

D. Johnson Space Center (JSC)

1. Human Exploration Range Safety Panel (HERSP)

The Human Exploration Range Safety Panel (HERSP) was formally chartered in 2012 to manage range safety activities for Space Launch Systems, Multi-Purpose Crew Vehicle/Orion, and Ground Systems Development and Operations Programs within the Human Exploration and Operations Mission Directorate. The HERSP works technical issues through its three associated working groups: Flight Analysis, Flight Safety System, and Range Ground. The HERSP also produced and delivered the Program Introduction for Orion/SLS Exploration Missions (EM) allowing the initiation of requirements tailoring with the Eastern Range.

2. Morpheus

The Morpheus Project provides an integrated vertical test bed platform for advancing multiple subsystem technologies. Morpheus is designed to integrate and demonstrate two key technologies. The first is a LOX / liquid methane propulsion system, and the second technology is autonomous landing and hazard avoidance. After extensive tethered and hot fire testing at JSC in 2012, the vehicle was taken to KSC for free flight testing. On the second free flight, the vehicle lost control and crashed. An investigation indicated that the vehicle had a loss of the inertial reference most probably due to operation of the Space Integrated GPS/INS (SIGI) outside its vibroacoustic certification at launch. Morpheus 1.5B is under construction and will be test fired at JSC in the late spring of 2013. All free flight tests will again occur at KSC.



FIGURE 25: MORPHEUS TEST FIRING

3. Multi-Purpose Crew Vehicle (MPCV) Ascent Abort 2 (AA-2) Flight Test

The MPCV Flight Test Management Office identified range safety as a discipline of focus for advancing AA-2. In 2012, range safety personnel, roles, and responsibilities were established along with a schedule for addressing AA-2 range safety issues in the next year. The range flight safety analysis completed for this flight test will be extremely valuable in defining analysis expectations and methodologies that will be employed for future MPCV analyses for EM missions.

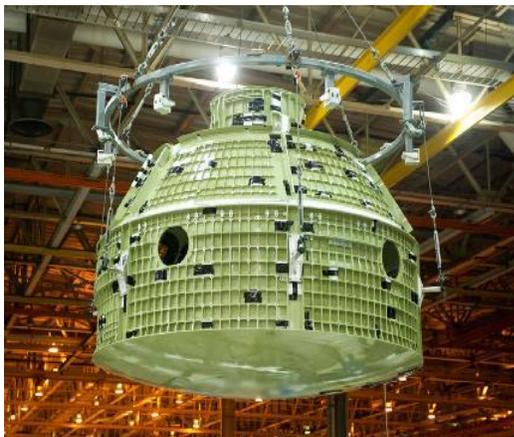


FIGURE 26: MULTI-PURPOSE CREW VEHICLE

4. MPCV Exploration Flight Test 1 (EFT-1)

JSC continued to provide range safety expertise to the broader EFT-1 team, supporting regular safety meetings and reviewing analysis products, as focus has begun to shift towards operations ahead of the upcoming flight test. In addition, JSC personnel collaborated with the FAA to facilitate

steps in the commercial licensing process and develop a better understanding of the unique licensing aspects of this flight.