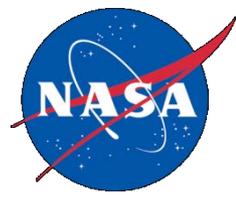


**Welcome to the
Johnson Space Center
Human Health and Performance Contract (HHPC)
Pre-proposal Conference**



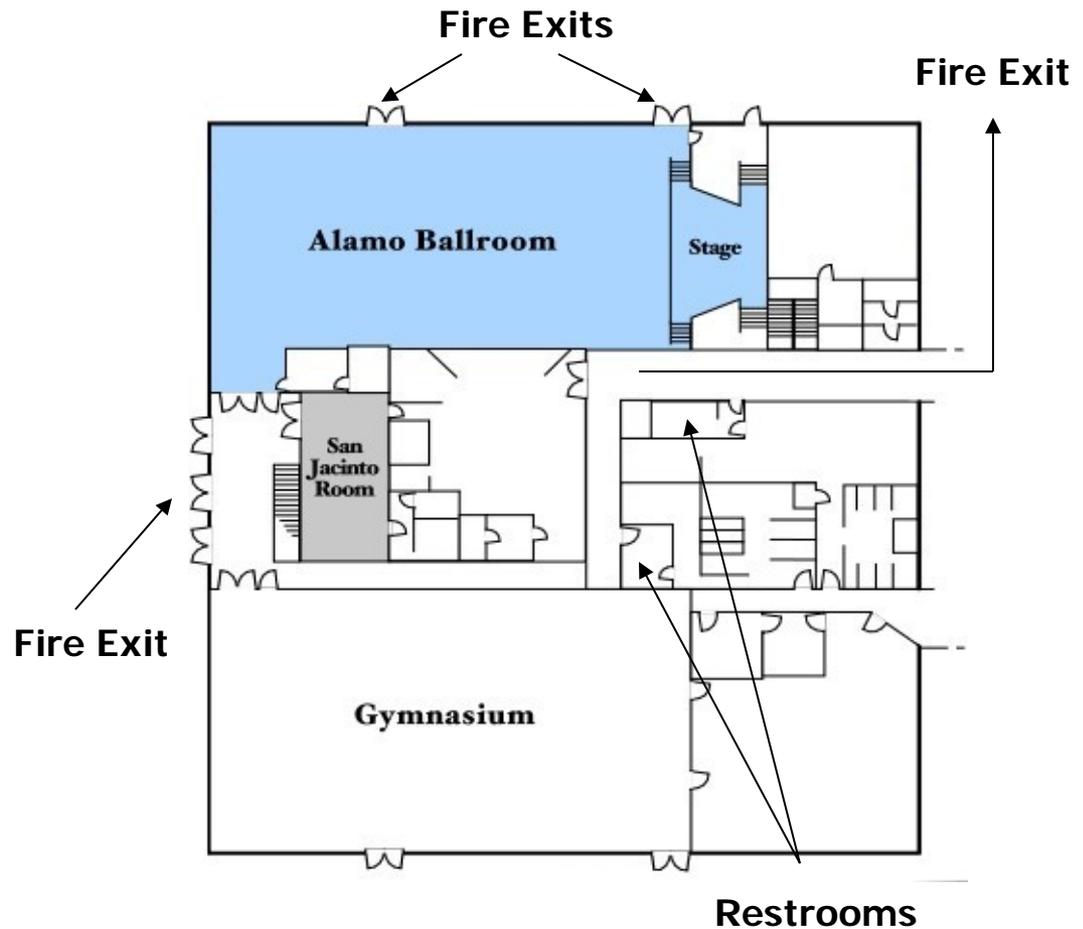
**Tuesday, September 30, 2014
Gilruth Center, Alamo Ballroom**

Safety and Administrative Information



Restrooms can be found in the hallway outside this ballroom

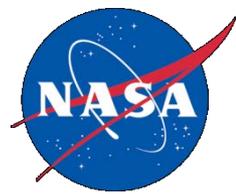
Fire exits are the front entrance and side exit doors. In the event of a fire, you must move at least 75 ft away from the building



Agenda



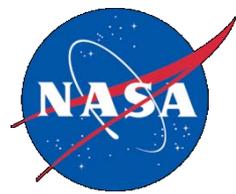
Topic	Presenter
Welcome and General Information	Roger Roberts
Opening Remarks	Debra Johnson
Human Health and Performance Directorate	Craig Stencil
Orientation and Procurement Overview	Roger Roberts
Statement of Work	Richard Lee Jonathan Dory
Draft RFP Highlights	Roger Roberts
Small Business	Charles Williams
Labor Relations	Suzan Thomas
Government Property	Mike Puryear
Safety and Health Programs	Dan Clem
HHPC Schedule and Closing Remarks	Roger Roberts
Submit written questions	Attendees
HHPD Integration Efforts	Jonathan Dory
Human Health and Performance Directorate Risk Process	Dave Francisco
Site Tours	Janis Connolly
Questions and Answers	All



Opening Remarks

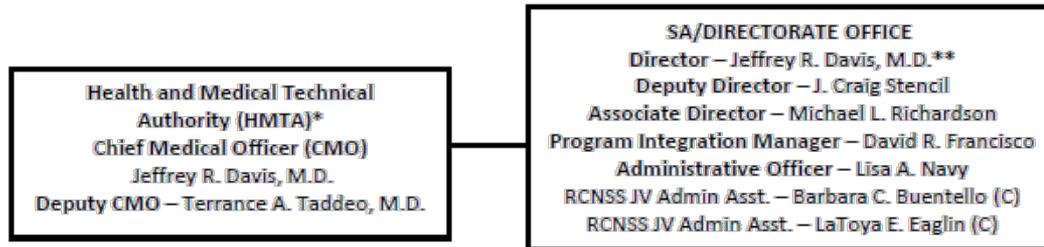
Debra Johnson

Director, Office of Procurement



**Human Health and Performance
Directorate
Craig Stencil
Deputy Director**

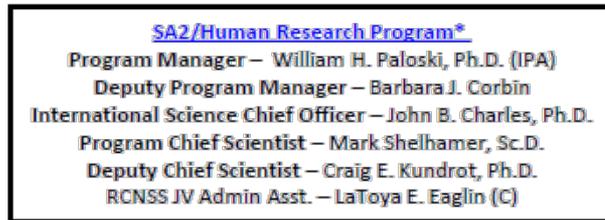
Human Health and Performance Directorate



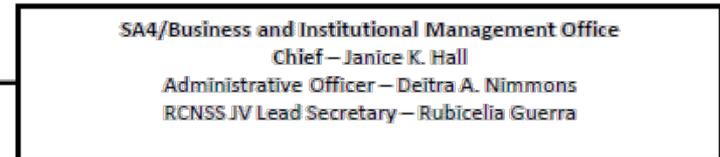
* NASA Chief Health and Medical Officer provides HMTA and Medical Policy Board oversight

** Also reports to Associate Administrator, HEOMD as Director, NASA Human Health and Performance Center and Deputy Director, Center of Excellence for Collaborative Innovation

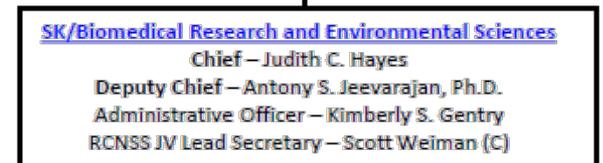
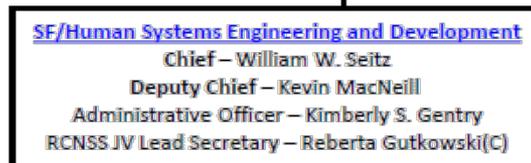
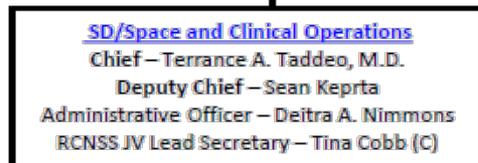
** Also reports to HEOMD as Director, NASA Human Health and Performance Center and Deputy Director, Center of Excellence for Collaborative Innovation

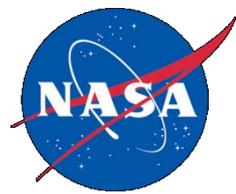


* Reports to HEOMD



* HQ HEOMD provides oversight for the Center of Excellence for Collaborative Innovation

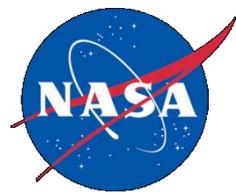




Orientation and Procurement Overview

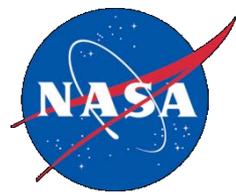
Roger Roberts
Contracting Officer

Disclaimer



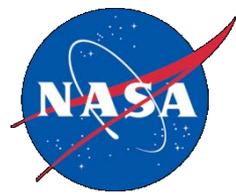
- **These slides are not to be interpreted as a comprehensive description of the requirements in the Draft Request for Proposal (DRFP).**
- **To the extent there are any inconsistencies between this briefing and the future solicitation, the solicitation will govern.**

Orientation



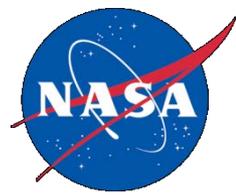
- The purpose of this pre-proposal conference is to help industry understand the Government's requirements.
- Questions:
 - Any response to questions during the conference shall not be construed as an official answer
 - Note cards are available to submit questions
 - Contractors may submit written questions to the Contracting Officer as described in the cover letter to the Draft RFP.
 - Official responses to written questions received by the Contracting Officer will be posted to the NASA Acquisition Internet Service (NAIS) Web Portal and the HHPC procurement website.
 - The deadline for questions regarding the Draft RFP is October 7, 2014.

HHPC SSA and SEB Membership



- Source Selection Authority (SSA)
 - Melanie Saunders - Associate Director Management of the Johnson Space Center
- Source Evaluation Board (SEB) Membership
 - SA4/Richard Lee, Lead
 - BH4/Roger Roberts, Contracting Officer (CO)
 - SF/Jonathan Dory
 - SK/Janis Connolly
 - SD/Jennifer Fogarty
 - SA2/Robert Galvez
 - OZ2/Jessica Curry

Orientation (cont.)



- **Points of Contact:**

- Contracting Officer: Roger Roberts

- HHPC web address:

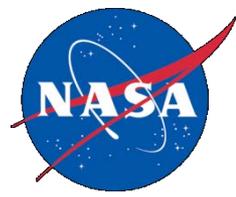
- <http://procurement.jsc.nasa.gov/HHPC>

- Questions may be submitted

- By emailing roger.m.roberts@nasa.gov and jsc-hhpc-1@mail.nasa.gov.

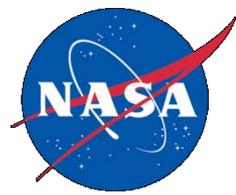
- Or click on the “Anonymous Questions to the Contracting Officer” link to submit an anonymous question.

Orientation (cont.)



- Ombudsman (NFS 1852.215-84): “...before consulting with an ombudsman, interested parties must first address their concerns, issues, disagreements, and/or recommendations to the Contracting Officer for resolution ... If resolution cannot be made by the Contracting Officer, interested parties may contact the installation ombudsman ...”
- If resolution cannot be made by the contracting officer, interested parties may contact the installation ombudsman, whose name, address, telephone number, facsimile number, and e-mail address may be found at:
http://prod.nais.nasa.gov/pub/pub_library/Omb.html. Concerns, issues, disagreements, and recommendations, which cannot be resolved at the installation may be referred to the Agency ombudsman identified at the above URL.

