

COE CST First Annual Technical Meeting:

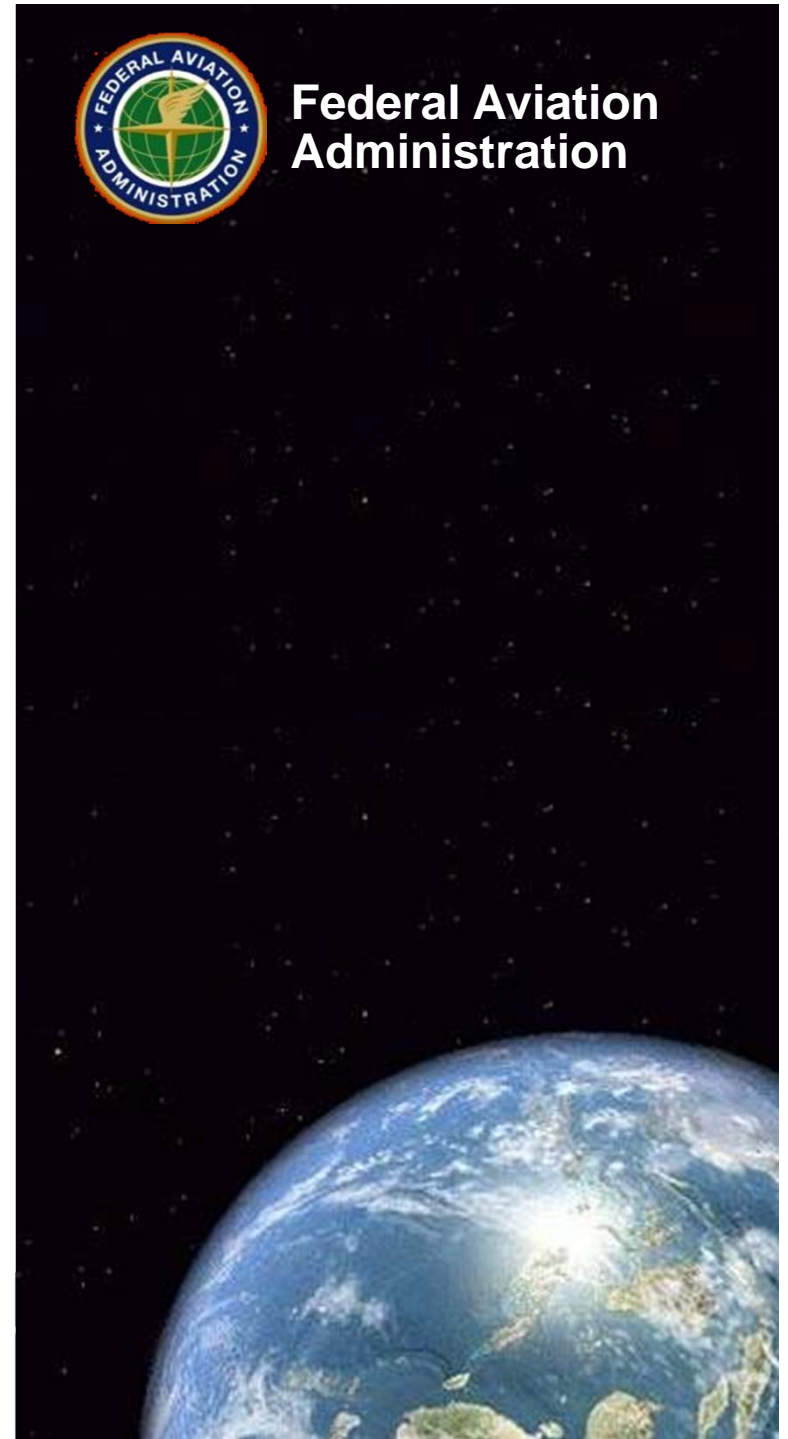
2. Human System Risk Management Approach

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**Federal Aviation
Administration**



Overview

- Team Members
- Purpose of Task
- Research Methodology
- Schedule & Milestones
- Results
- Next Steps
- Contact Information



Team Members

- UTMB
 - Jim Vanderploeg, MD – PI
 - Richard Jennings, MD – Co-I
 - Jennifer Law, MD – Resident in Aerospace Med
 - Charles Mathers, MD – Resident in Aerosp Med
- Wyle Integrated Science & Engineering
 - Eric Kerstman, MD
- NASA Johnson Space Center
 - Multiple participants

Purpose of Task

- Purpose
 - Investigate the feasibility of applying the JSC Human System Risk Management approach for long-duration spaceflight to commercial suborbital and short duration orbital spaceflight
- Objectives
 - Select subset of risks appropriate for commercial spaceflight
 - Quantify the health and performance risk
 - Define mitigation strategies

