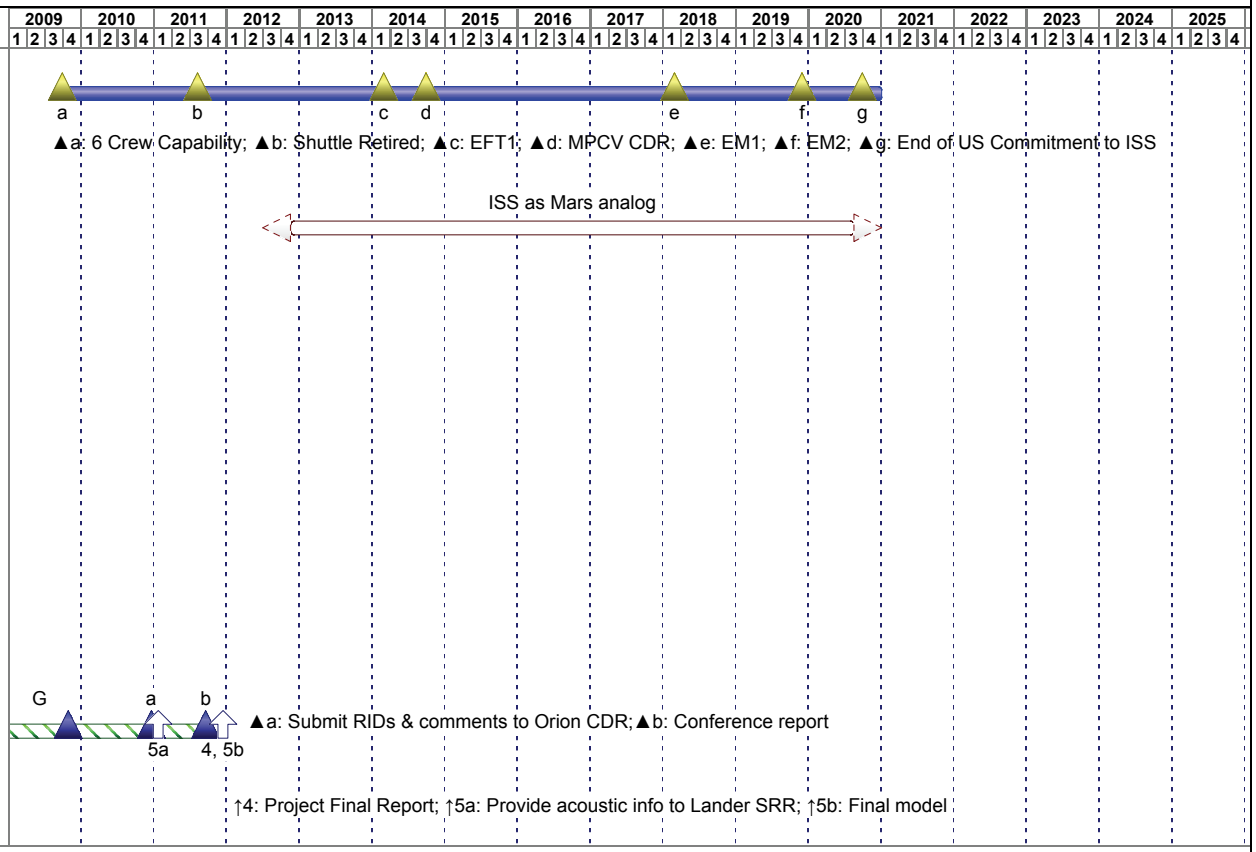
G: Ground Study	**Early Start**	**6) Technology**
F: Flight Study	**Task To Be Determined After Decision Point**	**7) Countermeasure**
L: Lunar	**Major Milestone/Event/Accomplishment**	**8) Information To/From other Elements**
NSBRI	**1) Risk Characterization**	**9) Information to HSRB**
DA&M: Data Analysis & Modeling	**2) Task↓↑Task**	**10) Requirements**
FP: Flight Prep	**3) Standards - New**	**11) Study**
AO: Add on to another study	**4) Standards - Update**	**Stop**
Planned/unfunded	**5) Tools**	**Major Decision Point**