Current Contract Overview: Bioastronautics Contract



Contract Number: NAS9-02078

Prime Contractor: Wyle Integrated Science & Engineering Group

Contract Type:

- Cost Plus Award Fee (CPAF) hybrid consisting of baseline contract scope (completion form), Indefinite Delivery Indefinite Quantity (IDIQ) and Level of Effort (LOE)

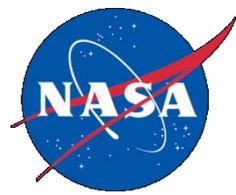
Period of Performance:

- May 1, 2003 – April 30, 2015
- Additional contract extensions will bridge the BC contract to the start date of HHPC

Estimated Current Contract Value:

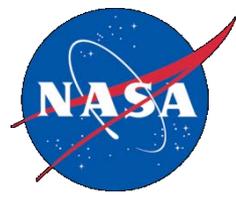
- \$1.48B

HHPC Contract Type



- HHPC has been assigned NAICS code 541712-Research and Development in Biotechnology
 - Size Standard in number of employees is 1000 (by exception)
- HHPC is an Cost Plus Award Fee (CPAF) Indefinite Delivery/Indefinite Quantity (IDIQ) Contract with Completion Form and Level of Effort (LOE) Task Orders.
- This procurement is a full and open competition

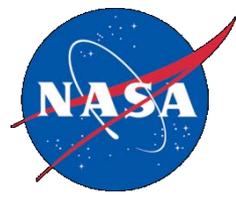
HHPC Period of Performance



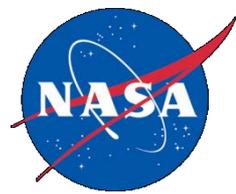
- **Planned Period of Performance (POP)**

- 65-Day Phase-in Period:
 - July 27, 2015– September 30, 2015
- 5- Year Base Period:
 - October 1, 2015– September 30, 2020
- 3- Year Option Period:
 - October 1, 2020– September 30, 2023
- 2- Year Option Period:
 - October 1, 2023– September 30, 2025

HHPC Online Technical Library



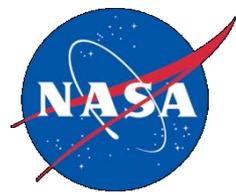
- Can be found at the HHPC procurement website:
<http://procurement.jsc.nasa.gov/HHPC/>
- Technical library is password-protected and requires permission
- Contains HHPC technical data associated with the SOW, Task/Delivery Orders, and other contract requirements
- Data can be accessed by prospective Offeror for review and subsequent use in development of proposals.
- The Online Technical Library is planned to be frozen at the time of the final RFP release.



Statement of Work (SOW)
Richard Lee / Jonathan Dory
SEB Board Chair / SEB Technical Lead

DRFP Highlights—Section C

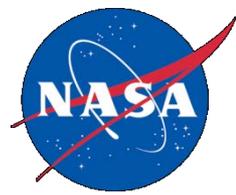
(Statement of Work)



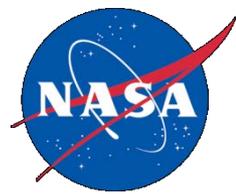
- **Section 1.0 – Contract Management and Administration (CMA)**
 - **Comprises the effort required to manage the contract**
 - 1.1 Contract Management
 - 1.2 Safety and Health
 - 1.3 Quality Management System
 - 1.4 Environmental Management System
 - 1.5 Configuration Management
 - 1.6 Cost Estimating for Task/Delivery Orders
 - 1.7 Financial Reporting
 - 1.8 Facilities and Equipment Management
 - 1.9 Property Management
 - 1.10 Communicating, Reporting, and Metrics

DRFP Highlights—Section C

(Statement of Work)

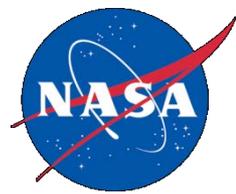


- **Section 2.0 Health, Research, and Laboratory Services**
 - 2.1 Health Services
 - 2.2 Animal Care Facility
 - 2.3 Biomedical Research Laboratories
 - 2.4 Environmental Science Laboratories
 - 2.5 Human Factors Laboratories
- **Section 3.0 Engineering, Research and Project Management**
 - 3.1 System Management
 - 3.2 Project Management
 - 3.3 Mission Integration
- **Section 4.0 Integration**
 - 4.1 Health and Medical Technical Authority
 - 4.2 Human System Integration
 - 4.3 Human Research Program
 - 4.4 Risk Management
 - 4.5 Knowledge Capture and Dissemination
 - 4.6 Information Systems Architecture
 - 4.7 Collaborative Innovation
 - 4.8 Education and Development



DRFP Highlights
Roger Roberts
Contracting Officer

DRFP Highlights



- **SF33 PROPOSAL ACCEPTANCE PERIOD**

- Please note that proposals shall remain valid for **365** days from the date specified for receipt by the Government.

- **B.3(1) CONTRACT VALUE**

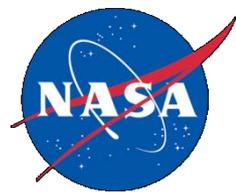
- Offeror shall fill-in dollar amounts for the fixed priced phase-in.

- **B.9 FULLY BURDENED RATE TABLE FOR PRICING COST REIMBURSABLE (CR) TASK ORDERS**

- Propose fully burdened rates (exclusive of fee) for each labor category in the Fully Burdened Rate Table.

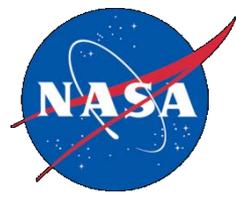
- Propose the Not to Exceed (NTE) Award Fee Rate in the Fully Burdened Rate Table.

DRFP Highlights



- **E.2 52.246-11 HIGHER-LEVEL CONTRACT QUALITY REQUIREMENT**
 - The Contractor shall have a quality program that complies with International Organization for Standardization document AS-9100C/2009.
 - Independent certification/registration is not required.
- **G.13 52.216-92 SUBMISSION OF VOUCHERS FOR PAYMENT**
- **H.3 REPRESENTATIONS, CERTIFICATIONS AND OTHER STATEMENTS OF OFFEROR**
 - The Offeror shall fill-in the proposal number and date.
- **H.6 JSC 52.219-90 SMALL BUSINESS SUBCONTRACTING GOALS**
 - The Offeror shall fill-in the applicable small business subcontracting goals.

DRFP Highlights



- **H.9 1852.235-71 KEY PERSONNEL AND FACILITIES**

- The Clause contains a list to be filled in by Offeror for personnel and/or facilities considered essential to the work being performed.

- **I. 13 52.227-23 RIGHTS TO PROPOSAL DATA (TECHNICAL)**

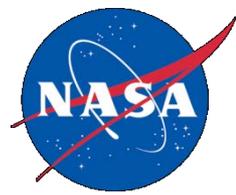
- The Offeror shall fill-in the appropriate pages as described in the clause.

- **L.1 INSTRUCTIONS TO OFFERORS-COMPETITIVE ACQUISITION**

- Initial proposal should include the Offeror's best terms

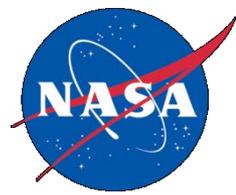
- Though the Government reserves the right to conduct discussions, the intent is to award without discussion

DRFP Highlights



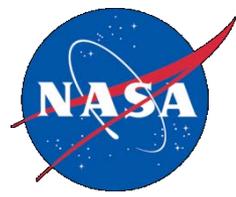
- **L.16 PROPOSAL MARKING AND DELIVERY**
 - For proposal delivery, the Offeror shall notify the CO via email one day in advance of the proposal submission.
- **L.22.2 PROPOSAL ARRANGEMENT, PAGE LIMITATIONS, COPIES, AND DUE DATES**
 - It is important that you carefully read the page definitions as defined in this provision.
 - Observe proposal due dates: Past Performance is requested to be delivered prior to other volumes of the proposal, due date for Past Performance is December 16, 2014, all other volumes are due January 15, 2015.

DRFP Highlights



- Review all instructions and page count limitations; the SEB will not evaluate pages that exceed page limitations.
- Offerors are highly encouraged to provide only the relevant information necessary to understand their proposal.
- Title pages, cover sheets, tables of contents, acronym listings (or a glossary of abbreviations), and requested cross reference lists are excluded from the page counts.
- Including evaluation information on the items described above will result in these pages being counted toward your page count.

DRFP Highlights—Section J



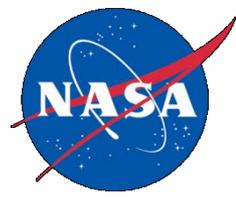
Blue– DRD Delivered with proposal Green – DRD Delivered after contract award

Black – Not a contract deliverable

• Section J – Contents

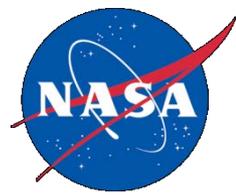
- J-1 Applicable Documents
- J-2 Data Requirements List (DRL) and Data Requirements Documents (DRD)
- J-3 Installation Accountable Government Property
- J-4 List of Government Furnished Property
- J-5 Organizational Conflict of Interest (OCI) Mitigation
- J-6 Safety and Health Plan
- J-7 Small Business Subcontracting Plan
- J-8 Information Technology (IT) Security Plan
- J-9 Government Property Management Plan
- J-10 Contract Phase-In Plan
- J -11 Award Fee Plan
- J-12 Wage Determination

DRFP Highlights—Section J



- **Section J – Contents**

- J-13 Total Compensation Plan
- J-14 DD Form 254, Department of Defense Contract Security Classification Specification
- J-15 Staffing and Critical Skills Plan
- J-16 Configuration Management Plan
- J-17 Contract Work Breakdown Structure (WBS) and Dictionary
- J-18 Contract Management Plan
- J-19 Quality Plan
- J-20 External Customer Plan
- J-21 Technology, Innovation and Process Improvements Plan
- J-22 Electrical, Electronic and Electromechanical (EEE) Parts Plan
- J-23 Installation Accountable Government Property Computer Hardware
- J-24 Installation Accountable Government Property Computer Software
- J-25 Acronym List

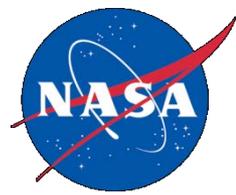


- **L.22.3.1 Management Approach (MA), Mission Suitability Sub-factor 1**

— The Offeror shall describe its approach to and rationale for meeting the contract requirements, as required on the MA1, MA2, MA3, MA4, and MA5 sub-factors below.

- MA1. Overall Management Approach
- MA2. Key Personnel Approach
- MA3. Staffing Approach
- MA4. Contract Phase-In Approach
- MA5. Safety & Health Approach

The Offeror's response will be evaluated for overall demonstrated understanding, completeness, feasibility, effectiveness where associated risks do not jeopardize an acceptable level of contract performance.



- **L.22.3.2 Technical Approach (TA) Mission Suitability Sub-factor 2**

The Offeror shall describe its approach to and rationale for meeting the contract requirements, as required on the TA1 and TA2 sub-factors below.

— **TA1. Scenarios**

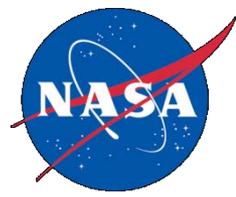
The Offeror shall describe its approach and rationale to meet the technical requirements of the SOW for each of the four (4) scenarios included in the DRFP. These scenarios shall not be priced.

— **TA2. IDIQ Task/Delivery Orders**

The Offeror shall demonstrate technical understanding of the requirements of each of the eight (8) Task/Delivery Orders included in the DRFP, including the specific resources required to perform the requirements, explaining any efficiencies. Pricing for these Task/Delivery Orders are included as part of Attachment L-7, Pricing Workbook.

The Offeror's response will be evaluated for overall demonstrated understanding, completeness, feasibility, effectiveness where associated risks do not jeopardize an acceptable level of contract performance.

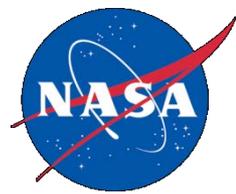
DRFP Highlights — TA1 Scenarios



- The DRFP includes four (4) scenarios that will be used as part of evaluation for mission suitability.
- The scenario responses are for technical evaluation only and will not be priced.

Scenarios Number	Title	Reference Attachment
Scenario A	Consolidation and Relocation of Science and Research Laboratories	L-2
Scenario B	ISS On-Orbit Medical Event	L-2
Scenario C	Payload Processing Affects Ground Personnel	L-2
Scenario D	Occupational Surveillance Strategy for a Newly Identified Medical Condition	L-2

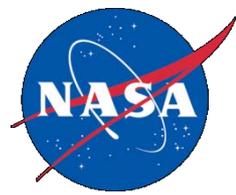
DRFP Highlights — TA2 Task/Delivery Orders



- Products and services will be ordered by Task/Delivery Orders (TDOs)
- TDOs may be Completion Form or Term Form (Level of Effort)
- The DRFP includes eight (8) example TDOs that cover the technical breadth of the first-year effort to which Offerors will respond in their proposal

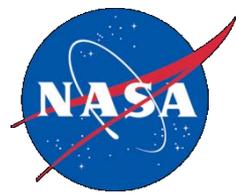
Task/Delivery Order Number	Title	Reference Attachment
TO-RFP-01	Contract Management and Administration	L-3-1
TO-RFP-02	Flight Sustaining, Resupply and Integration	L-3-2
TO-RFP-03	Information Architecture Infrastructure & Operations	L-3-3
TO-RFP-04	Biomedical Operations	L-3-4
TO-RFP-05	Environmental Sciences	L-3-5
TO-RFP-06	Spaceflight Clinical Operations	L-3-6
TO-RFP-07	ISS Medical Projects (ISSMP)	L-3-7
TO-RFP-08	JSC Clinic Operations	L-3-8

DRFP Highlights – Mission Suitability Factor



—L.22.3.3 Small Business Utilization, Mission Suitability Sub-factor 3

- The Small Business goals are described in the Small Business portion of this presentation that follows this Section.



