PROCESSING FLOWS
VOLUME 3 OF 5
MARCH 7, 1986
FINAL REPORT
KENNEDY SPACE CENTER
NAS10-11165
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OTV PROCESSING FLOWS

and

REQUIREMENTS IDENTIFICATION SHEETS (RIS's)
The ground based flow was developed first because it could, initially, follow the lines of current processing practices at the KSC launch site. The space based flow was laid out in a similar fashion using the same primary task numbers to facilitate a direct correlation between space based and ground based activities. Several tasks are different, of course, either because of the zero "G" environment or because of the nature of the structure of the Space Station itself. Large cranes and tugs, for example, serve no purpose in space but an MRMS (Mobile Remote Manipulating System) will be used extensively during recovery, deployment, or moves at the Station itself. Another example of the cause for differences between ground and space based flows would be in the propellant tanking activity. The propellant storage area tanks are in the basic Station structure so the vehicle is loaded with cryos before it moved to the launch site rather than after, as is the normal operation on the ground.

If a major task box is not used, that task box and number are just left out. If a new SBOTV task is added, it is associated with an existing major task box and identified as a new subtask by using a new decimal number within the block where it is added. As indicated above, the tasks may not run in the same sequence as for the GBOTV so the major task numbers for the SBOTV flow may not be sequential nor are all the GBOTV tasks used.

These facts alone lead to some elemental test optimization for the GBOTV. If the function is not used for the SBOTV then one must justify the addition of that item for the GBOTV or else delete it. In this fashion, the accomplishment of the necessities of Space processing can be first performed on the ground -- and be debugged in a more "test crew friendly" environment before being committed to space operations.
The flows were reviewed in detail and several potential candidates were identified in this manner for either deletion or else as items that could be deleted after first use where system integrity; eg., the cryo load test; and/or system compatibility; eg., the Cite test; had been satisfactorily performed and demonstrated. These items were identified as such on the flows in the Appendices. Additional savings may be available as a result of changes in test practices or as a result of the specific hardware in use at the time actual operations start. One should expect several iterations of these flows will be required before a final flow is evolved and approved. Whatever the flow configuration is, it must make: 1) a successful Space Based Operation possible, 2) provide for the transition of those needs to the Ground Based Operation as a set of basic requirements, and 3) provide for the orderly transition of those successfully demonstrated operations from Ground Based to Space Based Operations.

These two sets of analyses -- Flows and RIS's -- for the GBOTV and for the SBOTV-- are the primary source of information for the rest of the KSC OTV Launch Operations Study. Work to identify KSC facility requirements for the OTV Program, simplify or automate either flow thru the application of automation technology, revise test practices and identify crew sizes or skills used these flows as the primary point of departure from current operations and practices. Analyses results were documented by revising the appropriate RIS page. The latest results of those analyses are the material included in the Appendices to this document.
APPENDIX A

GROUND BASED ORBITAL TRANSFER VEHICLE FLOW
NOTES:

A. BATTERY AND ORDNANCE -- REQUIREMENTS AND TYPE PRESENTLY UNDEFINED.
   INSTALLATION OF EITHER OR BOTH COULD OCCUR ELSEWHERE. DESIGN OBJECTIVE
   SHOULD BE -- IF THE FUNCTION IS REQUIRED, IT SHOULD BE ACCOMPLISHED OFFLINE.

B. SC PROCESSING REQUIREMENTS IN PCR COULD INFLUENCE TOTAL FLOW TIME.

C. RCS REQUIREMENTS ARE NOT FIRM. DESIGN OBJECTIVE SHOULD BE TO ACCOMPLISH OFFLINE.

D. DESIGN OBJECTIVE SHOULD BE TO ELIMINATE ANY OTV ACCESS REQUIREMENTS IN PLB AFTER PLB INSERTION.

E. OTV REENTRY BRAKING DEVICE PROCESSING -- TBD

SAME TASK AND NUMBER IN SPACE BASED REFERENCE FLOW

SUBJECT TO DELETION FOR OPERATIONAL EFFICIENCIES
APPENDIX B

GROUND BASED RESOURCE IDENTIFICATION SHEETS
The following Ground Based Resource Identification Sheets (RIS's), have defined the OTV processing flow in 39 separate tasks. These tasks (1 thru 39) are detailed further to provide specific manpower and facility requirements by individual subtasks of the OTV processing flow.

