Orion’s Maiden Flight Test: Exploration Flight Test 1 (EFT-1)
December 5, 2014

Paul M. Anderson
Lockheed Martin Space Systems Company
University of Colorado - Boulder
November 29, 2016
ORION

Launch Abort System

Crew Module

Service Module

Spacecraft Adapter

Spacecraft Adapter Jettison Panels
EXPLORATION MISSION TIMELINE

May 2010
PA-1
Dec. 2014
EFT-1
EM-1
AA2
EM-2
SEPARATION EVENTS
17 Events
Start 6 minutes after launch
Continue throughout the flight

HEAT SHIELD
1.6 inches thick
Mass erodes by 20% during reentry

RADIATION
Vehicle travels 15 times farther than ISS
Flight passes through Van Allen radiation belts

PARACHUTES
Vehicle must slow down from 20,000 MPH to 20 MPH
11 Parachutes total, 8 for crew module
Deployment starts at 300 MPH
EXPLORATION MISSION TIMELINE

- May 2010: PA-1
- Dec. 2014: EFT-1
- EM-1
- AA2
- EM-2
BEYOND EARTH ORBIT CREW SAFETY COMPLEXITY

45 MINUTES TO EARTH

5 TO 11 DAYS TO EARTH
ORION IS BUILT FOR GOING BEYOND EARTH ORBIT

- **OXYGEN**
  - BEO: 190 L
  - LEO: 36 L

- **PROPELLANT**
  - BEO: 40 L
  - LEO: 40 L

- **FOOD**
  - BEO: 14.8 ft³
  - LEO: 2.8 ft³

- **DRINKING WATER**
  - BEO: 14.8 L
  - LEO: 36 L

- **REENTRY SPEED**
  - BEO: 11.2 km/sec
  - LEO: 7.8 km/sec

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- **ADVANCED CARBON DIOXIDE REMOVAL SYSTEM**
  - BEO: 14.8 ft³
  - LEO: 2.8 ft³

- **CARBON DIOXIDE**
  - FILTER
    - BEO: 42
    - LEO: 8
  - WATER
    - BEO: 210 L
    - LEO: 40 L

- **RADIATION SHIELDING**
  - BEO
  - ISS

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- **RADIATION SHIELDING**
  - BEO
  - ISS
ORION CONTINUES INTERNATIONAL PARTNERSHIPS
FIRST STEP TO MARS

#JOURNEYTOMARS
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