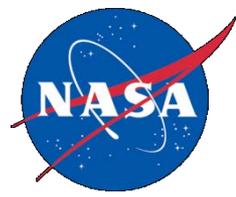
—L.22.4 Past Performance

- Offerors shall submit past performance for up to five recent contracts (work performed within last **five years**), subject to 85 page count limit.
- Offerors shall consider recency, relevancy, and magnitude of effort as it relates to the HHPC procurement.
- Offerors shall submit the Past Performance Questionnaire (Attachment L-6) to Points-of-Contact from each of the contracting companies provided as evidence of Past Performance by the Offeror.

—L.22.5 Cost/Price

- Herb Rocha, Cost/Price Analyst, will be providing cost/pricing overview instructions during a separate online pricing web conference scheduled on October 3 at 9am CDT.
- Logistics for the cost/pricing web conference will be posted to the HHPC Procurement Page.

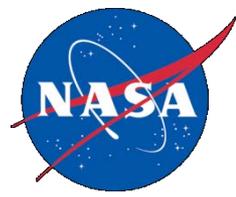
DRFP Highlights



—L.22.6 Model Contract

- The Offeror shall submit two (2) original, signed copies of the completed model contract, including a signed SF 33 form (submitted with each copy) as well as two (2) CD ROM copies.
- The Offeror shall also submit Representations, Certifications and Other Statements of Offeror along with other data as specified in L.22.6.

DRFP Highlights



— M.4 Mission Suitability Factor

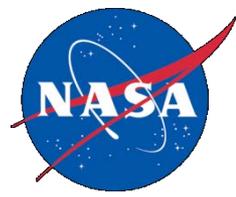
– Mission suitability – Scored on 1,000 point system, with the following proposed allocation:

Management Approach	350 points
Technical Approach	550 points
Small Business Participation	100 points

— M.5 Cost/Price – Evaluated on cost realism and price reasonableness

— M.6 Past Performance – Confidence levels (adjectival ratings)

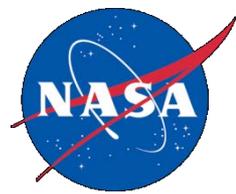
DRFP Highlights



— Factor comparison

- Mission Suitability and Past Performance, when combined, are more important than Cost.
- Mission Suitability is more important than Cost.
- Cost is more important than Past Performance.

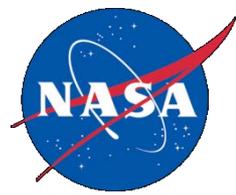
— **The Offeror is notified that a lack of resource realism may adversely affect their Mission Suitability score and result in cost adjustments under the Cost/Price factor M.5.**



Small Business
Charles T. Williams
Senior Small Business Specialist

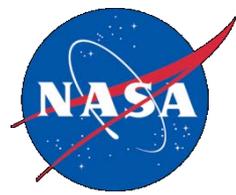
Contact Information
Charles Williams: (281) 483-5933
Industry Assistance Office: (281) 483-4512

Small Business



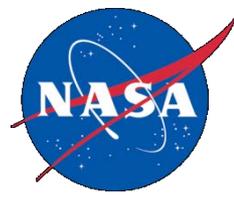
- **This solicitation contains FAR clause 52.219-9, “Small Business Subcontracting Plan with Alternate II”.**
- **There are 11 main elements. You must address each element.**

Small Business Goals



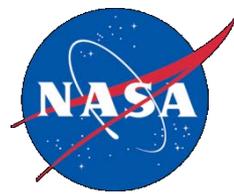
SB Category	Small Business Goals
Small Businesses (SB)	30.0%
Small Disadvantaged Business Concerns (SDB) (Includes SDB's in represented and under-represented areas)	5.0%
Women Owned Small Business Concerns (WOSB)	7.0%
HUBZone Small Business Concerns (HBZ)	3.0%
Veteran Owned Small Business Concerns (VOSB)	5.0%
Service-Disabled Veteran-Owned Small Business Concerns (SDVOSB)	3.0%
Minority Serving Institutions (MSI)	1.0%

Small Business Goals Template



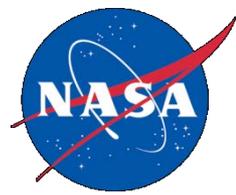
	Column A	Column B	Column C
Business Category	Goal as Percent of Contract Value	Dollar Value to be subcontracted per Category	Goal as Percent of Subcontracting Value
Small Business Concerns			
Large Business Concerns	N/A		
Total Dollars to be Subcontracted	N/A		
Subcategories of Small Business Concerns			
Women Owned Small Business			
Small Disadvantaged Business			
Veteran Owned Small Business			
Service-Disabled Veteran-Owned Small Business			
HUBZone Small Business			
Minority Serving Institutions			

Small Business Goals Example

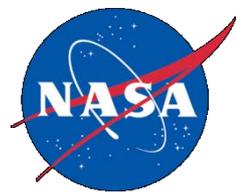


	Column A	Column B	Column C
Business Category	Goal as Percent of Contract Value	Dollar Value to be subcontracted per Category	Goal as Percent of Subcontracting Value
Small Business Concerns	25 percent	\$25,000,000	50 percent
Large Business Concerns	N/A	\$25,000,000	50 percent
Total Dollars to be Subcontracted	N/A	\$50,000,000	100 percent*
Subcategories of Small Business Concerns**			
Women Owned Small Business	9 percent	\$9,000,000	18 percent
Small Disadvantaged Business	5.0 percent	\$5,000,000	10 percent
Veteran Owned Small Business	2.5 percent	\$2,500,000	5 percent
Service-Disabled Veteran-Owned Small Business	1.5 percent	\$1,500,000	3 percent
HUBZone Small Business	1.5 percent	\$1,500,000	3 percent

List of Small Business Subcontractors Example

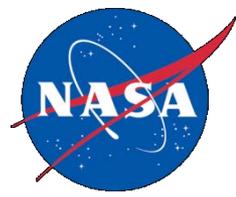


Company Name	DUNS/ Cage Code	Type of Business	NAICS	SOW Ref.	Dollar Value
XYZ Corp	123456789	SB, SDB	811212	3.2	\$400,000
Acme Ltd.	5KWH50	Large	541579	2.1	\$1,520,000
Smith & Jones		VOSB, SDVOSB	541512	2.4	\$4,650,000
Total					\$6,570,000



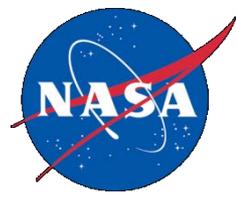
Labor Relations
Suzan Thomas
JSC Contractor Industrial Relations Officer

RFP Labor Relations Requirements



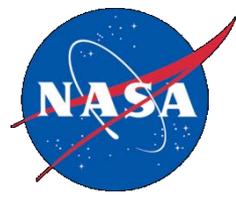
- Wage Determinations
- Total Compensation Plan
- References (Regulations and Clauses)

Wage Determination (WD)



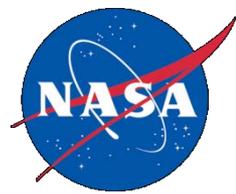
- WD 2005-2515 Revision 16 and WD 2005-251 Revision 18 are applicable to this contract, and will be included in Section J-12 of the RFP and the resultant contract.
 - These WDs apply to all non-exempt labor categories and set forth the minimum wages and fringe benefits for these categories.
 - Please note that the WDs are odd-numbered.
 - Compliance with the Health and Welfare (H&W) rate on all Standard WDs ending in an "odd number" requires payment of the minimum H&W rate for each hour paid for each employee up to a maximum of 40 hours per week.
 - The WD will be updated as required.

Total Compensation Plan (TCP)

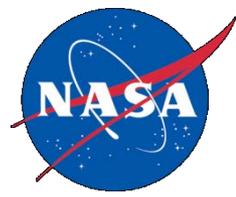


- Total compensation plans identify and discuss wages, salaries, and fringe benefits for professional employees and non-exempt service employees for both the prime and all major subcontractors to demonstrate that the proposed compensation is reasonable.
 - The definition of a major subcontractor is provided in NFS 1831.205-670(b).
- Compensation Templates (a)-(e) will be provided in the cost volume, and evaluated as part of the TCP evaluation.
 - Ensure that your completed Compensation Templates are consistent with the information you provided in the TCP.
- This DRD is due with the proposal and will be incorporated into the final contract.
 - This DRD is updated every three years and upon any major changes to your compensation plan.

References (Regulations and Clauses)

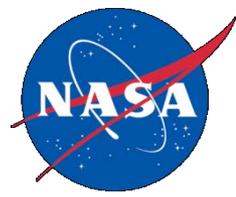


Reference	Title
FAR Part 22	Application of Labor Laws to Government Acquisitions
FAR 52.222-41	Service Contract Labor Standards
NFS Part 22	Application of Labor Laws to Government Acquisitions
29 CFR 541	Defining and Delimiting the Exemptions for Executive, Administrative, Professional, Computer, and Outside Sales Employees



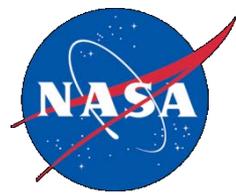
Government Property
Mike Puryear, CPPM, CF
Industrial Property Officer

RFP/CONTRACT PROPERTY CLAUSES



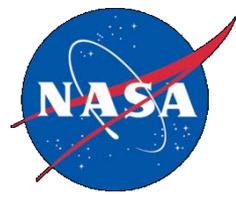
- NFS 1852.245-70 (Alt 1) Contractor Requests for Gov-Provided Equipment
- NFS 1852.245-71 + Alt 1 Installation-Accountable Gov Property
- NFS 1852.245-73 Financial Reporting of NASA Property in the Custody of Contractors (1018 reporting)
- NFS 1852.245-75 Property Management Changes

RFP/CONTRACT PROPERTY CLAUSES



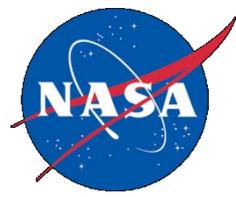
- NFS 1852.245-76 List of Gov Property Furnished Pursuant to FAR 52.245-1
- NFS 1852.245-78 Physical Inventory of Capital Personal Property
- NFS 1852.246-72 Material Inspection and Receiving Report (DD250 deliverable form)
- FAR 52.245-1 Gov Property

RFP/CONTRACT PROPERTY CLAUSES

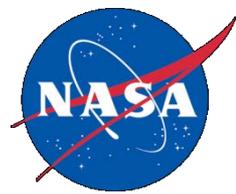


- DRD BP-07 Reports Required for Logistics
- DRD BP-08 Financial Reporting Contractor-Held Property
- DRD BP-09 Gov Property Management Plan (PMP)
- NFS 1852.245-80 Gov Property Management Information
- Various listings in Section J concerning Installation Accountable Gov Property and Gov Furnished Property

RFP/CONTRACT PROPERTY CLAUSES



- PAY SPECIAL ATTENTION TO:
- NFS 1845.7101
 - NASA Form 1018 Reporting
 - Property classification prior to acquisition
 - Transfer of property to and from cognizant centers
 - Total unit acquisition cost – **HIGHLY IMPORTANT**
- NFS 1852.245-71 Installation Accountable Gov Property
 - Interaction with FAR 52.245-1
- NFS 1852.245-80 Gov Property Management Information

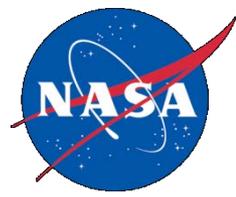


Safety & Health Programs
Guidelines for responding to Safety Requirements in
the JSC HHPC Request for Proposal (RFP)

Dan Clem

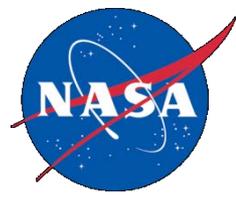
Safety and Test Operations Division

Overview of the NASA Safety Program



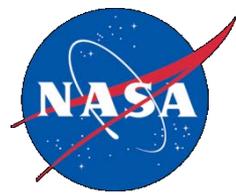
- NASA safety objective is to avoid loss of life, personal injury and illness, property loss or damage, or environmental harm resulting from any of its activities and to ensure safe and healthy conditions for persons working at or visiting NASA facilities
- NASA shall comply with all applicable regulations
 - NASA Safety & Health Requirements
 - Requirements of those Federal agencies with regulatory authority over NASA such as OSHA, EPA, and DoT
- NASA requires every employee to report workplace hazards
 - **NASA ensures that there is no reprisal to personnel for reporting unsafe or unhealthy conditions**