The RIS for each subtask is divided into 3 sections; Personnel, Facilities, and Equipment Resource Requirements.

The Personnel section details manpower requirements at either the vehicle location or the control station. Along with the manning requirements is the serial time to complete the subtask and the computed total manhours. The Primary and Secondary keys associated with the Automation Technology Knowledge Base (ATKB), have not been keyed at this time.

The Detailed Facility Resources section indicates all the facility requirements for the specific subtask.

The Detailed Equipment Resources section indicates the additional special equipment required to perform a specific subtask.

A legend on the bottom of each sheet provides a description of the data as input to the analysis system. All the fields defined are self explanatory with the exception of those marked (*).

The Ground Based RIS's are presented in numerical order which coincides with the vehicle processing flow.
Detailed Resources Identification

Task No: 1 RECEIVING AND INSPECTION

Subtask No: 1.0100 Descriptions: <TRANSPORTATION LAND>

Activity: TRANSPORT THE OTV TO KSC VIA LAND TRANSPORTATION

<table>
<thead>
<tr>
<th>Personnel:</th>
<th>Control Station</th>
</tr>
</thead>
<tbody>
<tr>
<td>Payload Specialist(s) (0)</td>
<td>(0)</td>
</tr>
<tr>
<td>Engineering</td>
<td>(0)</td>
</tr>
<tr>
<td>Shop</td>
<td>(2)</td>
</tr>
<tr>
<td>Inspector</td>
<td>(1)</td>
</tr>
<tr>
<td>Other</td>
<td>(0)</td>
</tr>
<tr>
<td>Sub Total (3)</td>
<td>Total (3)</td>
</tr>
</tbody>
</table>

Serial Time To Complete: 5760 min

Total Manhours: 288.0

Automation Need: (Primary Key)

Automation Secondary Key(s): 

<table>
<thead>
<tr>
<th>Detailed Facility Resources</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical Size:</td>
</tr>
<tr>
<td>Air Lock: [W/D/H][ft]</td>
</tr>
<tr>
<td>Doors: [W/H][ft]</td>
</tr>
<tr>
<td>High Bay: [W/D/H][ft]</td>
</tr>
</tbody>
</table>

Crane Capacity:

<p>| |</p>
<table>
<thead>
<tr>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>0 Ton 0 Ft.Hook Height</td>
</tr>
</tbody>
</table>

Standard Commercial Power: NA

Cleanliness: OK

Closed Circuit Television: NA

Fuel/Oxidizer Disposal: N

Fire Protection/Deluge(*): A

Lightning Protection: NA

Commercial Telephone: NA

Personnel Airlock: NA

<table>
<thead>
<tr>
<th>Detailed Equipment Resources</th>
</tr>
</thead>
<tbody>
<tr>
<td>Special Tool Kit: NA</td>
</tr>
<tr>
<td>Breakout Boxes: NA</td>
</tr>
<tr>
<td>Air Pallet: NA</td>
</tr>
<tr>
<td>NASA Canister: NA</td>
</tr>
<tr>
<td>OTV Adapter: NA</td>
</tr>
<tr>
<td>Adapter Cables: NA</td>
</tr>
<tr>
<td>Ground Power Unit: NA</td>
</tr>
<tr>
<td>Work Stands: NA</td>
</tr>
<tr>
<td>Special Hoisting Equip: NA</td>
</tr>
<tr>
<td>OTV Canister: NA</td>
</tr>
</tbody>
</table>

(*) Legend For Data Input

<table>
<thead>
<tr>
<th>Fire Protection/Delage(*)</th>
<th>RF System(*)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A: fire protection</td>
<td>A: S Band &amp; C Band</td>
</tr>
<tr>
<td>or B: deluge</td>
<td>or B: Ku Band</td>
</tr>
<tr>
<td>or C: both</td>
<td>or C: both</td>
</tr>
<tr>
<td>or N: none</td>
<td>or N: none</td>
</tr>
</tbody>
</table>

Hazard Level:= 1: None

Others:= Y: Yes

or 2: Local Clear

or 3: Area Clear

or 4: Facility Clear

TD: To Be Determined
### Detailed Resources Identification

**Task No:** 1  **RECEIVING AND INSPECTION**

Subtask No: < 1.0200>  **Description:** <TRANSPORTATION BARGE >

Hazard Level(*): 1  **None**  
Activity: TRANSPORT THE OTV TO KSC VIA BARGE TRANSPORTATION

