

CRITICAL PATH ROADMAP DISCIPLINE(S)	PRIMARY SPECIES / TYPE	GROUND EXPERIMENT TITLE	NASA OBPR - TASK BOOK								
			Year Experiment Was Listed in Book								
			1995	1996	1997	1998	1999	2000	2001	2002	
Human Behavior & Performance	Animal	Animal Model for Sleep Loss and Circadian Disruption								2001	2002
Human Behavior & Performance; Neurovestibular Adaptation	Animal	Circadian and Vestibular System Relationships								2001	2002
Human Behavior & Performance	Animal	Circadian Disruption in the Space Environment								2001	2002
Human Behavior & Performance	Animal	Circadian Rhythm and Control of Hematopoiesis								2001	2002
Human Behavior & Performance	Animal	Circadian Rhythms in Rhesus: Gravity, Light & Gender	1995	1996	1997	1998	1999				
Human Behavior & Performance; Neurovestibular Adaptation	Animal	Effect of Gravity on the Regulation of Circadian Rhythms	1995	1996	1997	1998	1999				
Human Behavior & Performance; Clinical Capabilities	Animal	Effects of Circadian Rhythms on Decompression Outcome				1998	1999	2000	2001		
Human Behavior & Performance	Animal	Effects of Gravity on Insect Circadian Rhythmicity						2000	2001	2002	
Human Behavior & Performance	Animal	Gender Differences in the Responses of Rhesus Monkeys to a Hyperdynamic Environment			1997	1998					
Human Behavior & Performance	Animal	Hypergravity Effects on the Maternal-Fetal System						2000	2001	2002	
Human Behavior & Performance	Animal	Long-term Exposure to Constant Dim Light Desynchronizes the Circadian System of Rat							2001	2002	
Human Behavior & Performance; Cardiovascular Alterations	Animal	Microgravity and Circadian Cardiovascular Rhythms							2001	2002	
Human Behavior & Performance	Animal	Primate Circadian Rhythms in the Martian Environment							2001	2002	
Human Behavior & Performance	Animal	Stress, Performance and Locus Coeruleus							2001	2002	
Human Behavior & Performance	Human	A Shared Augmented Reality System for Communication Across Environments; Shared Augmented-Reality for Communication across Environments					1999	2000			
Human Behavior & Performance	Human	Acute Total & Chronic Partial Sleep Deprivation: Effects on Neurobehavioral Function, Waking EEG and the Renin-Angiotensin System				1998	1999	2000			
Human Behavior & Performance; Neurovestibular Adaptation; Advanced Life Support	Human	Adaptation in Artificial Gravity Environments; Adaptation in Artificial Gravity	1995	1996	1997	1998	1999	2000	2001	2002	
Human Behavior & Performance	Human	Adapting to Simulated Altered Gravity				1998					
Human Behavior & Performance	Human	Advanced Computational Human Factors Analysis				1998	1999				
Human Behavior & Performance	Human	Advanced Displays and Controls for 6 DOF Orientation and Navigation in Virtual Microgravity				1998	1999				
Human Behavior & Performance; Cardiovascular Alterations	Human	Alterations in Cardiovascular Regulation and Function During Simulated Microgravity				1998	1999				
Human Behavior & Performance	Human	An EVA Strength and Reach Model	1995	1996	1997						
Human Behavior & Performance	Human	An EVA Suit Fatigue, Strength, and Reach Model				1998	1999	2000			
Human Behavior & Performance	Human	Antarctic Space Analog Program			1997	1998	1999				
Human Behavior & Performance	Human	Application of the FRANCIE Framework and Methodology to Assessing Human Reliability and Enhancing Human Performance in Aerospace Maintenance, Safety, and Crew Operations					1999	2000	2001	2002	
Human Behavior & Performance	Human	Assessing and Optimizing the Perceptual Utility of Immersive Display Media; Assessing and Optimizing the Perceptual Utility of Immersive Displays					1999	2000	2001		
Human Behavior & Performance	Human	Astronaut Scheduling Assistant: A Biomathematical Model of the Neurobehavioral Performance Capability of Space Shuttle Crews									2002