Overview of the NASA Safety Program



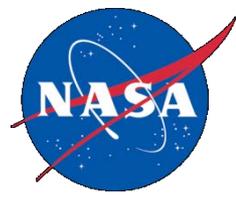
- The NASA Safety Policy stresses individual responsibility of each employee for their own safety and that of their co-workers. Risk within the work environment must be managed to control hazards and we strive to continuously improve workplace conditions
- OSHA has recognized JSC as a leader in health and safety by awarding the “STAR” designation level of achievement in the Voluntary Protection Program (VPP)
- As a VPP STAR, JSC is recognized as having a comprehensive and successful safety and health program, is below the national average for the industry in injury/illness rates, has demonstrated good faith in working with OSHA, and serves as a safety & health mentor

What would be expected of you at JSC



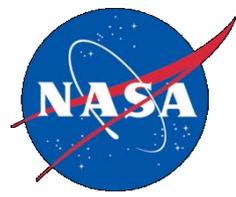
- All contractors performing work at JSC shall comply with all applicable safety and health regulations
- Every major onsite contractor shall have a designated safety official and shall conform to a written safety and health plan
- Safety and health approach shall follow OSHA, VPP and JSC guidelines
- Failure to comply with safety and health requirements may result in one or more of the following - contract termination, lower fee, or exclusion from future contract awards

The Safety & Health Deliverables

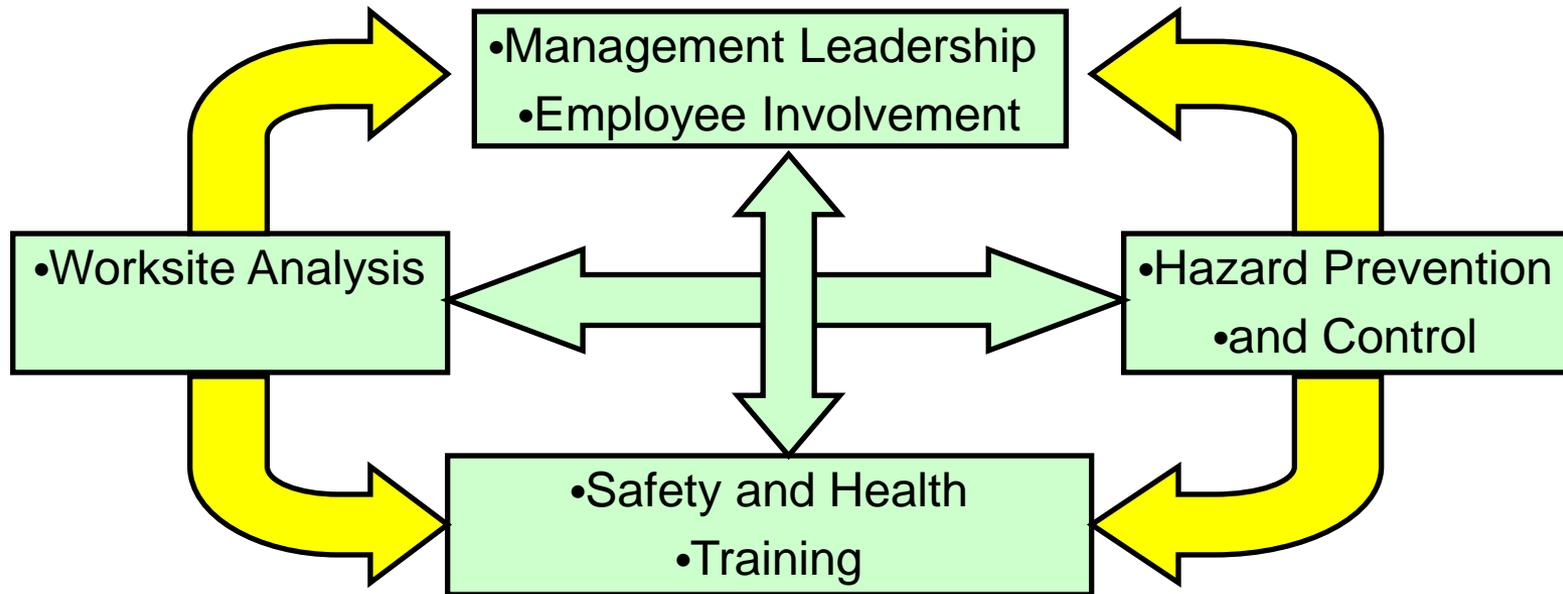


- **Submission of detailed safety and health data is required as part of the proposal including;**
 - Safety & Health Plan, which includes a detailed discussion of the policies, procedures, and techniques that will be used to ensure the safety and occupational health of your employees and to ensure safe working conditions throughout the performance of the contract.
 - Partial submission with Proposal per the DRD.
 - Complete submission 15 days before contract start
 - Statement regarding past OSHA & EPA citations and corrective actions taken to prevent recurrence.
 - Records of OSHA recordable injuries (OSHA 300 & 300A logs & calculated frequency rates).
 - Insurance carrier information – including Experience Modifier Rates (EMR).

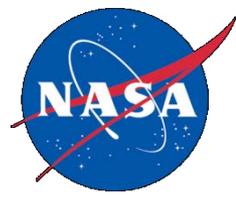
A Successful Safety Program Model



- Based on 4 Basic VPP elements defined by OSHA



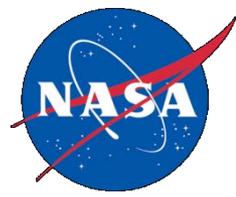
The Safety & Health Plan



Safety & Health Plan provisions you should expect to address on a typical JSC service contract

- **Management Leadership and Employee Involvement**
 - **Policy, Goals and Objectives** - Discuss company policies, goals and objectives for safety and health. Describe top leadership's level of commitment for achieving objectives
 - **Management Leadership and Employee Participation** - Discuss visible leadership actions that motivate and reinforce safety and health performance and discuss meaningful opportunities for employees to engage and support the safety and health program
 - **Assignment of Responsibility** – Discuss roles, responsibilities and accountability of safety representatives
 - **Program Evaluation** – Discuss annual evaluation of safety and health program consistent with OSHA's VPP criteria

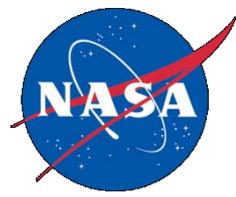
The Safety & Health Plan



- **Worksite Analysis**

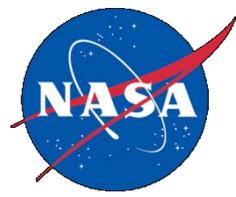
- **Hazard Identification** – Describe the methods and techniques used to systematically identify hazards
- **Inspections** – Describe the procedures and frequency for regular inspections and who will be accountable for implementing corrective measures
- **Employee Reports of Hazards** – Describe the methods to be used to encourage employees to report hazards and how the reports will be analyzed and resolved
- **Mishap Investigations** – Discuss methods of response, reporting, and investigation of mishaps
- **Trend Analysis** – Discuss approach in performing trend analysis and methods of documenting data

The Safety & Health Plan



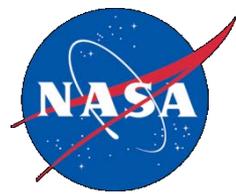
- **Hazard Prevention and Control**
- Discuss the approach to be used for selecting controls appropriate to the hazardous operations associated with this contract
 - Maintain a list of hazardous operations and processes
 - Develop written procedures to identify safety procedures
 - Describe methods for notification of personnel
- **Medical (Occupational Healthcare) Program** –describe medical surveillance program, response to injuries & illnesses, case management
- **Disciplinary System** – approach used to modify behaviors
- **Emergency Preparedness** – methods used for emergency preparedness and contingency planning that addresses fire, explosion, weather, environmental releases or other potential emergencies

The Safety & Health Plan

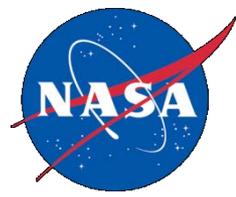


- **Safety and Health Training**
- **Program Description** – describe your training program to ensure safe work practices, hazard recognition and to meet all regulatory requirements
- **Tailor training toward specific audiences** – managers, supervisors, employees (crafts, office workers, etc.)
- **Train for emergencies** – fire drills, evacuation drills, site emergencies

Recommendations

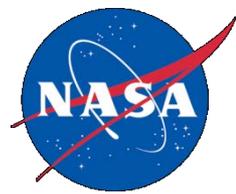


- Pay special attention to the reports contained in the body of the Safety & Health Plan DRD under Other Deliverables – includes; building fire warden roster; hazardous materials inventory; roster of terminated employees; material safety data sheets; OSHA logs; program self evaluation.
- Tailor your plan to what you will do on the contract
- Review the requirements provided in **JSC Safety and Health Handbook (JPR 1700.1)** <http://jschandbook.jsc.nasa.gov> and describe how you will incorporate JSC requirements into your Safety & Health Program
- For the good of your employees and your business, take safety seriously and proactively plan to PREVENT injuries.



Submit Written Questions

Attendees



HHPD Integration Efforts

Jonathan Dory

SEB Technical Lead

Human Health and Performance Integration



Challenges:

- Synthesizing decades of Research and Operation Data into standards and solutions for future spaceflight
- Developing innovative methods to mitigate human system risks for spaceflight
- Managing and coordinating multiple projects across several programs
- Integrating and leveraging opportunities and resources both within NASA and outside the Agency

Goals:

Create and manage a portfolio of internal and external activities targeting the highest priority human spaceflight health and performance risks:

- Leveraging cross-agency opportunities: ISS, HRP, AES, OCT, MPCV, CCP
- Use innovative approaches to solving human health and performance risks
- Creating a decision framework for novel problem solving techniques

HHPD Customers



- **ISS**
 - Continued support for safe operations including medical operations, environmental monitoring, countermeasures, as well as development and sustaining engineering
 - Utilization for the Human Research Program as a technology test bed
- **Human Research Program**
 - Mitigation of spaceflight human health and performance risks
 - Integration and execution of flight and ground research (Internally executed and externally solicited)
- **MPCV/Exploration Systems Development:**
 - Systems Integration and certification
 - Systems and GFE Design, Development, Test and Integration
 - Planning for Operations
- **Commercial Cargo and Crew**
 - Consultation and Lessons Learned
 - Insight/oversight
 - Certification
- **Space Technology Mission Directorate**
 - Advanced Exploration Systems (AES) Projects (RadWorks, Others)
 - Office of the Chief Technologist (OCT) Projects
- **Collaboration for Innovation**
 - NASA Human Health and Performance Center (NHHPC)
 - Center of Excellence for Collaborative Innovation
- **JSC and White Sands Test Facility**
 - Occupational Health Services
 - Human Test Subject coordination
 - Institutional Review Board

Human Research Program Support



Requires planning and organizational management tools and professional support for the HRP program office and HRP control boards and panels.

- Operates as a stand-alone program reporting to the Human Exploration and Operations Mission Directorate (HEOMD)
- Operates from within the Directorate Office of HHPD
- Functions include:
 - Generation and maintenance of program-level products
 - Participation in management activities and coordination of program and project reviews
 - Identifying and resolving programmatic risks as well as risks applicable to crew health and safety
 - Identifying and prioritizing research and technology development that mitigates human health and performance risks
 - Support in establishing science management policy and development of processes
 - Coordinating procurements of scientific research and technology development
 - Performing directed research within NASA facilities, labs, and project



Enabling Integration Activities



Health and Medical Technical Authority

Provides independent program and policy oversight as part of the Agency governance model (along with the other Agency TA's Engineering and Safety and Mission Assurance) to ensure that the programs and projects are developed and managed in a way that does not jeopardize the health and well-being of NASA employees in space and on the ground. Supports Office of the Chief Medical Officer in endorsing program Key Decision Points and Certification of Flight Readiness.

Human System Standards

Provides technical management of human spaceflight standards found in the two-volume Space Flight Human System Standard, including (Volume 1 Crew Health, and Volume 2 Human Factors, Habitability, and Environmental Health); as well as the companion document Human Integration Design Handbook (HIDH)



Human System Integration

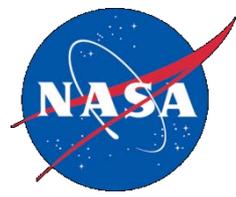
Provides Human-Systems Integration expertise to ensure human system domains (human health and performance) are integrated with other vehicle subsystems from the formulation and development of a project through operations and decommissioning

Enabling Collaborative Innovation



- **NASA Human Health and Performance Center (NHHPC)**
 - A virtual center that brings organizations together to advance human health and performance innovations for life in space and on Earth by sharing best practices and engaging in collaborative projects
- **nasa@work**
 - A NASA-wide online collaboration infrastructure that enables crowd-sourcing of solutions to NASA challenges across the NASA workforce
- **Center of Excellence for Collaborative Innovation (COECI)**
 - A virtual center to facilitate open innovation processes, develop guides, and process to help selecting solution mechanisms





Human Health & Performance Directorate
Risk Process
Dave Francisco
Program Integration Manager

Human Health and Performance Goals



The Human Health and Performance goals are:

1. To mitigate the Human Risks due to spaceflight
2. Ensure both in mission and long term health of astronauts
3. Enable efficient implementation of health care for spaceflight missions
4. Implement and maintain an occupational surveillance program to understand the impact of spaceflight on long term health

How Does HHP achieve its goals?