**Personnel:**

<table>
<thead>
<tr>
<th>Vehicle</th>
<th>Control Station</th>
</tr>
</thead>
<tbody>
<tr>
<td>Payload Specialist(s)</td>
<td>(0)</td>
</tr>
<tr>
<td>Engineering</td>
<td>(0)</td>
</tr>
<tr>
<td>Shop</td>
<td>(0)</td>
</tr>
<tr>
<td>Inspector</td>
<td>(1)</td>
</tr>
<tr>
<td>Other</td>
<td>(0)</td>
</tr>
<tr>
<td><strong>Sub Total</strong></td>
<td>(3)</td>
</tr>
</tbody>
</table>

**Serial Time To Complete:** 5760 min  **Total Manhours:** (288.0)

**Automation Need:** (Primary Key)

**Automation Secondary Key(s):**

- (3)

### Detailed Facility Resources

**Physical Size:**

<table>
<thead>
<tr>
<th>Air Lock</th>
<th>[W/D/H][ft]</th>
<th>Crane Capacity</th>
<th>[T][ft]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Doors</td>
<td>[H][ft]</td>
<td>0 Ton</td>
<td>0 Ft.Hook Height</td>
</tr>
<tr>
<td>High Boy</td>
<td>[W/D/H][ft]</td>
<td>0 Ton</td>
<td>0 Ft.Hook Height</td>
</tr>
</tbody>
</table>

**Standard Commercial Power:** NA  **Instrumentation Power [Uninterrupted]:** NA

**Cleanliness:** OK  **E.C.S:** Humidity: $0 +/− 0\%$  **Temperature:** $0 +/− 0 F$

**Closed Circuit Television:** NA  **Power Cutoff:** NA  **Facility GN2:** NA

**Fuel/Oxidizer Disposal:** N  **Helium Supply:** NA  **Shop Air:** NA

**Fire Protection/Deluge(*):** A  **Shower/Eye Wash:** NA  **Vacuum:** NA

**Lightning Protection:** NA  **Potable Water:** NA  **Paging:** NA

**Commercial Telephone:** NA  **RF System(*):** N  **OIS:** NA

**Personnel Airlock:** NA  **Grounding:** Y  **Explosion Proof:** NA

### Detailed Equipment Resources

<table>
<thead>
<tr>
<th>Special Tool Kit</th>
<th>Slings</th>
<th>OTV Adapter</th>
<th>NASA Canister</th>
</tr>
</thead>
<tbody>
<tr>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Breakout Boxes</th>
<th>Adapter Cables</th>
<th>Ground Power Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>NA</td>
<td>NA</td>
<td>NA</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Air Pallet</th>
<th>Work Stands</th>
<th>Special Hoisting Equip</th>
</tr>
</thead>
<tbody>
<tr>
<td>NA</td>
<td>NA</td>
<td>NA</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>NASA Canister</th>
<th>OTV Canister</th>
</tr>
</thead>
<tbody>
<tr>
<td>NA</td>
<td>NA</td>
</tr>
</tbody>
</table>

(* ) Legend For Data Input

**Fire Protection/Deluge:**

- A: fire protection
- B: deluge
- C: both
- N: none

**Hazard Level:**

- 1: None
- 2: Local Clear
- 3: Area Clear
- 4: Facility Clear

**Others:**

- Y: Yes
- N: No

**Not Applicable:**

- TD: To Be Determined
Detailed Resources Identification

Task No: 1 RECEIVING AND INSPECTION

Subtask No: < 1.0500> Description: <TRANSPORTATION AIR>

Hazard Level(s): 1 None
Activity: TRANSPORT THE OTV TO KSC VIA AIR TRANSPORTATION

Personnel:

<table>
<thead>
<tr>
<th>Vehicle</th>
<th>Control Station</th>
</tr>
</thead>
<tbody>
<tr>
<td>Payload Specialist(s)</td>
<td>(0)</td>
</tr>
<tr>
<td>Engineering</td>
<td>(0)</td>
</tr>
<tr>
<td>Shop</td>
<td>(1)</td>
</tr>
<tr>
<td>Inspector</td>
<td>(0)</td>
</tr>
<tr>
<td>Other</td>
<td>(2)</td>
</tr>
<tr>
<td>Sub Total</td>
<td>(2)</td>
</tr>
</tbody>
</table>