Human Behavior & Performance	Human	Augmented Reality for Space Flight						2000	2001	2002	
Human Behavior & Performance	Human	Behavioral Trends and Adaptation During Space Analogue Missions	1995	1996	1997	1998					
Human Behavior & Performance	Human	Cardiovascular Alterations: Human Studies Core; Cardiovascular Deconditioning in Humans: Human Studies Core				1998	1999				
Human Behavior & Performance	Human	Circadian Entrainment, Sleep-Wake Regulation and Neurobehavioral Performance During Extended Duration Space Flight; Circadian Entrainment, Sleep-Wake Regulation and Performance During Space Flight				1998	1999	2000	2001	2002	
Human Behavior & Performance; Clinical Capabilities	Human	Clinical Trial of the Efficacy of Melatonin as a Countermeasure for Entrainment to the Sleep/Wake Schedules Required During Shuttle Missions				1998	1999	2000	2001		
Human Behavior & Performance	Human	Control-Crew Network Communication During Routine and Non-Routine Events: Effects on Mission Control-Crew Performance					1999				
Human Behavior & Performance; Clinical Capabilities	Human	Countermeasures to Neurobehavioral Deficits from Cumulative Partial Sleep Deprivation During Space Flight				1998	1999	2000			
Human Behavior & Performance	Human	Countermeasures to Neurobehavioral Deficits from Partial Sleep Loss							2001	2002	
Human Behavior & Performance	Human	Coupling Computer and Astronaut Performance for Multi-Person Modeling and Analysis; Coupling Computer Vision and Astronaut Performance for Multi-Person Modeling and Analysis					1999	2000	2001	2002	
Human Behavior & Performance	Human	Crew Behavior and Performance in Ground Operations	1995	1996							
Human Behavior & Performance	Human	Crew Culture, Selection, Training and Performance	1995	1996							
Human Behavior & Performance	Human	Crew Task Simulation for Maintenance, Training, and Safety							2001	2002	
Human Behavior & Performance	Human	Cultural and Personality Determinants of Performance and Error Management						2000	2001		
Clinical Capabilities; Human Behavior & Performance	Human	Designing a Smart Medical System for Psychosocial Support							2001	2002	
Human Behavior & Performance	Human	Development and Demonstration of an Integrated, Independent Human Factors Evaluation Process for Space Payloads and Equipment									2002
Human Behavior & Performance	Human	Development of an Index of Habitability Using Converging Indicators: Physiology, Performance, and Subjective Reports Physiology, Performance, and Subjective Reports									2002
Human Behavior & Performance; Neurovestibular Adaptation	Human	Development of Data-Driven Models to Describe Astronaut Performance in Microgravity: Full-Body Dynamics and Control	1995	1996	1997	1998	1999				
Human Behavior & Performance	Human	Distributed Decision Making in Extended Space Flight	1995	1996	1997						
Human Behavior & Performance	Human	Distributed Team Decision Making in Exploration Missions							2001	2002	
Human Behavior & Performance	Human	Dynamic Human-Centered Interfaces: Monitoring Attentional Processes in Control of Critical Systems during Long and Ultra-Long Duration Human Space Missions					1999	2000	2001	2002	
Human Behavior & Performance	Human	Evaluation of Intermittent Bright Light Exposure as a Space Flight Countermeasure			1997	1998	1999	N/A	2001		
Human Behavior & Performance	Human	Haptic Interfaces to Augment Human Machine Interaction in Space Activities; Haptic Interfaces to Augment Human/Machine Interaction in Space Activities					1999	2000	2001	2002	
Human Behavior & Performance	Human	Human Biology-Based Adaptive Systems in Support of Space Exploration					1999	2000	2001	2002	