- By managing a portfolio of evidenced based human spaceflight risks via the NASA Human Health and Medical Technical Authority (HMTA)
- Developing and maintaining health standards
- Providing a space based healthcare system by developing and implementing new technologies, medical protocols and processes to mitigate human spaceflight risks
- Integrating content from spaceflight operations, medical care, occupational surveillance, biomedical research and technology (hardware/software) development

Human Health and Performance Directorate Integration

Mitigation of Human Risks due to spaceflight requires the integration of content from multiple sources/programs



It is critical to efficiently and effectively coordinate activities across these diverse components to mitigate human risks and enable spaceflight.

Integrated Human System Risk Mitigation

Human System Risk Board - HSRB



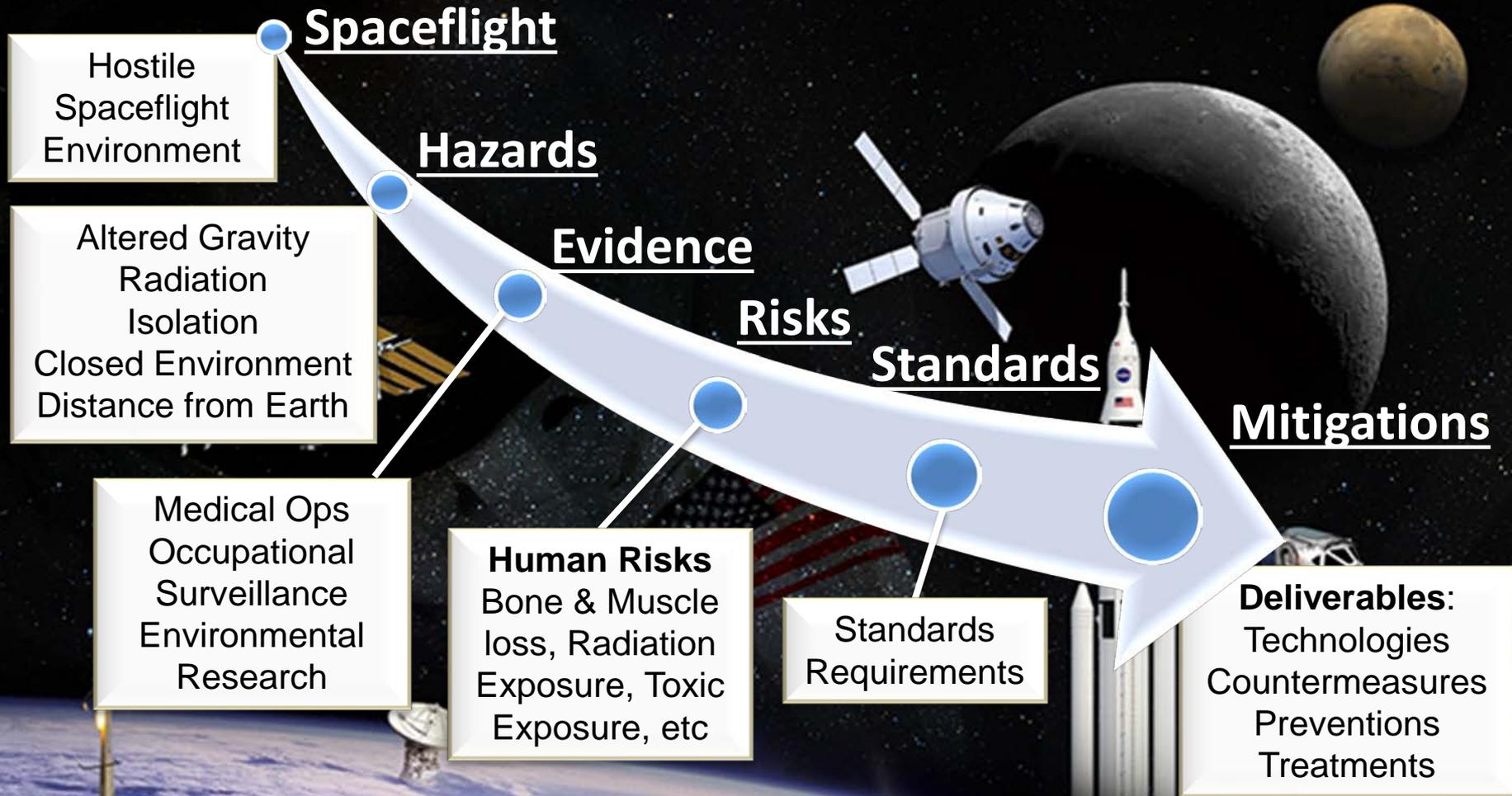
The HSRB has the overall responsibility to implement and maintain a consistent, integrated process for assessing, documenting and tracking all risks to the human system associated with spaceflight activities (both in flight and post flight)

The HSRB is Chaired by the Chief Medical Officer at JSC and contains members from medical operations, Human Research Program, ISS Program, the Crew Office and ad hoc members (as determined by the topic).

- The HSRB is delegated responsibility by the NASA HQ Office of Chief Health & Medical Officer for the following:
 - (1) Identifies and analyzes risks and concerns, and approves appropriate plan strategies (e.g. retire, mitigate or accept);
 - (2) Endorses cross-Program, multidisciplinary action plans
 - (3) Tracks the overall progress of the subsequent detailed management plans developed and implemented by the programs (funding entities)
 - (4) Develops HMTA's risk posture and makes decisions pertaining to risk disposition as work is performed to address risk mitigation and improve risk posture.
 - (5) Disseminates risk dispositions and knowledge to stakeholders

NASA Human Health and Performance

Goal: Enable Successful Space Exploration by Minimizing the Risks of Spaceflight Hazards



Hazards of Spaceflight

Hazards Drive Human Spaceflight Risks

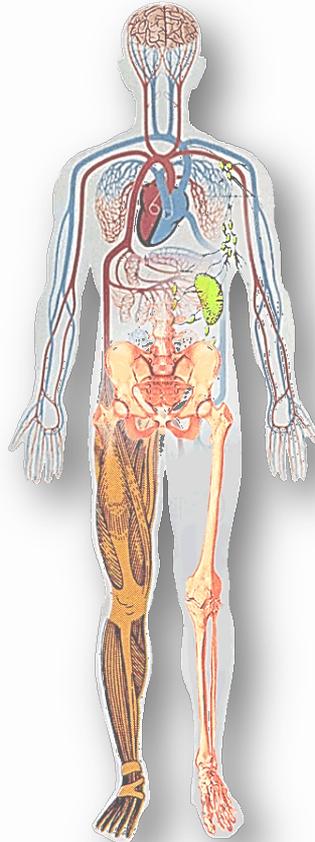


Altered Gravity - Physiological Changes

Balance Disorders
Fluid Shifts
Cardiovascular Deconditioning
Vision Impairment
Muscle Atrophy
Bone Loss

Space Radiation

Acute In-flight effects
Long term cancer risk



Distance from earth

Drives the need for additional
“autonomous” medical care
capacity – cannot come home for
treatment

Hostile/ Closed Environment

Vehicle Design
Environmental – CO₂ Levels,
Toxic Exposures, Water, Food

Isolation & Confinement

Behavioral aspect of isolation
Sleep disorders

Summary of Human Risks of Spaceflight

Grouped by Hazards – 30 Human Risks, 2 Concern/Watchlist Items



Altered Gravity Field

Primary Effect

1. Spaceflight-Induced Intracranial Hypertension/Vision Alteration ★
2. Urinary Retention
3. Space Adaptation Back Pain
4. Renal Stone Formation ★
5. Risk of Bone Fracture due to spaceflight Induced bone changes ★
6. Impaired Performance Due to Reduced Muscle Mass, Strength & Endurance ★
7. Reduced Physical Performance Capabilities Due to Reduced Aerobic Capacity ★
8. Impaired Control of Spacecraft, Associated Systems and Immediate Vehicle Egress due to Vestibular / Sensorimotor Alterations associated with space flight. ★
9. Cardiac Rhythm Problems ★
10. Orthostatic Intolerance During Re-Exposure to Gravity ★
11. Adverse Health Effects due to Alterations in Host Microorganism Interaction ★

Concerns/Watchlist

1. Concern of Clinically Relevant Unpredicted Effects of Medication
2. Intervertebral Disc Damage

Radiation

Primary Effect

1. Risk of Space Radiation Exposure on Human Health ★

Distance from Earth

Primary Effect

1. Unacceptable Health and Mission Outcomes Due to Limitations of In-flight Medical Capabilities ★
2. Risk of Ineffective or Toxic Medications due to Long Term Storage

Isolation

Primary Effect

1. Risk of performance decrements due to adverse behavioral conditions ★

Hostile/Closed Environment-Spacecraft Design

Primary Effect

1. Toxic Exposure ★
2. Acute and Chronic Carbon Dioxide Exposure ★
3. Hearing Loss Related to Spaceflight ★
4. Risk of reduced crew performance prior to adaptation to mild hypoxia.
5. Injury and Compromised Performance due to EVA Operations ★
6. Decompression Sickness ★
7. Injury from Sunlight Exposure ★
8. Incompatible Vehicle/Habitat Design
9. Risk of Inadequate Human-Machine Interface ★
10. Risk to crew health and compromised performance due to inadequate nutrition ★
11. Adverse Health Effects of Lunar (Celestial) Dust Exposure ★
12. Performance Errors Due to Fatigue Resulting from Sleep Loss, Circadian Desynchronization, Extended Wakefulness, and Work Overload ★
13. Injury from Dynamic Loads ★
14. Risk of Altered Immune Response ★
15. Risk of electrical shock ★

Standards	
★	NASA-STD-3001, VOLUME 1, CREW HEALTH
★	NASA-STD-3001, VOLUME 2, HUMAN FACTORS, HABITABILITY, & ENVIRONMENTAL HEALTH
★	Clinical Practice Guidelines

Standards in process of review/change/addition

Health and Medical Policy and Standards



Standards based on best available scientific/clinical evidence & expert recommendations (medical practice, lessons learned, analogue environments, research findings, risk management data)

Policy Document
NPD 8900.5 NASA Health and Medical Policy
for Human Space Exploration

Space Flight Health Standard
NASA-STD-3001, VOLUME 1, CREW HEALTH
March 2007, In process of update

Sets standards for fitness for duty, space flight permissible exposure limits, permissible outcome limits, levels of medical care, medical diagnosis, intervention, treatment and care

Human Factors/Environmental
NASA-STD-3001, VOLUME 2, HUMAN FACTORS,
HABITABILITY, & ENVIRONMENTAL HEALTH
January 2011

Defines standards for spacecraft (including habitats & suits), and related equipment and software systems with which the crew interfaces during space operations

NASA Crewmember Medical Standards -
Selection & Annual Medical Certification
OCHMO 80771201 MED

Pre-, In-, and Post Flight Medical Evaluations
for Long-Duration ISS Crewmembers
SSP 50667

Human Integration Design Handbook (HIDH) -
NASA/SP-2010-3407

Compendium of human space flight knowledge.
Resource for preparing program-specific requirements.