Serial Time To Complete: 480 min  
Total Manhours: 16.0

Automation Need: (Primary Key)

Automation Secondary Key(s)

Detailed Facility Resources

<table>
<thead>
<tr>
<th>Physical Size:</th>
<th>Crane Capacity:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air Lock: 0 0 0 [W/D/H][ft] 0 Ton 0 Ft.Hook Height</td>
<td></td>
</tr>
<tr>
<td>Doors: 0 0 [W/H][ft]</td>
<td></td>
</tr>
<tr>
<td>High Bay: 0 0 0 [W/D/H][ft] 0 Ton 0 Ft.Hook Height</td>
<td></td>
</tr>
</tbody>
</table>

Standard Commercial Power: NA  
Instrumentation Power [Uninterrupted]: NA

Cleanliness: OK  
E.C.S: Humidity: 0 +/-% 0 %  
Temperature: 0 +/-% 0 F

Closed Circuit Television: NA  
Power Cutoff: NA  
Facility GN2: NA

Fuel/Oxidizer Disposal: N  
Helium Supply: NA  
Shop Air: NA

Fire Protection/Deluge(*): A  
Shower/Eye Wash: NA  
Vacuum: NA

Lightning Protection: NA  
Potable Water: NA  
Paging: NA

Commercial Telephone: NA  
RF System(*): N  
OIS: NA

Personnel Airlock: NA  
Grounding: Y  
Explosion Proof: NA

Detailed Equipment Resources

<table>
<thead>
<tr>
<th>Special Tool Kit: NA</th>
<th>Slings: NA</th>
<th>OTV Adapter: NA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Breakout Boxes: NA</td>
<td>Adapter Cables: NA</td>
<td>Ground Power Unit: NA</td>
</tr>
<tr>
<td>Air Pallet: NA</td>
<td>Work Stands: NA</td>
<td>Special Hoisting Equip: NA</td>
</tr>
<tr>
<td>NASA Canister: NA</td>
<td>OTV Canister: NA</td>
<td></td>
</tr>
</tbody>
</table>

(+) Legend For Data Input

Fire Protection/Deluge(*) A: fire protection  
or B: deluge  
or C: both  
or N: none

RF System(*) A: S Band & C Band  
or B: Ku Band  
or C: both  
or N: none

Hazard Level: 1: None  
or 2: Local Clear  
or 3: Area Clear  
or 4: Facility Clear

Others: Y: Yes  
N: No  
NA: Not Applicable  
TD: To Be Determined

TD: To Be Determined
Task No: 1 RECEIVING AND INSPECTION

Subtask No: <1.0400> Description: <TRANSFER TO RECEIVING>

Hazard Level(*): 1 None
Activity: REMOVE OTV FROM TRANSPORTER AND PREPARE FOR TRANSPORT TO OTVPF

Personnel:

Vehicle
Payload Specialist(s) (0) Control Station (0)
Engineering (2) (0)
Shop (4) (0)
Inspector (2) (0)
Other (0) (0)
Sub Total (8) Total (0)

Serial Time To Complete: 480 min Total Manhours (64.0)

Automation Need: (Primary Key)
Automation Secondary Key(s):

Detailed Facility Resources

Physical Size:
Air Lock: \(0 \times 0 \times [W/D/H][\text{ft}]\)
Doors: \(0 \times [W/H][\text{ft}]\)
High Bay: \(0 \times 0 \times [W/D/H][\text{ft}]\)

Crane Capacity:
0 Ton 0 Ft. Hook Height

Standard Commercial Power: Y Instrumentation Power [Uninterrupted]: NA
Cleanliness: 100K E.C.S.: Humidity: 50 +/- 5 %
Closed Circuit Television: NA Power Cutoff: NA Temperature: 70 +/- 5 F
Fire Protection/Deluge(*): A Shower/Eye Wash: NA
Lightning Protection: Y Potable Water: NA Paging: Y
Commercial Telephone: Y RF System(*): N OIS: NA
Personnel Airlock: Y Grounding: Y Explosion Proof: NA

Detailed Equipment Resources

Special Tool Kit: NA Slings: NA OTV Adapter: NA
Breakout Boxes: NA Adapter Cables: NA Ground Power Unit: NA
Air Pallet: NA Work Stands: NA Special Hoisting Equip: NA
NASA Canister: NA OTV Canister: NA