Human Behavior & Performance	Human	Human Centered Visual Displays							2001	2002	
Human Behavior & Performance	Human	Human Interaction Design for Anomaly Response Support	1995	1996	1997	1998	1999				
Human Behavior & Performance	Human	Human Interaction Design for Cooperating Automation	1995	1996	1997	1998					
Human Behavior & Performance	Human	Human Task Performance Evaluation with Luminance Images		1996	1997						
Human Behavior & Performance; Neurovestibular Adaptation	Human	Human Visual Self-Motion and Depth Estimation From Optic Flow in 1G				1998	1999	2000			
Human Behavior & Performance	Human	Human-Systems Design Requirements Data Base and Tracking System							2001	2002	

CRITICAL PATH ROADMAP DISCIPLINE(S)	PRIMARY SPECIES / TYPE	GROUND EXPERIMENT TITLE	NASA OBPR - TASK BOOK										
			Year Experiment Was Listed in Book										
			1995	1996	1997	1998	1999	2000	2001	2002			
Human Behavior & Performance	Human	Imagery Systems for Enhanced Crew Habitability, Performance, and Productivity on the International Space Station (ISS)											2002
Human Behavior & Performance	Human	Improving Human Task Performance with Luminance Images and Dynamic Overlays						1999	2000	2001			
Human Behavior & Performance	Human	Individuals and Cultures in Social Isolation										2001	2002
Human Behavior & Performance; Cardiovascular Alterations	Human	Influence of Gender and Age on Renal and Cardio-Endocrine Responses to Simulated Microgravity										2001	2002
Human Behavior & Performance	Human	Integrated Crew Performance Assessment and Training										2001	2002
Human Behavior & Performance	Human	Malleable Human Interfaces										2001	2002
Human Behavior & Performance	Human	Malleable Human-Machine Interfaces								2000			
Clinical Capabilities; Human Behavior & Performance	Human	Microgravity Investigation and Crew Reactions in 0-G (MICRO-G)				1998	1999	2000	2001	2002			
Human Behavior & Performance; Neurovestibular Adaptation	Human	Microgravity: Sleep Deprivation and Autonomic Control	1995	1996	1997	1998	1999						
Human Behavior & Performance	Human	Minimum Surface Effect Microactuator for Dexterous Micromanipulation				1997	1998						
Human Behavior & Performance	Human	Mission Control-Crew Communication During Routine and Non-Routine Events										2001	2002
Human Behavior & Performance	Human	Neurocognitive Function Test for Space Flight Crew Members		1996	1997	1998	1999						
Human Behavior & Performance	Human	On-Line Analysis of Physiologic and Neurobehavioral Variables During Long-Duration Space Missions					1998	1999	2000				
Human Behavior & Performance	Human	Optical Computer Recognition of Performance under Stress										2001	2002
Human Behavior & Performance	Human	Optimized Visual Communication Systems				1998	1999	2000					
Human Behavior & Performance	Human	Optimizing Light Spectrum for Long Duration Space Flight										2001	2002
Human Behavior & Performance	Human	Orientation for Intervention: Supporting Mission Awareness in Space Operations					1998	1999	2000	2001			
Human Behavior & Performance	Human	Perceptual Optimization of Image Compression and Displays	1995	1996	1997								
Human Behavior & Performance	Human	Perceptually-Tuned Visual Simulation	1995	1996	1997	1998							
Human Behavior & Performance	Human	Performance and Sleep Consequences of Repeated Phase Shifts Within Appendix K Guidelines								2000	2001	2002	
Human Behavior & Performance	Human	Performance Assessment Using Dynamic Simulation and Human Factors Analysis in IVA and EVA				1997	1998	1999					
Human Behavior & Performance	Human	Physiological Monitoring of Mental Workload				1997	1998	1999	2000				
Human Behavior & Performance	Human	PI-in-a-Box					1998	1999	2000				
Human Behavior & Performance; Bone Loss	Human	Postural Effects on PTH, Calcium, and Skeletal Dynamics	1995	1996	1997								