Crew Health, Medical, and Safety: Space Flight Health Standards



Discipline	Type	Standard
Bone	POL	Maintain bone mass at $\geq -2SD$
Cardiovascular	FFD	Maintain $\geq 75\%$ of baseline VO2 max
Neurosensory	FFD	General Sensory Motor, Motion Sickness, Perception, Gaze Control
Behavioral	FFD	Maintain nominal behaviors, cognitive test scores, adequate sleep
Immunology	POL	WBC > 5000/ul CD4 + T > 2000/ul
Nutrition	POL	80% of spaceflight-modified/USDA nutrient requirements
Muscle	FFD	Maintain 80% of baseline muscle strength
Radiation	PEL	$\leq 3\%$ REID (Risk of Exposure Induced Death)

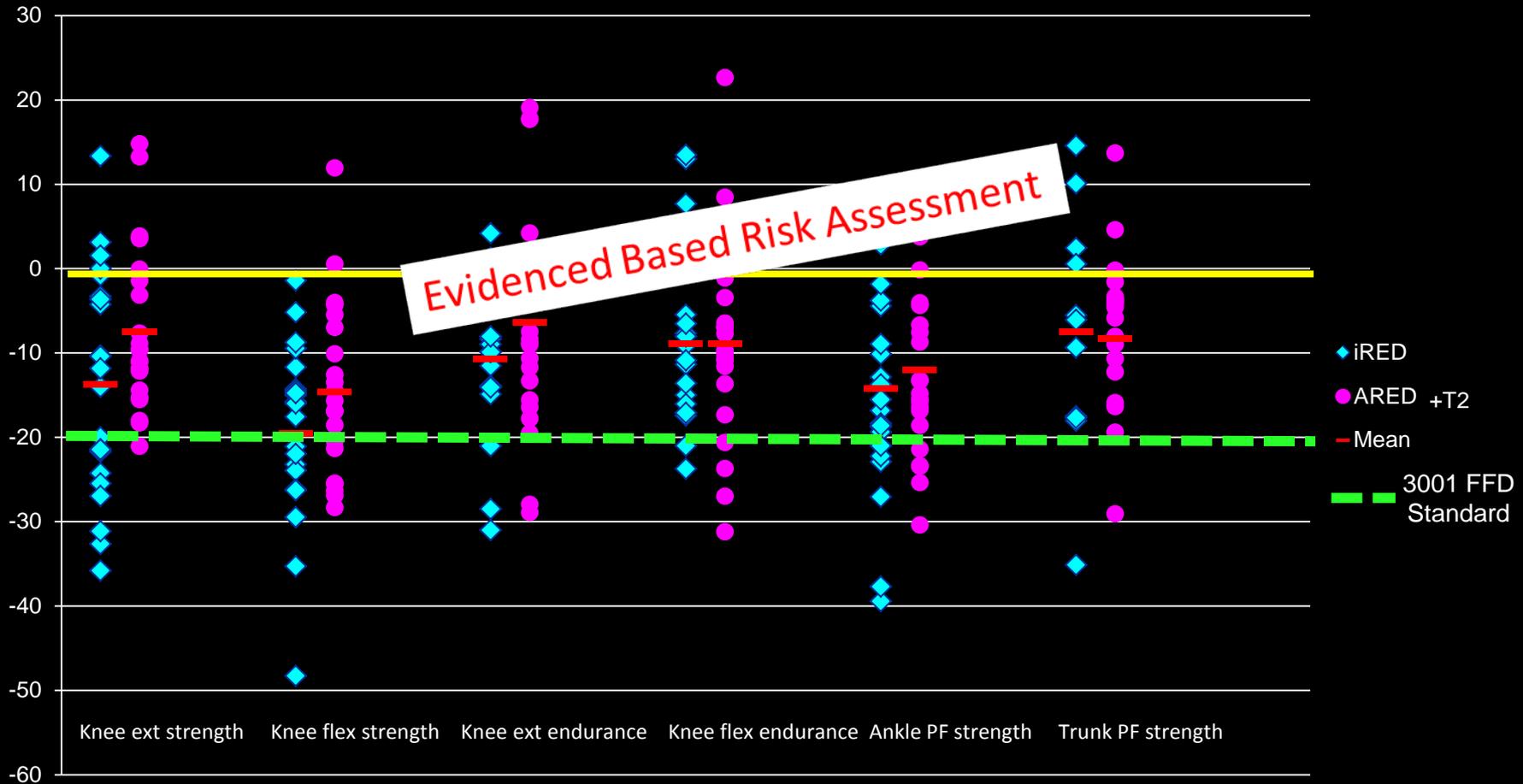
FFD - fitness for duty, PEL - space flight permissible exposure limits, POL - permissible outcome limits

Muscle Function

Exp 1-32 (IRED n=22 ARED+T2 n=25)

Pre/Post Changes of Strength

Based on data from LSAH/Exercise Lab - MRIDs 7/2013



Human System Risks – Likelihood vs Consequence



Consequence

Mission Health and Performance (OPS)

Death or permanently disabling injury to one or more crew (LOC)
OR
Severe reduction of performance that results in loss of most mission objectives (LOM)

Significant injury, illness, or incapacitation – may affect personal safety
OR
Significant reduction in performance results in the loss of some mission objectives

Minor injury/illness that is self-limiting
OR
Minor impact to performance and operations- requires additional resources (time, consumables)

Temporary discomfort
OR
Insignificant impact to performance and operations - no additional resources required

CM = Countermeasure
LOC = Loss of Crew
LOM = Loss of Mission

Consequence

Long Term Health (post mission) (LTH)

- Unknown and improbable return to baseline (requires drastic intervention surgery & therapy)
- Major impact on quality of life (permanent reduced function, premature death)

- Return to near baseline requires extended medical intervention w/ known clinical methods/technologies (pharmaceuticals, etc.)
- Moderate impact on quality of life

- Return to baseline values within 1 year with nominal intervention (time, exercise, nutrition, lenses)
- Negligible effect on quality of life

- Return to baseline values within 3 months with limited intervention
- No effect on the quality of life

Quality of Life is defined as impact on day to day physical and mental functional capability and/or lifetime loss of years

	High	1 x 4	2 x 4	3 x 4
	Medium	1 x 3	2 x 3	3 x 3
	Low	1 x 2	2 x 2	3 x 2
	Very Low	1 x 1	2 x 1	3 x 1
		Low	Medium	High
		≤0.1 %	<1 %	≥1.0%
		Likelihood		

Sample Risk – Human System Risk Board (HSRB)



Risk Title: Risk of Impaired Performance Due to Reduced Muscle Mass, Strength & Endurance

Risk Statement: Given that exposure to a microgravity environment causes skeletal muscle to undergo reduced mass, strength, and endurance, there is a possibility that mission task performance would be impaired or tasks would not be completed.

Primary Hazard: μ -gravity

Secondary Hazard: Radiation

Context: Environmental

Countermeasure: Prevention: Pre-flight training, inflight exercise, diet, aerobic & resistive hardware.. Treatment: Post flight reconditioning

Risks are assessed with known countermeasures for in mission and long term health consequences. And for multiple Design Reference Missions.

State: 80% of baseline muscle strength. Pre-flight standard: Pre-flight muscle strength & function shall be within 80% of baseline for the astronaut population. Ample data from shuttle and ISS document pre & post flight strength assessment (see metric). No capability for strength measurements on ISS. Limited in flight time course of change in muscle strength. Impact of radiation environment unquantifiable, but considered to be contributing cardiovascular factor (reference radiation risk).

DRM Categories	Mission Duration	LxC OPS	Risk Disposition	LxC LTH	Risk Disposition
Low Earth Orbit	6 Months	1 x 4	Accepted/Optimize	3 x 1	Accepted
	1 Year	1 x 4	Accepted/Optimize	3 x 1	Accepted
Deep Space Sortie	1 Month	1 x 4	Accepted/Optimize	3 x 1	Accepted
Lunar Visit/Habitation	1 Year	1 x 4	Accepted/Optimize	3 x 1	Accepted
Deep Space Journey/Hab	1 Year	1 x 4	Accepted/Optimize	3 x 1	Accepted
Planetary	3 Years	1 x 4/ 3 x 3	Requires Mitigation	3 x 2	Requires Mitigation

➤ **L x C Drivers:** Assumption is that “ISS like” countermeasures will be available for Deep Space Journey & Planetary DRMs. **OPS Likelihood: ALL DRMs:** Activities with the highest impact are emergency egress & rescue of an incapacitated crew member. Probability of these occurrences is $\leq 0.1\%$. Additionally, **Planetary:** Surface EVA (freq./type) would also be impacted and the probability is $\geq 1\%$ due to transit duration effect on muscle strength/endurance. **Ops Consequence, All DRMs:** Death if unable to emergency egress or rescue an incapacitated crew member. In addition, **Planetary:** Significant Reduction of Performance (shorter duration EVA, less strenuous activities) for surface operations.

➤ **LTH Likelihood: All DRMs :** ~25% of crew do NOT maintain 80% of preflight values during a 6 month ISS mission with CEVIS, ARED & T2. **LTH Consequence: All DRMs ex. Planetary:** Crew return to baseline within 3 months with limited intervention. **Planetary:** Anticipate taking longer to return to baseline - 1 year recovery.

Risk Disposition Rationale: For all missions except Planetary, the risk is accepted but optimization of countermeasure is desired. **For Planetary:** Mitigation is required to provide effective countermeasures with less mass and volume.

Sample Risk – Human System Risk Board (HSRB)



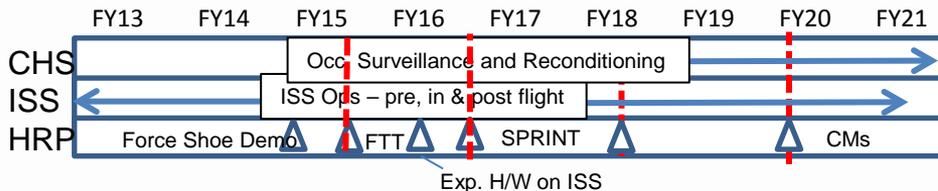
Deliverables Required	Responsible Program	Budget (\$M) - FY (2014-2018)/Timeline
Knowledge/Research: -ISS Functional Tasks Test -ISS SPRINT -Other Rsch Tasks (Active/Planned)	HRP HRP HRP/NSBRI	\$1.0M/2015 \$3M \$8M
Technology: -Portable Load Sensing Evals. -Adv. Exercise Concept Evals. ISS -MPCV Exercise Concept Dev. - <i>Adv Exercise Risk Mitigation</i>	HRP/ISS/ HRP	\$4M \$3.3M \$27M
Operational Protocols: -ASCR Std - F -Med -ISS	ISS	\$0.2M/2015 \$0.1M/2014
Guidelines/Standards: -Standard -Require for MPCV	ISS/CHS/HRP ISS/CHS/HRP	\$0.2M/2015 \$0.1M/2014

Deliverables required to mitigate the risk are tracked at a high level. Detailed tracking maintained by funding programs.

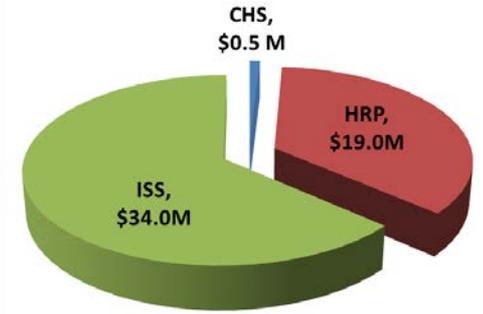
Note: All tasks costs are shared with the Aerobic risk

**Italics indicates planned/desired work (not included in totals)*

Total Budget 2014-18 = \$53M



Red dashed line = Risk Evaluation Assessment



Risks to Standard - Requirement Flow



Risks

Bone Fracture due to Spaceflight-induced Changes to Bone

Impaired Performance Due to Reduced Muscle Mass, Strength & Endurance

Reduced Physical Performance Capabilities Due to Reduced Aerobic Capacity

Standard(s)

Space Flight Health Standard
NASA-STD-3001, VOLUME 1, CREW HEALTH
March 2007, In process of update

4.2.8 Permissible Outcome Limit for Muscle Strength Standard
4.2.8.2 Countermeasures shall maintain in-flight skeletal muscle strength at or above 80 % of baseline values.

Space Flight Health Standard
NASA-STD-3001, VOLUME 2, HUMAN FACTORS,...
January 2011

7.4.1 The system shall provide countermeasures to meet crew bone, muscle, sensory-motor, and cardiovascular standards defined in NASA-STD-3001, Volume 1.

Risks to Standards

Standards to Program Requirements

Requirements

ISS

SSP 50260 International Space Station Medical Operations Requirements Document - MORD

8.5.2.2 CREW PARTICIPATION IN DAILY PHYSICAL EXERCISE

ISS crewmembers shall participate in physical exercise, consisting of aerobic, anaerobic and resistive exercise as prescribed by medical specialists.

Commercial Crew

CCT-REQ-1130 ISS Crew Transportation Requirements Document

N/A – due to limited duration of mission

MPCV

MPCV Human System Integration Requirements -HSIR

3.5.4.1 Exercise Capability [HS6032]

The system shall provide the capability for aerobic and resistive exercise training for 30 continuous minutes each day per crewmember for missions greater than 8 days.

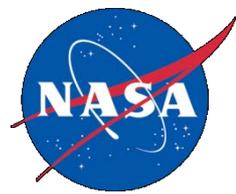
Summary



The Human Health and Performance Directorate/Health and Medical Technical Authority utilizes an evidence-based human risk system to:

- Identify and analyze human risks
- Determine risk posture
- Endorses cross-Program, multidisciplinary action plans
- Track the overall progress of the subsequent detailed management plans developed and implemented by the programs (funding entities)
- Disseminate risk dispositions and knowledge to stakeholders

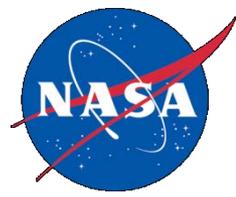
Effective integration of multiple entities are critical to the successful mitigation of humans system risks in order to ensure crew health and enable space exploration missions.