(•) Legend For Data Input

Fire Protection/Deluge—A: fire protection or B: deluge or C: both or N: none

RF System—A: S Band or C Band or B: Ku Band or C: both or N: none

Hazard Level—1: None or 2: Local Clear or 3: Area Clear or 4: Facility Clear
Others—Y: Yes or N: No or NA: Not Applicable or TD: To Be Determined
Detailed Resources Identification

Task No: 1 RECEIVING AND INSPECTION

Subtask No: <1.0500> Description: RECEIVING
Hazard Level(*) = 1 None
Activity: RECEIVE OTV/TNSPORTER AND INSPECT

Personnel:

<table>
<thead>
<tr>
<th>Vehicle</th>
<th>Control Station</th>
</tr>
</thead>
<tbody>
<tr>
<td>Payload Specialist(s)</td>
<td>0</td>
</tr>
<tr>
<td>Engineering</td>
<td>0</td>
</tr>
<tr>
<td>Shop</td>
<td>2</td>
</tr>
<tr>
<td>Inspector</td>
<td>1</td>
</tr>
<tr>
<td>Other</td>
<td>0</td>
</tr>
<tr>
<td>Sub Total</td>
<td>4</td>
</tr>
</tbody>
</table>

Total Manhours: 32.0

Serial Time To Complete: 480 min

Automation Need: (Primary Key)

Automation Secondary Key(s):

Detailed Facility Resources

Physical Size:

- Air Lock: 0 0 0 [W/D/H] [ft]
- Doors: 0 0 0 [W/H] [ft]
- High Bay: 0 0 0 [W/D/H] [ft]

Crane Capacity:

- 0 Ton 0 Ft. Hook Height

Standard Commercial Power:

- Y

Cleanliness:

- 100K

Closed Circuit Television:

- NA

Fuel/Oxidizer Disposal:

- N

Fire Protection/Deluge(*):

- A

Lightning Protection:

- Y

Commercial Telephone:

- Y

Personnel Airlock:

- Y

Detailed Equipment Resources

Special Tool Kit:

- NA

Slings:

- NA

OTV Adapter:

- NA

Breakout Boxes:

- NA

Adapter Cables:

- NA

Ground Power Unit:

- NA

Air Pallet:

- NA

Work Stands:

- NA

Special Hoisting Equip:

- NA

NASA Canister:

- NA

OTV Canister:

- NA

Legend For Data Input

- Fire Protection/Deluge = A: fire protection
  or B: deluge
  or C: both
  or N: none

- Hazard Level = 1: None
  or 2: Local Clear
  or 3: Area Clear
  or 4: Facility Clear

- RF System = A: S Band & C Band
  or B: Ku Band
  or C: both
  or N: none

- Others = Y: Yes
  or N: No

- OIS: NA

- TD: To Be Determined
Detailed Resources Identification

Task No: 1 RECEIVING AND INSPECTION

Subtask No: <1.0000>

Description: <FER OTV TO OTVPF AIRLOCK>

Hazard Level(*): 1 None

Activity: CLEAN TRANSPORTER–REMOVE/UNPACK OTV IN OTVPF AIRLOCK

Personnel:

<table>
<thead>
<tr>
<th>Vehicle</th>
<th>Control Station</th>
</tr>
</thead>
<tbody>
<tr>
<td>Payload Specialist(s)</td>
<td>(0)</td>
</tr>
<tr>
<td>Engineering</td>
<td>(2)</td>
</tr>
<tr>
<td>Shop</td>
<td>(5)</td>
</tr>
<tr>
<td>Inspector</td>
<td>(1)</td>
</tr>
<tr>
<td>Other</td>
<td>(8)</td>
</tr>
<tr>
<td>Sub Total</td>
<td>(8)</td>
</tr>
</tbody>
</table>

Serial Time To Complete: 240 min

Automation Need: (Primary Key)

Automation Secondary Key(s):

Detailed Facility Resources

<table>
<thead>
<tr>
<th>Physical Size:</th>
<th>Crane Capacity:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air Lock: 40 40 50 [W/D/H][ft]</td>
<td>10 Ton 45 Ft.Hook Height</td>
</tr>
<tr>
<td>Doors: 0 0 [W/H][ft]</td>
<td>0 Ton 0 Ft.Hook Height</td>
</tr>
<tr>
<td>High Bay: 0 0 0 [W/D/H][ft]</td>
<td></td>
</tr>
</tbody>
</table>

