft. X 5 ft.	2	Normal range	N/A	
	<b>Hot or Cold Running Water:</b>	<b>Privacy Requirements:</b>	<b>Vibration/Acoustic Isolation:</b>	<b>Other:</b>	
	N/A	A sound-proof booth is provided by the JSC Clinic	Acoustic isolation is necessary	N/A	
<b>Constraints/Special Requirements:</b>	-Test will be conducted in the U.S. at the JSC Flight Medicine Clinic - If the crew lands in Russia, then audiometric data obtained in Russian clinics as soon as possible after landing will be used, followed by audiometry at JSC during the next postflight physical exam upon return to the US (if a hearing change was noted in the Russian postflight audiometry). The JSC Audiologist and NASA Crew Surgeon will determine “if a hearing change was noted in the Russian postflight audiometry.”				
<b>Early Destow / Early Return:</b>	N/A				
<b>Notes:</b>	When possible, this test is combined with the post-flight physical (MR009L Pre- and Postflight Physical Exam for Long Duration Crews) on R+3 days.				
<b>Data Delivery</b>	<b>Data/Report to Designated Recipients (Nominal/Contingency):</b>				

	Results from the audiometry will be included in the crewmember's medical report and electronic medical record.
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3.7 Summary Schedule

TABLE 3.7: SUMMARY SCHEDULE

ACTIVITY	DURATION	SCHEDULE	FLEXIBILITY	BLOOD VOLUME	PERSONNEL REQUIRED	CONSTRAINTS
<b>Preflight Training - N/A</b>						
<b>Preflight</b>						
Audiometry	20 minutes	During last rotation (No later than L-60 days)	Flexibility in schedule so that test is performed at the JSC Flight Medicine Clinic.	N/A	Audiologist, medical technician, crewmember	- Conducted at the JSC Clinic
<b>In-Flight – N/A</b>						
<b>Postflight</b>						
Audiometry	20 minutes	R+3 days	Flexibility in schedule so that test is performed at the JSC Flight Medicine Clinic.	N/A	Audiologist, medical technician, crewmember	- Combined with physical exam if possible - Conducted at the JSC Clinic unless landing in Russia. - If the crew lands in Russia, then audiometric data obtained in Russian clinics as soon as possible after landing will be used, followed by audiometry at JSC during the next postflight physical exam upon return to the US (if a hearing change was noted in the Russian postflight audiometry). The JSC Audiologist and NASA Crew Surgeon will determine “if a hearing change was noted in the Russian postflight audiometry.”
<b>Postflight Debrief – N/A</b>						