Collaborating With Industry at KSC

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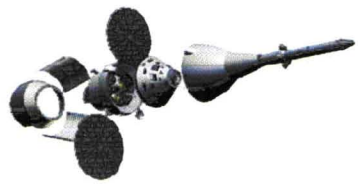
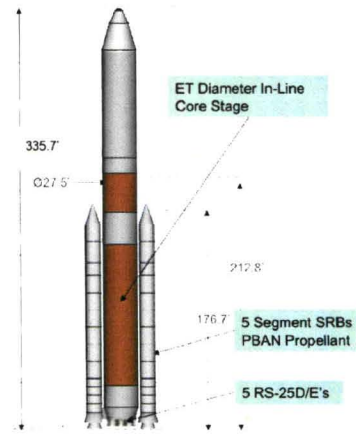
Agenda

- **Human Exploration Capability**
- **Commercial Crew**
- **Introduction to New Business at KSC**
  - **S&MA Involvement in Agreement Development**
  - **Explosive Hazards "Rule of Thumb"**
  - **Update to KNPR 8715.3, KSC Safety Practices Procedural Requirements**

Human Exploration and Operations

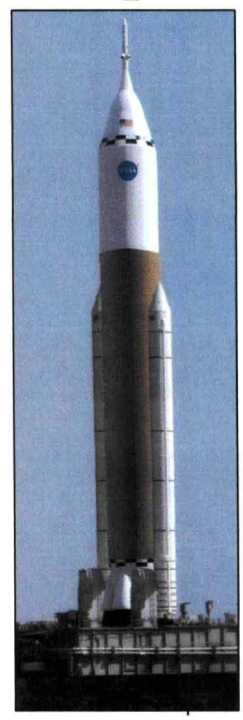
- Human Exploration Capability
  - Space Launch System Program
  - Multi-Purpose Crew Vehicle Program
  - Ground Operations
- Commercial Spaceflight
  - Commercial Crew Development





Human Exploration Capability

- The Human Exploration Capability (HEC) theme will develop the launch and spaceflight vehicles that will provide the initial capability for crewed exploration missions beyond LEO
  - SLS – Government and industry analysis of multiple launch vehicle architectures
  - MPCV – Continue with existing Orion development plans
  - GO – Ground operations planning, 21st century launch complex



Multi-Purpose Crew Vehicle

- **NASA has selected the beyond-LEO version of the Orion design ("block 2") as the MPCV Reference Vehicle Design**
  - **Spacecraft to serve as the primary crew vehicle for missions beyond LEO**
  - **Capable of conducting regular in-space operations (rendezvous, docking, extravehicular activity [EVA]) in conjunction with payloads delivered by SLS for missions beyond LEO**
- **Preliminary trace of top-level MPCV requirements suggests that MPCV is within scope of current Orion contract**
- **Final decisions on NASA's plans for the MPCV will be made during the Acquisition Strategy review process by Summer 2011**

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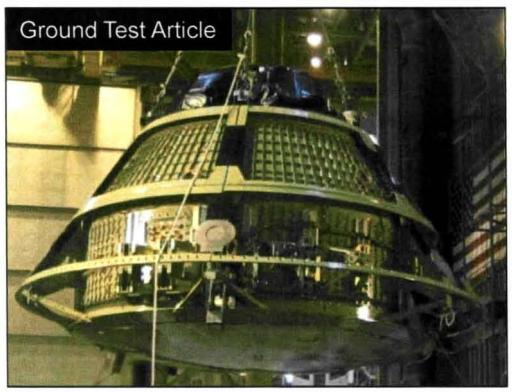
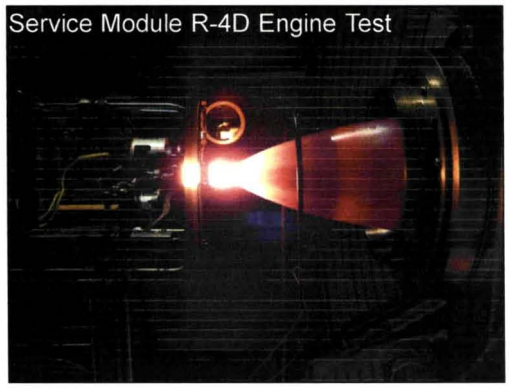
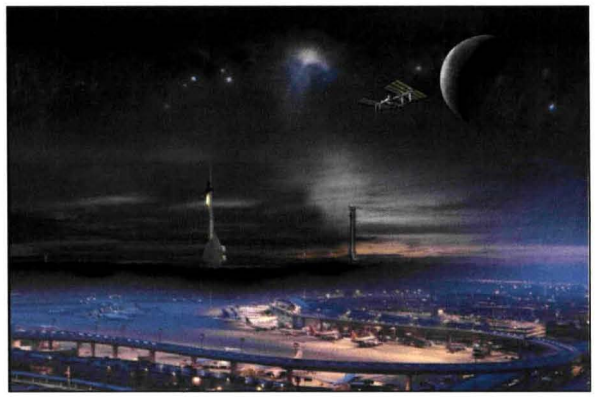
Multi-Purpose Crew Vehicle