Research Methodology

- Sources of Information:
 - NASA Human Research Roadmap (HRR)
 - Historical Human Spaceflight Data
 - Integrated Medical Model
- Thirty-one operationally focused risks defined in HRR Program Requirements Document
- Integrated Research Plan and Evidence Book (IRD) details activities to fill the knowledge and mitigation gaps

Research Methodology - 2

- Assign level of concern for each risk applicable to commercial flight

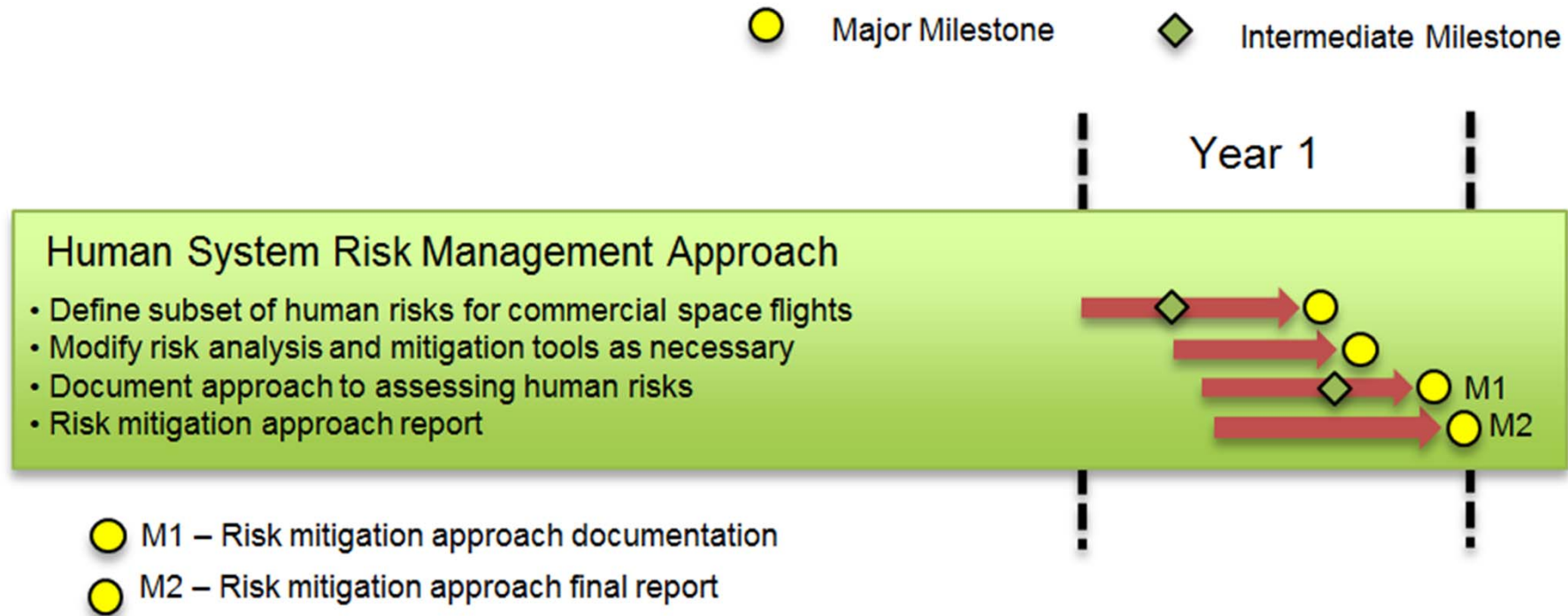
Concern Level	Crew	Passengers
Definite	3	4
Possible	21	21
Least	7	6

- Develop risk mitigation strategies for each definite and possible concern

Example

- Risk: Abnormal cardiac rhythm
- Rationale:
 - Passengers in poorer health with history of heart problems
 - Reduced cardiac function
 - Increased risk of cardiac arrest
- Mitigation:
 - Pre-screening to identify
 - Pre-treatment to eliminate or control arrhythmia
 - Pre-flight testing/training under simulated environment (centrifuge and/or Zero-G flight)

Schedule & Milestones



Results

- Thirty-one risks have been identified and categorized
- Twenty-four risks for crew members and 25 for passengers are being evaluated for mitigation strategies
- Draft report is under review

Next Steps

- Complete the final report for submission to the FAA Office of Commercial Space Transportation
- Consider publication in peer-reviewed medical journal
- Follow-on project to create software system to identify and categorize risks and define mitigation strategies

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