Human Behavior & Performance	Human	Predicting Vulnerability to Performance Impairment from Sleep Loss						1999	2000	2001	2002		
Human Behavior & Performance	Human	Pre-Launch Adaptation of Orbiter Crew Members to Earlier Shifts Following Exposure to a Single Bright Light Episode: Clinical Trial Comparing the Response in Men to that in Women	1995	1996	1997								
Human Behavior & Performance	Human	Psychosocial Performance Factors in Space Dwelling Groups										2001	2002
Human Behavior & Performance	Human	Quantifying Astronaut Tasks: Robotic Technology and Future Space Suit Development						1999	2000	2001	2002		
Human Behavior & Performance	Human	Quantitative EEG Monitoring of Vigilance: Effects of Sleep Deprivation, Circadian Phase and Sympathetic Activation					1998	1999	2000				
Human Behavior & Performance; Cardiovascular Alterations	Human	Renal and Cardio-Endocrine Responses in Humans to Simulated Microgravity					1998	1999	2000				
Human Behavior & Performance; Cardiovascular Alterations	Human	Renal-Endocrine Response to Gravity and Sleep Disruption	1995	1996									
Human Behavior & Performance	Human	Review and Analysis of Diaries from French Remote Duty Stations		1996	1997	1998							
Human Behavior & Performance; Cardiovascular Alterations; Neurovestibular Adaptation	Human	Sleep Restriction and Mechanisms of Orthostatic Tolerance				1997	1998	1999	2000				
Human Behavior & Performance	Human	Sleeping Short					1998	1999	2000	2001			
Human Behavior & Performance; Immunology, Infection & Hematology	Human	Space Flight Immunodeficiency					1998	1999	2000	2001	2002		
Human Behavior & Performance	Human	Spatial Auditory Displays for Space Missions	1995	1996	1997								
Human Behavior & Performance	Human	Speech Monitoring Cognitive and Personality Alterations										2001	2002
Human Behavior & Performance	Human	State Dependent Aspects of Cognition			1996	1997	1998						
Human Behavior & Performance	Human	Studies of the Perceptual Stability and Position of Virtual Objects					1998	1999	2000				
Human Behavior & Performance; Immunology, Infection & Hematology	Human	Sustained Partial Sleep Deprivation: Effects on Immune Modulation and Growth Factors					1998	1999	2000				
Clinical Capabilities; Human Behavior & Performance	Human	The Development and Human Factors Analysis of Advanced 3D-Visualization for Telepresence								2000	2001	2002	
Human Behavior & Performance	Human	Ultrashort Sleep Strategies During Sustained Performance	1995	1996	1997	1998							
Human Behavior & Performance; Neurovestibular Adaptation	Human	Virtual Reality Training: "Cybersickness" and Effects on Sensorimotor Functions (This Task began in FY2000)						1999	2000	2001	2002		
Human Behavior & Performance; Neurovestibular Adaptation	Human	Visual Orientation in Unfamiliar Gravitational-Inertial Environments					1998	1999	2000				
Human Behavior & Performance	Other	Communication of expertise										2001	
Human Behavior & Performance	Other	Mathematical Model for Scheduled Light Exposure: Circadian/Performance										2001	2002
Human Behavior & Performance; Radiation Effects; Clinical Capabilities; Environmental Health	Other	Miniature Time of Flight Mass Spectrometer					1998	1999	2000				
Human Behavior & Performance	Other	Quick Assessment of Basic Cognitive Function: Blood Pressure Cuffs for the Mind										2001	2002
Human Behavior & Performance	Plant	A Gravitoresponsive Time-Keeping Protein of the Plant and Animal Cell Surface; A Gravitoresponsive Time-Keeping Protein of the Plant and Animal Surface						1999	2000	2001	2002		
Human Behavior & Performance	Plant	Mechanism of Phytochrome Regulation of Shoot Gravitropism in Arabidopsis	1995	1996	1997	1998							