Task Name

ISS and other vehicles



Space Human Factors Engineering (SHFE)

RISK OF AN INCOMPATIBLE VEHICLE / HABITAT DESIGN

SHFE-HAB-01: What validated acoustic model can predict the effects of structures, materials, crew and equipment on the acoustic environment of a spacecraft or habitat? (formerly SHFE 2.1.9.1)

Acoustics: Spacecraft Internal Acoustic Environment Modeling (Directed)

Task Name

2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022 2023 2024 2025

ISS and other vehicles

a b c d e f g

▲a: 6 Crew Capability; ▲b: Shuttle Retired; ▲c: EFT1; ▲d: MPCV CDR; ▲e: EM1; ▲f: EM2; ▲g: End of US Commitment to ISS

ISS as Mars analog

Space Human Factors Engineering (SHFE)

RISK OF AN INCOMPATIBLE VEHICLE / HABITAT DESIGN

SHFE-HAB-02: What tools can be used to evaluate habitability concepts for on-orbit and planetary missions?

Hab Asmt: Habitability -Human Factors and Habitability Assessment Tool (Directed-in review)

▲a: Analog Study findings report; ▲b: Report documenting findings from NEEMO testing of SHORT

↑1: Project Interim Report; ↑5a: Tool demonstration for stakeholder

a b 5a 1 5b

↑5b: Final Report

Analysis tools for ISS Performance Data (Solicit)

G

Analysis tools/models

5

Review of Gap Status

Task Name

2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022 2023 2024 2025

ISS and other vehicles

a b c d e f g

▲a: 6 Crew Capability; ▲b: Shuttle Retired; ▲c: EFT1; ▲d: MPCV CDR; ▲e: EM1; ▲f: EM2; ▲g: End of US Commitment to ISS

ISS as Mars analog

Space Human Factors Engineering (SHFE)

RISK OF AN INCOMPATIBLE VEHICLE / HABITAT DESIGN

SHFE-HAB-03: How can we determine the effects of combined vibration and acceleration on task performance?

SDBI 1904 –Human Factors Assessment of Vibration Effects on Visual Performance during Launch (SDBI)