HHPC Pre-Proposal Conference Site Tours

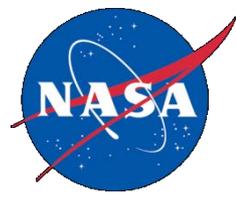
Janis Connolly
SEB Member

Facility Tour Information



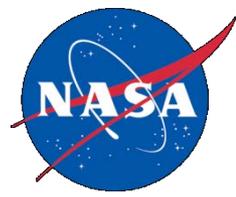
- Tours are designed to provide potential Offerors with a better understanding of the facilities where the HHPC contractor may perform work
- Tours will include:
 - A technical overview of the facility
 - Functions
 - Hardware and Equipment
 - Products and Services
 - Customers and Interfaces
 - The presentations given in the labs will be posted on the web site.
- Tour guides/presenters will not be answering questions. Please submit questions in writing to the CO or the HHPC website.
 - Answers to all questions will be posted to the web site.

Tour Ground Rules



- Those who attend the Site Tours must have their badge.
 - You should have received your badge at registration.
 - Please have your Drivers License
 - You must have a badge to board the transportation.
- For those on the tour, please be present at the Gilruth Lobby no later than 12:40 p.m. Transportation will leave promptly at 12:50 p.m.
- Wednesday morning, October 1st, please be present at the Gilruth Lobby no later than 7:40am. Transportation will depart promptly at 7:50 a.m. For the afternoon tours, please be present at the Gilruth Lobby no later than 12:40 p.m. Transportation will leave promptly at 12:50 p.m.

Tour Ground Rules



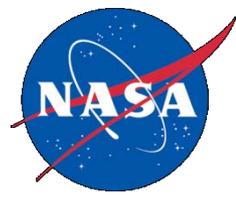
Reminder: Safety Information

- The site tour may require walking on uneven surfaces and using stairways
- Please, no open-toed shoes, or high heels or shorts
- In the event of a fire alarm follow your tour guide to exit the building and assemble at the designated area

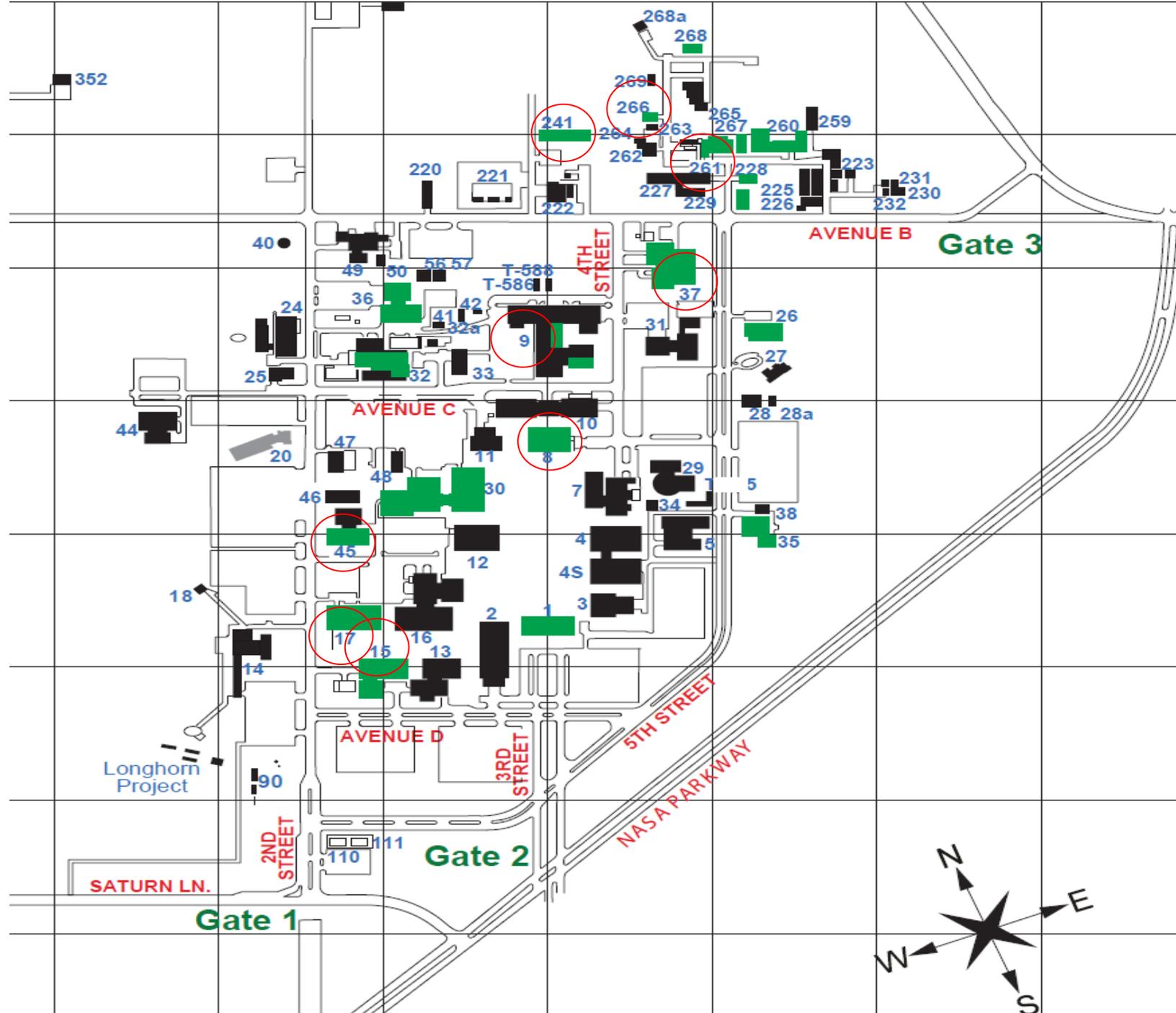
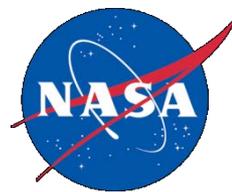
Other Information

- Cell phones should be on vibrate mode or turned off during the entire tour
 - Certain facilities may require that cell phones be turned off
- Be mindful of tight spaces
 - Please don't touch
 - Recommend not bringing laptops or backpacks on the tour
 - No photography, recording, or video
- No food or drink in the Labs. If carrying water bottle, as you enter a lab, please place bottle on floor against the wall outside the lab.
- Smoking only in designated exterior areas

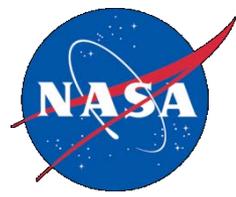
HHPC Laboratories



- Clinical and Occupational Medicine
 - Building 8
- Biomedical Research
 - Buildings 37, 261, 266
- Environmental Sciences
 - Buildings 37,45, 241
- Habitability and Human Factors
 - Buildings 15, 17, 241
- ISS Medical Projects
 - Building 9, 241



Clinical and Occupational Medicine



Mission is to optimize the health, fitness and well-being of astronauts and employees to enable mission success

Flight/Occupational Medicine Clinic B-8 , Clinical Lab B-37

• Flight Medicine Clinic

- Focuses on preventive medicine and medical risk management
- Long duration medical certification
- Psychological support for astronauts and their families
- Astronaut strength and reconditioning
- Lifetime surveillance of astronaut health

• Spaceflight Operations

- Pre-, in- and post-flight medical and biomedical engineering support
- In-flight medical condition management
- Astronaut medical training (hardware & procedures)
- Remote medical care for training, launch and landing
- In-flight and analog research implementation

• Occupational Health Clinic

- Occupational medical exams
- Hearing conservation program
- Workforce Wellness
- Employee assistance program
- Human test subject support



Main function is to conduct research focused on understanding the normal human response to space flight, develop, test and validate countermeasures to mitigate patho-physiological responses that may affect crew health, safety and performance during and after space missions. Standard measures to assess crew health will be implemented for applicable labs

Bone & Mineral B-266

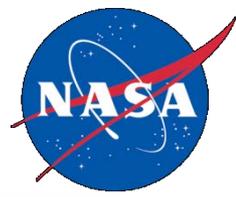
- Carry out DXA and p-QCT measurements
- Analyze epidemiologic data on Bone Loss
- Develop and evaluate Countermeasures to Spaceflight-Induced Bone Loss



Cardiovascular Physiology B-261

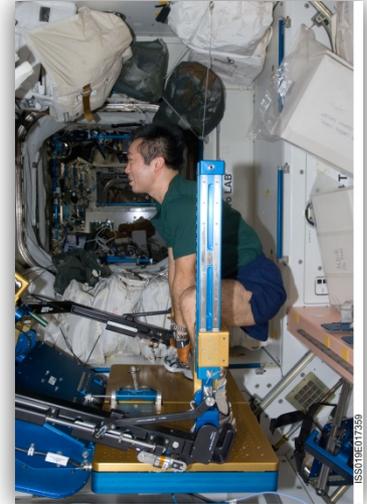
- Conduct ground-based and in-flight research to
 - Establish a normative database of cardiovascular changes due to space flight
 - Delineate associated mechanisms and develop effective countermeasures, alternative compression garments
- Determine functional Consequences of Orthostatic Intolerance, Exercise Capacity, and Risk of Cardiac Arrhythmias
- Conduct functional task test, integrated resistive and aerobic training

Biomedical Research Laboratories



Exercise Physiology B-261

- Understand and mitigate the untoward effects of microgravity on human physiology and performance during and after space flight
- Evaluate and validate exercise countermeasures hardware, protocols, and conditioning programs for the maintenance of crew health and performance in space
- Conduct research to understand the effects of microgravity on human physiology and performance in space and upon return to earth

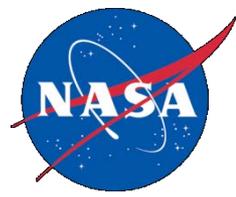


Nutritional Biochemistry B-37

- Determine the nutritional requirements for spaceflight with the goal to maintain astronaut health in space
- Support clinical nutritional assessment profile of flight crew
- Conduct research that includes spaceflight and ground-analog studies with human subjects
- Develop, evaluate, and validate nutritional countermeasures to prevent or minimize the negative effects of long-duration spaceflight



Biomedical Research Laboratories

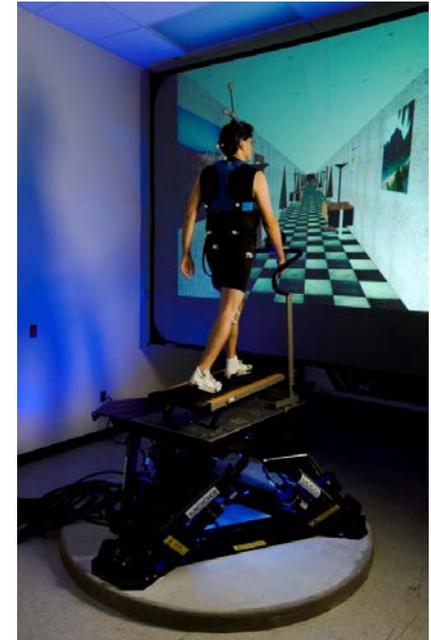


Neurosciences B-266

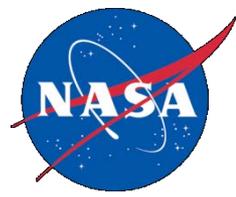
- Investigate the effects of space flight on the human nervous system, with particular emphasis on posture and gait function, eye-head coordination, perception, space motion sickness and vestibular-autonomic function
- Develop countermeasures to mitigate the space flight related changes in nervous system function associated with adaptation to microgravity and return to gravitational environment

Pharmacotherapeutics B-37

- Identify, estimate and mitigate risk of treatment failure in space by coordinating and conducting clinical research to identify physiological and biopharmaceutical changes in space
- Develop, identify and validate safe and effective noninvasive diagnostics tools, innovative pharmaceutical technologies, therapeutic procedures and intervention strategies
- Develop innovative technologies for novel drug delivery in space



Environmental Sciences Laboratories



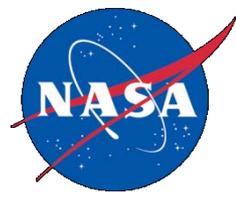
Provide expertise for operational support of all human space flight programs, including setting spacecraft environmental requirements, providing pre-mission or pre-increment analyses and planning, and evaluating actual on-orbit internal environmental conditions. These labs conduct research focused on the development of advanced environmental monitoring technology concepts and on evaluating and controlling environmentally induced risks to crew health and safety.

Acoustics and Noise Control Laboratory (ANCL) B-241

- Perform emissions engineering & verification testing on flight prototypes and ground-test hardware, including systems and habitable volumes.
- Provide acoustic measurements (sound pressure level, sound power level, and analysis services, etc.) and modeling
- Provide hardware design review and noise control engineering services for flight and ground-test hardware.



