



Johnson Space Center Health and Medical Technical Authority

Jennifer A. Fogarty, PhD

Space Life Sciences Innovation Lead

JSC HMTA Coordinator

May 12, 2010

NASA Space Flight Program and Project Management Requirements



- Specifies requirements for NASA Technical Authority (TA) process and designates three TAs
 - Engineering TA
 - Safety and Mission Assurance TA
 - Health and Medical TA
- TA Responsibilities
 - Approve changes to and waiver TA-owned requirements
 - Serve as members of program/project control boards, change boards, and internal review boards
 - Comply with established process for handling dissenting opinions
- Specific Engineering TA, Safety and Mission Assurance TA, and Health and Medical TA roles and responsibilities described

NPR 8900.1: Health and Medical Requirements for Human Space Exploration



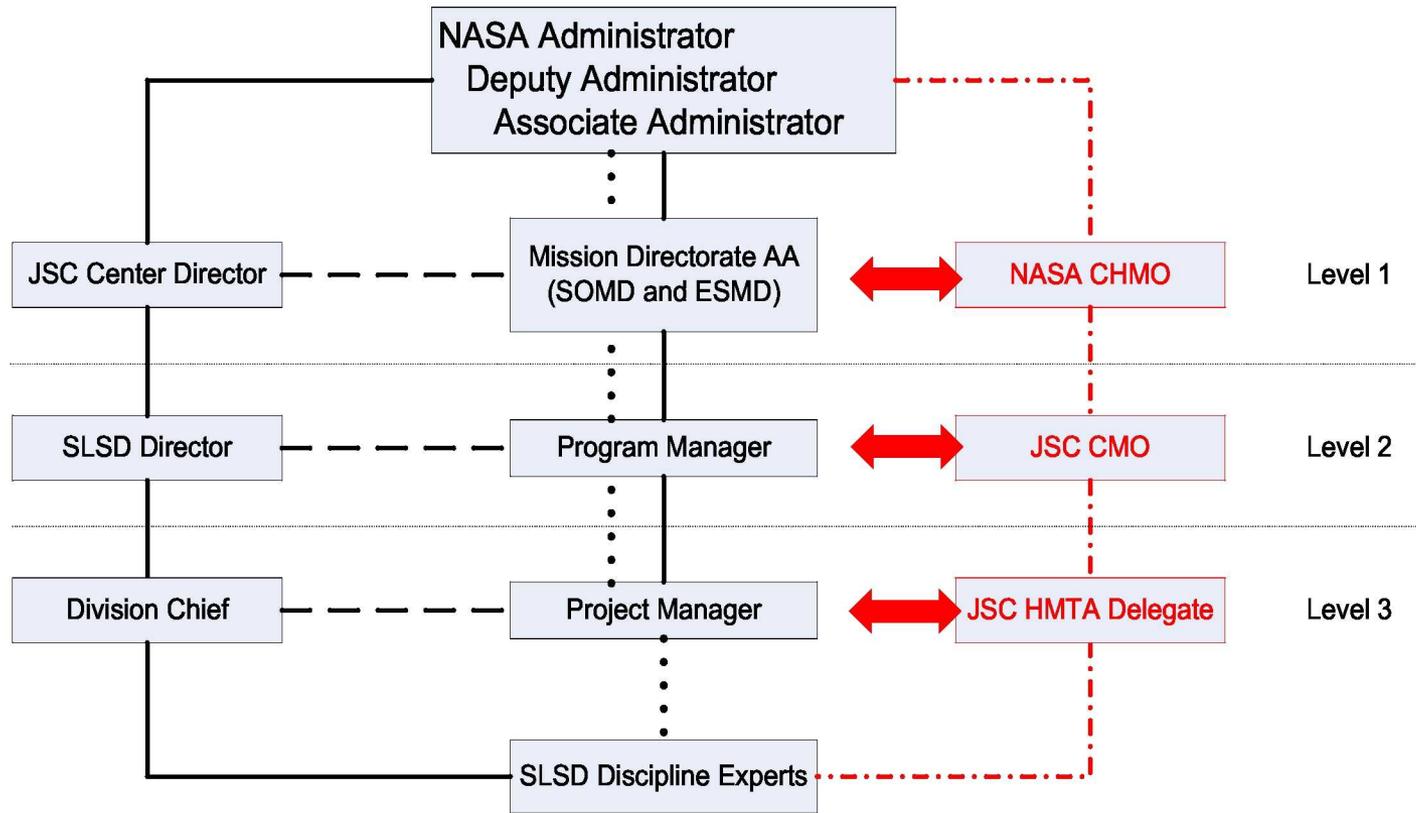
- HMTA responsibilities
 - Assure program/project compliance with Agency health and medical requirements at identified key decision points
 - Certify that programs/projects comply with Agency health and medical requirements prior to spaceflight missions
 - Assure technical excellence
- Designation of applicable NASA Centers for HMTA implementation and Chief Medical Officer (CMO) appointment
- Center CMO responsible for HMTA implementation for programs and projects at the center
 - JSC HMTA captured in “JSC HMTA Implementation Plan”
- Establishes specifics of dissenting opinion process consistent with NASA procedural requirements