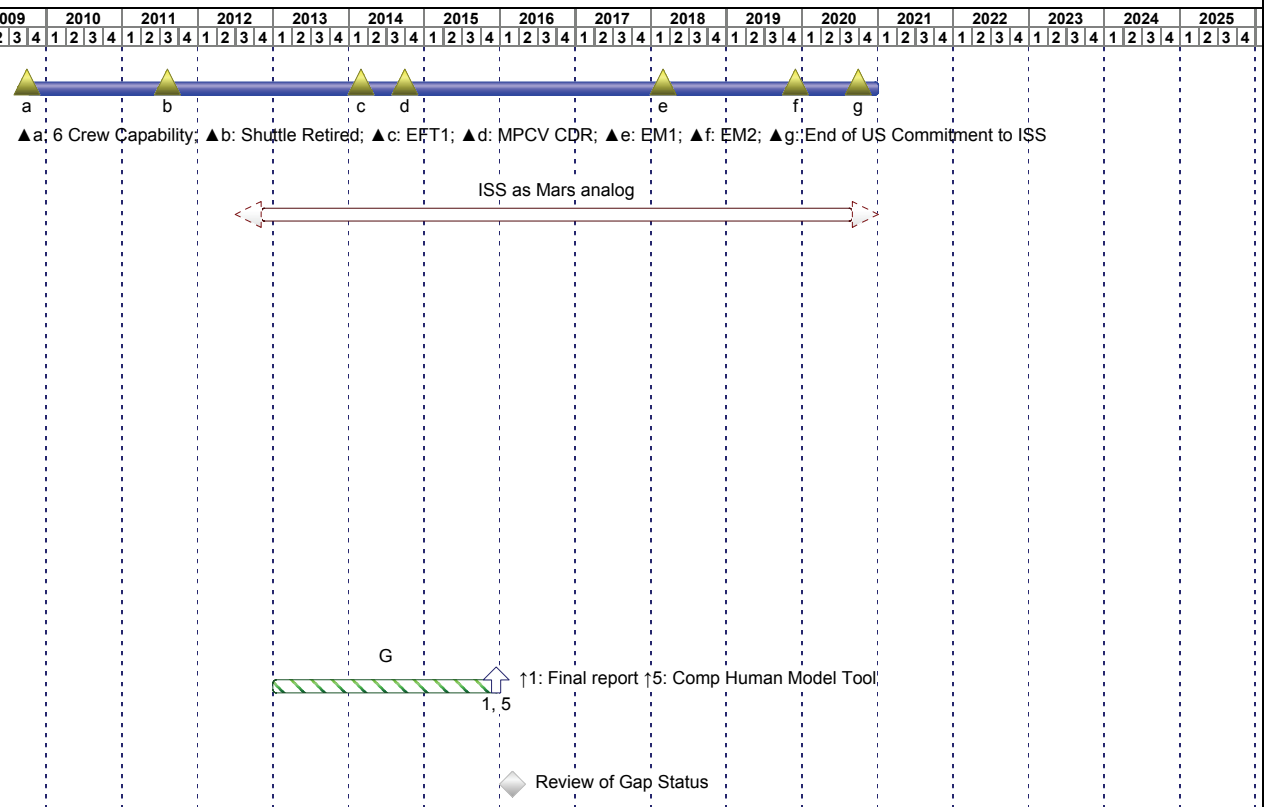
DA&M ↑3: Recommendations to NASA & HIDH; ↑10: Informing Mission Ops

▲a :Final report on SDBI 1904 results; ▲b: Report on peak vs extended vibration; ▲c: Final study report to stakeholder

10 a b 3,10,▲c

Task Name

ISS and other vehicles



Space Human Factors Engineering (SHFE)

RISK OF AN INCOMPATIBLE VEHICLE / HABITAT DESIGN

SHFE-HAB-04: How can existing models be modified to adequately represent the specified user population (e.g. field of view, visibility) in reduced gravity and be portable to other simulations environments?

Computational Human Modeling as a Habitability Assessment Tool (Solicit)