Environmental Sciences Laboratories



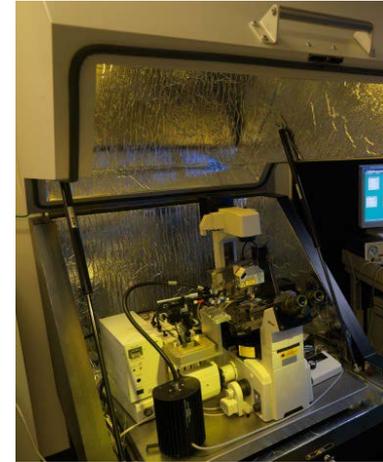
Core Laboratory B-37

- Provide research instrumentation for NASA investigators
- Provide laboratory space for chemical and biological analysis to all JSC researchers, interns, and external collaborators
- Provide expertise in analysis of biomedical samples
- Provide enhanced cellular and biological analytical capabilities at JSC

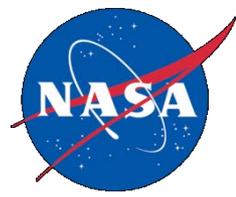
Environmental Health Laboratory B-228 (presently moving to B-37)

Performs analysis of suspected hazards and toxins in air (including asbestos), drinking water and building materials at the Johnson Space Center, Ellington Field and the Sonny Carter Training Facility.

- Maintains accreditation from the National Environmental Laboratory Accreditation Program (NELAP) State of Texas



Environmental Sciences Laboratories



Immunology B-37

- Investigate the effects of space flight on various aspects of human immune system
- Develop appropriate countermeasures for suppressed immune system during exploration class missions

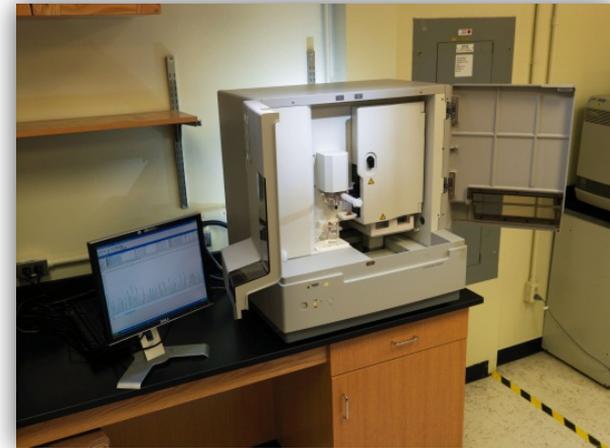


Microbiology Laboratory B-37

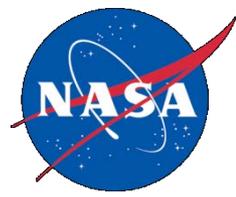
- Provide expertise in crew health and environmental design issues related to microorganisms
- Process clinical samples from the astronauts, their families and certain facility workers
- Process environmental samples to ensure that pathogens are not taken into the craft before flight; environmental sampling includes air, potable water, spacecraft surfaces, in-flight hardware, and food

Space Radiation Analysis Group (SRAG), Radiation Operations Support Area B-45

- Model and monitor the space radiation environment to ensure crew radiation exposures remain below established safety limits; project crew exposures and mitigate the adverse effects of radiation.



Environmental Sciences Laboratories



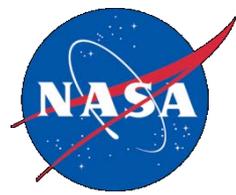
Toxicology and Environmental Chemistry B-37

Provides assessments of health hazards associated with all compounds that could enter the spacecraft air or water, off gas testing to control airborne contaminants in spacecraft atmosphere, onboard monitoring, and assessments of toxicological risks to crew

- Provide comprehensive analyses of spacecraft foods so that spaceflight menus can be judiciously designed to fulfill the nutritional needs of astronauts
- Develop technologies for real-time on-orbit water quality monitoring
- Analyze water samples from ISS



Habitability & Human Factors Laboratories



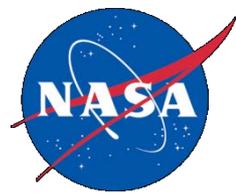
Responsible for ensuring that space human factors, including human physical parameters and performance capabilities and limitations, are defined, documented, and applied to the design and operation of vehicles, habitats, and flight crew systems equipment to ensure the safety and productivity of humans in space. These laboratories provide both operational support for flight programs as well as conduct research to help assure the effective crew performance.

Anthropometry and Biomechanics Facility (ABF) B-15

- Conduct space biomechanics and ergonomics research studies that deal with issues humans will encounter while living, working, and exploring in space.
- Test and evaluate crew work procedures/equipment, spacesuit design, EVA/IVA tool design, EVA/IVA human performance issues, EVA/IVA crew-induced loads

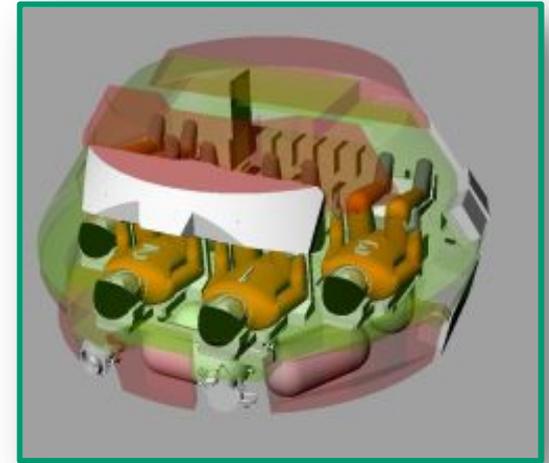


Habitability & Human Factors Laboratories



Graphics Research Analysis Facility (GRAF) B-15

- Performs computer-aided human factors analyses to address human engineering issues for space design and analyses (e.g., human modeling, habitability, computer animation, lighting and viewing analyses, operations analyses for activities inside and outside the spacecraft, design concept visualizations, research and development activities).

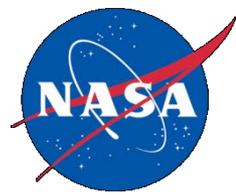


Habitability Design Center (HDC) B-15

- Provides advanced concepts to the community using Human Factors as a design tool to develop products, systems, and architecture.



Habitability & Human Factors Laboratories



Usability Testing and Analysis Facility (UTAF) B-15

- Provide analysis, evaluation and usability testing of crew interfaces for work areas and equipment (i.e., computer displays and controls, workstation systems, and other types of crew interfaces).

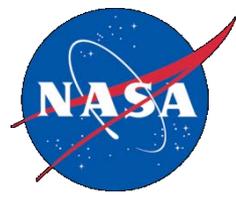


Space Food Systems Laboratory (SFSL) B-17

- Design, develop, evaluate and produce flight food, menus, packaging, and food-related ancillary hardware for Space Station, and Advanced Food Systems.



ISS Medical Projects



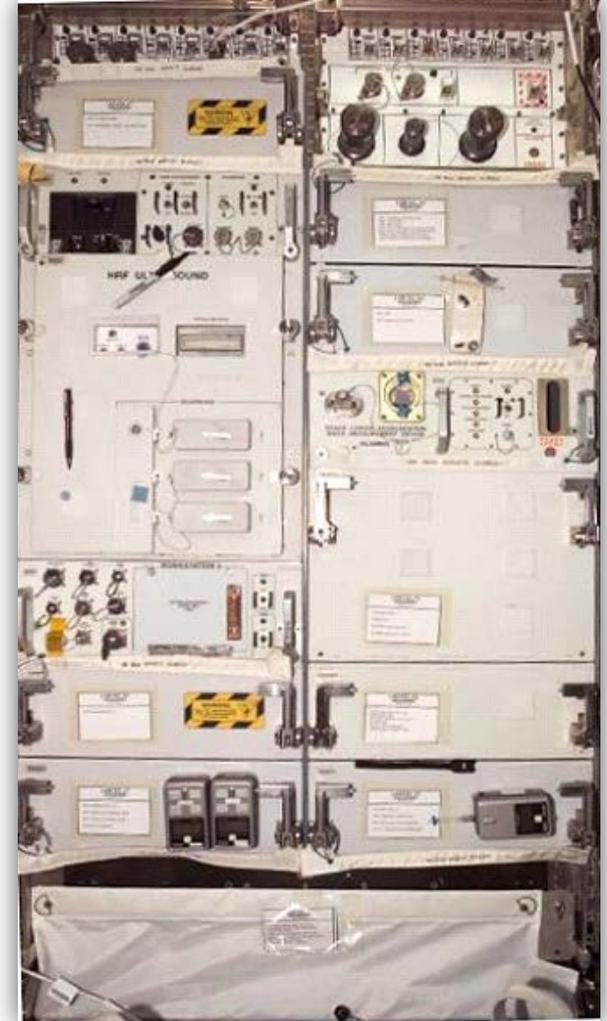
ISSMP provides planning, integration, and implementation services for HRP research tasks and evaluation activities requiring access to space or related flight resources; and supports pre- and post-flight activities

- Develop, operate, and sustain HRP flight hardware, develop and integrate experiments for flight

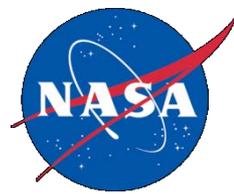
Payload Development Laboratory B-9

- Training and sustaining engineering for the crew training facility (Payload Development Laboratory)

Human Research Facility, Rack Processing B-241



Future and Potential Facilities



Building 8 moving to B45 North.
Completion is anticipated by
early 2015.

 **BUILDING 21: HUMAN HEALTH & PERFORMANCE LABORATORY | JOHNSON SPACE CENTER** 
A flexible, functional and efficient laboratory facility for the 21st century — enabling successful space exploration by minimizing the risks of spaceflight hazards.

- Supports space life sciences, human performance research, and manned missions
- Projected USGBC LEED Gold Certification
- Modular design and furnishings for future flexibility
- Consolidates multiple buildings into a single, highly functional and efficient 117,900 SF facility



MAIN ENTRY APPROACH (LOOKING WEST)



SOUTH EASTERN CORNER

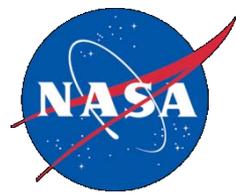


AERIAL PERSPECTIVE



COURTYARD (LOOKING WEST)

Buildings 15, 37, 228,
261 266, and 272 to be
moved to Building 21
(tentative)

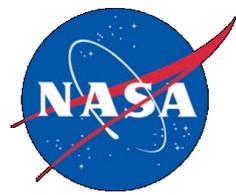


HHPC Schedule and Closing Remarks

Roger Roberts

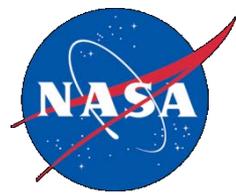
Contracting Officer

HHPC Planned Schedule



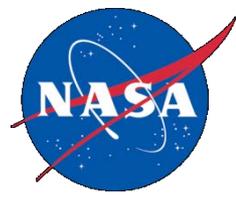
- ✓ Draft RFP Released September 23, 2014
- Draft RFP Questions Due October 7, 2014
- Final RFP Release October 31, 2014
- Past Performance Requested December 16, 2014
- Proposals Due January 15, 2015
- Award HHPC July 15, 2015
- Phase In Begins July 27, 2015
- HHPC Start October 1, 2015

Pre-Proposal Conference Remarks



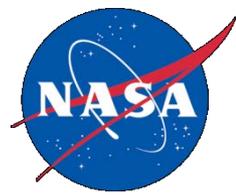
- Topics covered today should not be considered to be all inclusive and potential Offerors should not place undue emphasis on the content of this briefing.
- Information provided today is to assist in the development of proposals; however, the Final RFP will take precedence over information provided in this presentation.
- Continue to monitor the NASA Acquisition Internet Service (NAIS) and HHPC Website for information related to HHPC.
- Official responses to written (e-mailed) questions will be posted to the HHPC website and NAIS via a future RFP amendment.

Tips for Timeliness



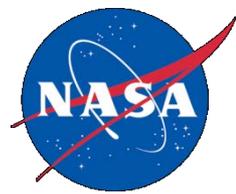
- For your proposal to be considered timely, your package must be delivered to Building 420 by the due date and time stated in the RFP
- Review all proposal delivery instructions with your courier to stress the importance of timeliness and the proper location of delivery
 - Shipping and Receiving will give your courier a receipt of delivery
- When delivering a proposal in person, remember to deliver the proposal through Gate 4, and not through the Central JSC Gate 1.
- Allow at least 48 hours to over-night a proposal through a mail carrier
 - A commercial/government mail carrier may have a mechanical breakdown or otherwise fail to deliver in a timely fashion
 - If you choose to deliver in person on the due date, remember that late flights, traffic jams, and congestion in the JSC area may affect the timeliness of your proposal
- Review the proposal instruction, coordinate with the point of contact in advance of the delivery and ask questions if any instructions are not clear.

Questions?



Are there any questions regarding the information provided today?

Thank you for attending the
HHPC Pre-Proposal Conference.



HHPC Contract Website

<http://procurement.jsc.nasa.gov/HHPC/>