JSC HMTA Implementation



- JSC HMTA Scope
 - Support ISS, Space Shuttle, Constellation, and Human Research Programs
 - JSC CMO responsible for HMTA implementation at JSC
 - Establishes key personnel within SLSD and delegation of authority
 - Management representatives, HMTA delegates, and technical expertise
- JSC HMTA Responsibilities
 - Assure program/project compliance with Space Flight Human System Standards, Vol 1 and Vol 2, and OCHMO Crewmember Medical Standards
 - Dispositioning appeals of standards and requirements not met by programs or projects
 - Approve changes to, and waivers of requirements that flow from HMTA owned standards
 - Sign CoFR for operational space flight activities
 - Provide a path to escalate serious technical concerns outside of the program/project chain of command, if warranted
 - Periodic review of Agency health and medical standards
 - Coordinate with other Agency TA who have relevant expertise (e.g., human factors)

JSC HMTA and Program/Project Information Flow



CHMO = Chief Health and Medical Officer
 CMO = Chief Medical Officer

- Direct Report
- HMTA Flow and Dissenting Opinion Appeal Adjudication
- Program Authority Flow
- - - - - Dissenting Opinion Appeal Adjudication
- ↔ Interface between the HMTA and Program and Projects

JSC HMTA Implementation



Goals of the JSC Health and Medical Technical Authority are:

- To be an advocate for the Space Life Sciences Directorate's technical experts
- To promote human system integration in all Space Flight Programs
- To provide a route of appeal when technical issues can not be resolved with a Program and the Agency's risk posture is elevated

JSC HMTA Implementation



Two basic functions of the HMTA:

1) Provide discipline expertise to a program or project

2) Provide independent assessments, decisions and an alternate pathway for escalating unresolved technical concerns

JSC HMTA Implementation



1. Provide discipline expertise to a program or project

- a) SLSD is the technical organization that delivers technical expertise to the ISS, STS, Constellation and Human Research Programs and their projects

-) This expertise is funded by the Programs and projects

-) A discipline expert may provide a technical opinion to a Program or project but it is not a formal HMTA position or decision unless rendered by the Chief Medical Officer or an HMTA Delegate

-) Emphasis is on using existing SLSD forums such as the FACB, SCxCB, DCB, and AMB to review issues and develop HMTA positions/opinions/decisions/etc.

JSC HMTA Implementation



2. Provide independent assessments, decisions and an alternate pathway for escalating unresolved technical concerns

- a) These activities are funded with non-program funds**
- b) Specific HMTA positions have been delegated authority and may establish an HMTA position**
 - a) Chief Medical Officer: Jeffrey R. Davis**
 - b) Deputy Chief Medical Officer: J. Michael Duncan**
 - c) Flight Activities Control Board Chair: Craig Stencil**
 - d) SLSD Constellation Control Board Chair: J. Mark Jernigan**
 - e) Orion Human System Integration Lead: Mihriban Whitmore**
 - f) Constellation EVA Lead: Michael L. Richardson**

HMTA Clarification



- **What is the difference between HMTA and SLSD?**
 - HMTA is responsible for providing the technical expertise to programs to conduct their work – this is done through SLSD personnel in various areas of expertise
 - HMTA decision making authority is held by designated individuals within the directorate. Discipline experts may be designated to support specific studies/projects by the CMO and/or HMTA delegates, at which time they will be funded by the HMTA.