Task Name

ISS and other vehicles

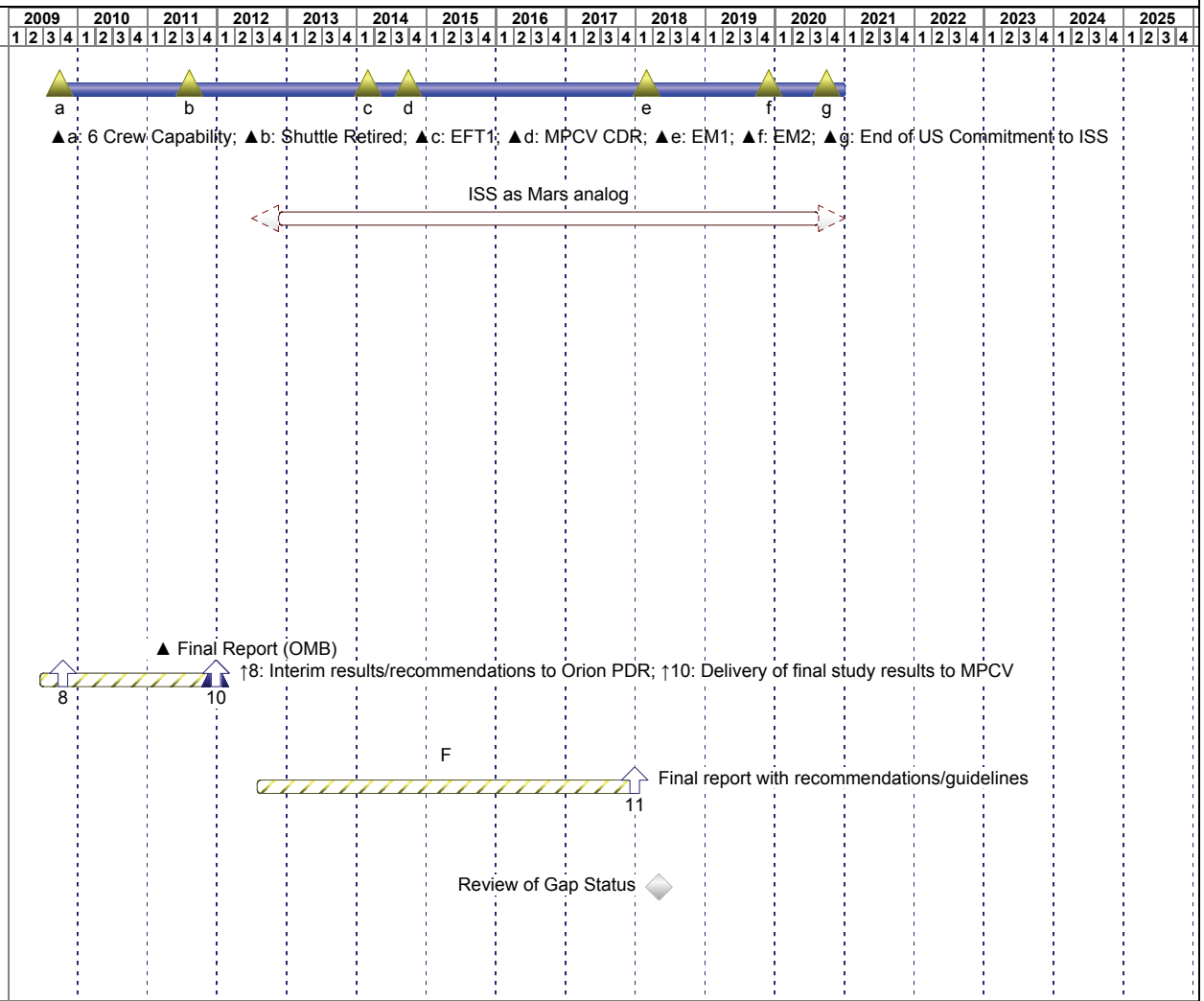
Space Human Factors Engineering (SHFE)

RISK OF AN INCOMPATIBLE VEHICLE / HABITAT DESIGN

SHFE-HAB-05: What is the effect of microgravity on spinal elongation?

Spinal: Spinal Elongation and Its Effects on Seated Height in a Microgravity Environment (Directed)

Quantification of In-flight Physical Changes - Anthropometry and Neutral Body Posture (NBP) - In Review



Task Name

2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022 2023 2024 2025

ISS and other vehicles

a b c d e f g

▲a: 6 Crew Capability; ▲b: Shuttle Retired; ▲c: EFT1; ▲d: MPCV CDR; ▲e: EM1; ▲f: EM2; ▲g: End of US Commitment to ISS

ISS as Mars analog

Space Human Factors Engineering (SHFE)

RISK OF AN INCOMPATIBLE VEHICLE / HABITAT DESIGN

SHFE-HAB-06: How can crews easily document human factors related issues that occur on orbit?

Semantic Language and Tools for Reporting Human Factors Incidents (SBIR)

Phase II

G

5

▲: Prelim database tool completed; ↑5: Incident Reporting software prototype delivered

Decision Point: Determination if database tool design task requires additional development? (Continue to Phase III)

No → Stop

Yes↓ Does database tool require additional development?

Continue to Phase III

Phase III

Refine prototype

Planned/unfunded