Commercial Spaceflight

- The Commercial Spaceflight theme provides incentives for commercial providers to develop and operate safe, reliable and affordable commercial systems to transport crew and cargo to and from the ISS and LEO
- In FY 2012, activities will transition from completing commercial cargo capability milestones to expanding NASA's efforts to develop commercial crew capability to the ISS and LEO
- Objectives of Commercial Crew:
  - Facilitate the development of a U.S. commercial crew space transportation capability with the goal of achieving safe, reliable and cost effective access to and from LEO and the ISS
  - Once the capability is matured and expected to be available to the Government and other customers, NASA could purchase commercial services to meet its ISS crew transportation needs



Introduction to New Business at KSC

KSC Support for New Business

- Center Planning and Development Office
  - The Center Planning & Development Office is the "Front Door" for any new development and partnerships with external customers.
  - Mission: The mission of the KSC Center Planning and Development Office is to form partnerships with industry, government and academia utilizing our institutional assets and technical capabilities to support the center's current and future missions.
- KSC Safety and Mission Assurance Integration Division houses the S&MA New Business Coordinator
  - Primary point of contact for S&MA input into new business opportunities
  - Goal is to get involved as early as possible/reasonable to make sure the proper safety considerations are included in the agreements.

Types of Partnerships

- KSC is working with over 50 companies to determine interest in and appropriate use of KSC assets and technical capabilities
  - Phases of Partnerships
    - Assessment
    - Formulation
    - Implementation
  - Examples of Potential Partnerships
    - One-time use of a facility
    - One-time use of technical capabilities
    - One-time use of test equipment
    - Extended use of any of the above capabilities
    - Transfer of facilities for commercial space operations
- KSC Released a "Notice of Availability" on January 24 to support commercial partnership activity
  - Purpose is to identify potential interest in and proposed uses for, some agency real property assets located at KSC
  - Received 27 responses so far

S&MA Involvement in Agreement Development

Safety Requirements

- In the past, we would place all of the KSC safety requirements on the partner coming onto the Center
- If given the opportunity, we like to use more rigor to determine what safety requirements are truly necessary based on the activities
- KSC S&MA goal is to levy the minimum possible number of KSC specific ground safety requirements on commercial companies since they are responsible for the protection of their own personnel and property.
  - KSC has the responsibility to protect NASA personnel (including NASA contractors and visitors) and NASA property

Explosive Hazards "Rule of Thumb"

QD Analysis

- **KSC S&MA developed a "Rule of Thumb" for quantities allowed in the Orbiter Processing Facilities (OPFs) without impacting surrounding facilities**
  - **Using the NASA Safety Standard for Explosives, Propellants, and Pyrotechnics (NASA-STD-8719.12)**
    - **Using the standard tables within the document**
    - **Explosive hazard only, not including toxics or acoustics**
- **If greater quantities are requested in the facilities, further analysis and mitigation will be required.**