Do I speak for the HMTA?

- Certain individuals have been delegated this authority via official memorandum; Delegates and levels of management may speak for the HMTA when issues have been vetted through the HMTA and SLSD processes.

HMTA Clarification



- What does it mean to ask for an HMTA opinion?
 - This is a more formal request from the program for an official position
 - Only the CMO or designated HMTA Delegates may make HMTA decisions; SLSD experts may offer expert opinions, but it is not sanctioned as an HMTA position unless the individual has been delegated Health and Medical Technical Authority
 - To develop an HMTA position/opinion an SLSD expert would use existing division forums to vet an issue and an HMTA position would be the product of the appropriate Directorate forum (if needed this Directorate forum may be convened as an HMTA board)
- When the SLSD technical workforce and a Program disagree, how is the HMTA used to escalate the issue?
 - It is expected that a technical issue will be reviewed and discussed through existing division and Directorate forums and all opportunities to work the issue with the Program will be exhausted before an issue is considered for escalation
 - An HMTA board will be convened to review the issue and rationale for escalation; the CMO, as board chair, will render a decision or recommendation which will be transmitted to the Chief Health and Medical Officer at NASA HQ, including all dissenting opinions

HMTA Clarification



- What kind of authority is delegated to HMTA Delegate?
 - The CMO is authorized to delegate JSC HMTA responsibilities with the concurrence of the CHMO on a case by case basis. Generic delegation of responsibilities are outlined in the JSC HMTA Implementation Plan.
 - Reporting of delegated decisions is critical to have fully coordinated positions within the HMTA. The delegate's responsibility is to work with the Directorate's discipline experts, communicate to the respective board for review and/or concurrence, and provide the CMO with a synthesized report reflecting how the issue was worked, the resulting position, and any dissenting opinions within the Directorate

HMTA Issues at other NASA Centers

- CHMO has delegated HMTA responsibilities to other NASA Centers by identifying a CMO at KSC, ARC, MSFC, and GSFC
- Implementation policy requires coordination of all human space flight HMTA issues through the JSC CMO

JSC HMTA Success



- Effective and regular reporting to OCHMO
- Effective use of Process Based Mission Assurance (PBMA) to communicate with NASA HQ and other Centers and capture HMTA knowledge and documents in a centralized location
- Oversight and Insight capability for 2 flight programs, 1 developmental program, and 1 research program
- Works successfully with project and program managers to resolve issues
- Leverages SLSD infrastructure, division and directorate control boards, to vet issues and address dissenting opinion
- Uses appropriate venues to provide feedback to Programs and projects (CMCs, FRRs, CoFR)

JSC HMTA Challenges



- Inadequate technical insight into Constellation Projects (Orion, Altair, etc.)
 - Orion funding for technical expertise has been significantly reduced; HMTA oversight capability has been compromised
 - Project is aware and issue captured as an IRMA risk
 - Next step is to address issue with the Cx Program
- ! Adequate visibility within existing flight programs
 - SSP and ISS recognize SLSD and HMTA on CoFR but need adequate resources to cover multiple flight boards
- ! Ability to fund independent analysis is limited