INHABITED BUILDING DISTANCES FOR OPF 1, 2 & 3

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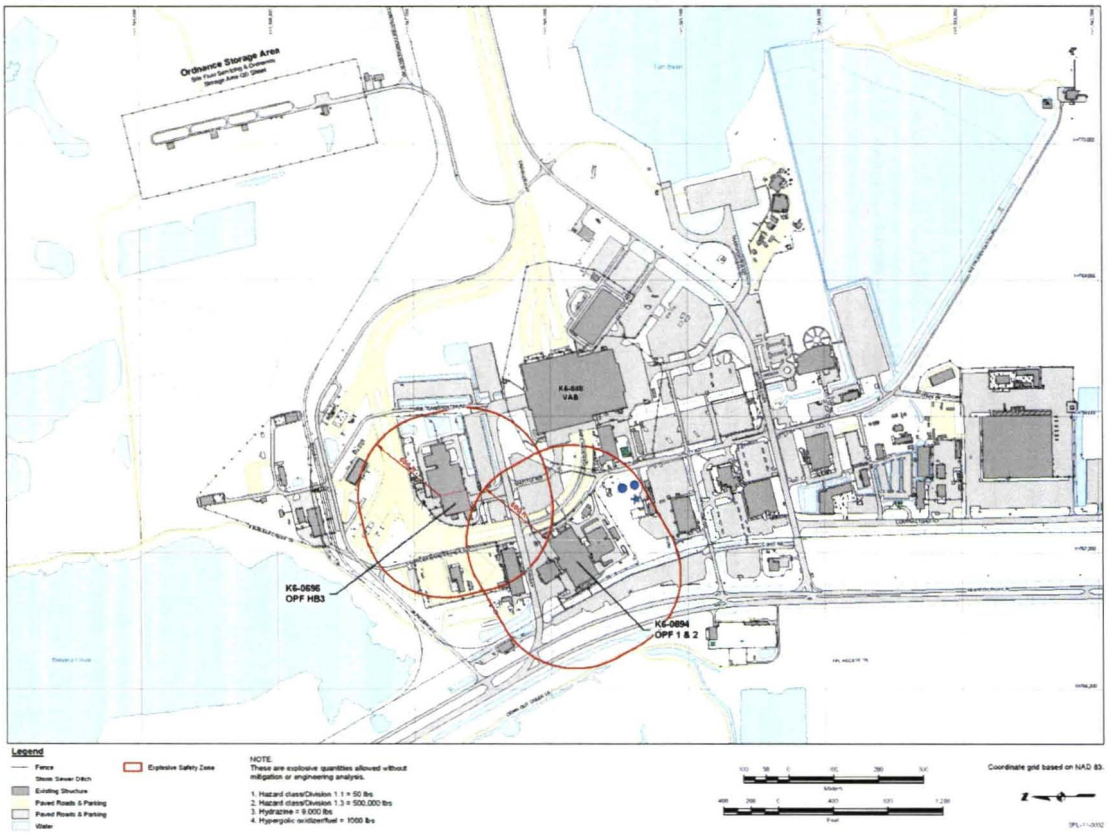
JAN 11



Maximum Quantities Allowed

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Commodity	Amount
Hazard Class/Division 1.1 e.g., Destruct Shape Charge	50 lbs
Hazard Class/Division 1.3 e.g., Solid Rocket Booster Propellant	500,000 lbs
Hydrazine	9,000 lbs
Hypergolic Oxidizer/Fuel	1,000 lbs

Note: This addresses the explosive hazards, it does not encompass all hazards.

Update to KNPR 8715.3, KSC Safety Practices Procedural Requirements

Background

- Eliminating repetitive requirements
- Documenting rationale
- Results of the Executive Safety Forum Safety Culture Discussion Group
- Future business at Kennedy Space Center

- SA is "scrubbing" the KSC safety policy, so they are applicable to the changing environment

Goals

- Provide rationale for safety requirements
- Eliminate unnecessary requirements
- Better define requirements
- Ensure proper flow-down of Agency requirements
- Define applicability
- Consolidate safety documentation
- Add anything that is missing
- Re-structure the document
  - Preliminary concept is to organize based on applicability
    - Civil Service
    - Contractors (Prime, Construction, Support, etc.)
    - Tenants
      - Single use facility
      - Joint use facility
    - Combinations
  - Once the team has evaluated the requirements, the structure will be evaluated to best suit the situation.

Questions