Back Up

JSC HMTA Implementation Plan: Reporting Requirements



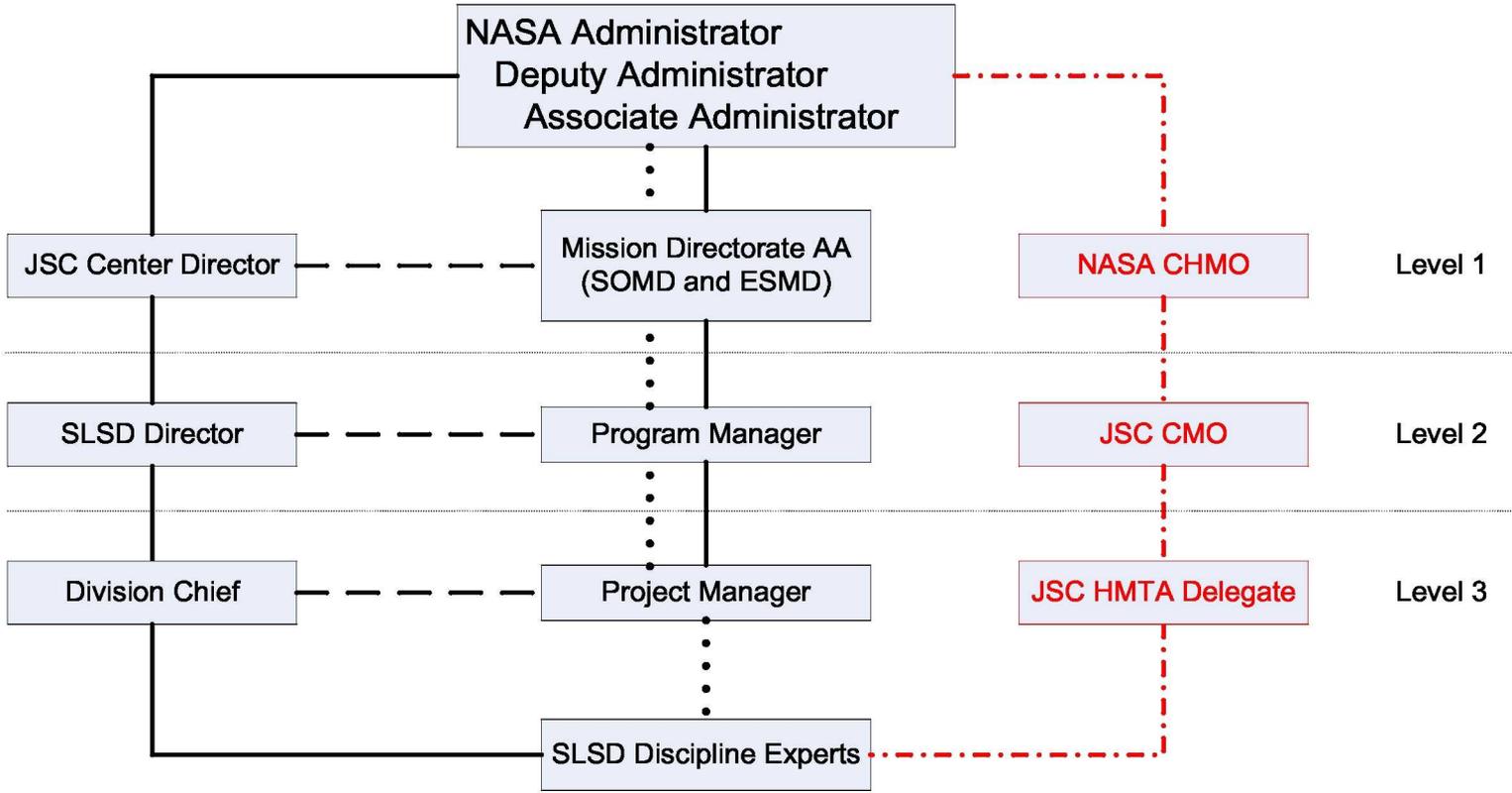
- The JSC CMO provides quarterly reporting to the CHMO and ad hoc reporting as warranted
 - Dispositions for waivers, exceptions, deviations and CRs
 - Certification of Flight Readiness Endorsements
 - Program status and issues, including Multilateral Space Medicine Board and Aerospace Medicine Board updates
 - Any status regarding ongoing work to improve agency level standards
- The following will be reported to the CHMO on an annual basis:
 - Annual summary report and budget request for the HRP prior to submission to the Exploration Systems Mission Directorate.



Technical Authority

Organizational Structure

Figure 1: JSC Health and Medical Technical Authority and Program Flow



CHMO = Chief Health and Medical Officer
CMO = Chief Medical Officer

- Direct Report
- HMTA Flow and Dissenting Opinion Appeal Adjudication
- Program Authority Flow
- - - - - Dissenting Opinion Appeal Adjudication