Standard Commercial Power: Y

Cleanliness: 100K

E.C.S: Humidity: 50 +/- 5 %

Closed Circuit Television: NA

Power Cutoff: NA

Fuel/Oxidizer Disposal: N

Helium Supply: NA

Fire Protection/Deluge(*): A

Power: 70 +/- 5 F

Lightning Protection: Y

Facility GN2: NA

Commerical Telephone: Y

Shop Air: Y

Personnel Airlock: Y

Grounding: Y

Commerical Equipment Resources

Special Tool Kit: NA

Slings: NA

Breakout Boxes: NA

Adapter Cables: NA

Air Pallet: NA

Work Stands: NA

NASA Canister: NA

OTV Canister: NA

(*) Legend For Data Input

Fire Protection/Deluge= A: fire protection
or B: deluge
or C: both
or N: none

Hazard Level:= 1: None
or 2: Local Clear
or 3: Area Clear
or 4: Facility Clear

Others:= Y: Yes
or N: No

NA: Not Applicable

TD: To Be Determined
## Detailed Resources Identification

### Task No: 1 REceiving And Inspection

**Subtask No:** <1.0700>  
**Description:** <TRANSFER OTV TO CLEAN ROOM>  
**Hazard Level:** 1 None  
**Activity:** MOVE OTV INTO CLEAN ROOM HIGH BAY

#### Personnel:

<table>
<thead>
<tr>
<th>Role</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vehicle Payload Specialist(s)</td>
<td>0</td>
</tr>
<tr>
<td>Vehicle Engineering</td>
<td>1</td>
</tr>
<tr>
<td>Vehicle Shop</td>
<td>5</td>
</tr>
<tr>
<td>Vehicle Inspector</td>
<td>2</td>
</tr>
<tr>
<td>Other</td>
<td>0</td>
</tr>
<tr>
<td><strong>Sub Total</strong></td>
<td>8</td>
</tr>
</tbody>
</table>

#### Serial Time To Complete: 480 min  
Total Manhours: 64.0

### Detailed Facility Resources

#### Physical Size:

<table>
<thead>
<tr>
<th>Component</th>
<th>Dimensions [W/D/H][ft]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air Lock</td>
<td>0 0 0</td>
</tr>
<tr>
<td>Doors</td>
<td>35 45</td>
</tr>
<tr>
<td>High Bay</td>
<td>70 100 85</td>
</tr>
</tbody>
</table>

#### Crane Capacity:

<table>
<thead>
<tr>
<th>Capacity</th>
<th>Hook Height</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 Ton</td>
<td>0 Ft. Hook Height</td>
</tr>
<tr>
<td>20 Ton</td>
<td>70 Ft. Hook Height</td>
</tr>
</tbody>
</table>

#### Standard Commercial Power

- Y: Yes

#### Cleanliness

- 100K

#### Closed Circuit Television

- NA

#### Fuel/Oxidizer Disposal

- N

#### Fire Protection/Deluge

- A
- B: deluge
- C: both
- N: none

#### Lighting Protection

- A
- B: deluge
- C: both
- N: none

#### Commerical Telephone

- Y: Yes

#### Personnel Airlock

- Y: Yes

#### Detailed Equipment Resources

<table>
<thead>
<tr>
<th>Item</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Special Tool Kit</td>
<td>NA</td>
</tr>
<tr>
<td>Breakout Boxes</td>
<td>NA</td>
</tr>
<tr>
<td>Slings</td>
<td>NA</td>
</tr>
<tr>
<td>Adapter Cables</td>
<td>NA</td>
</tr>
<tr>
<td>Air Pallet</td>
<td>NA</td>
</tr>
<tr>
<td>Work Stands</td>
<td>NA</td>
</tr>
<tr>
<td>NASA Canister</td>
<td>NA</td>
</tr>
<tr>
<td>OTV Canister</td>
<td>NA</td>
</tr>
<tr>
<td>OTV Adapter</td>
<td>NA</td>
</tr>
<tr>
<td>Ground Power Unit</td>
<td>NA</td>
</tr>
<tr>
<td>Special Hoisting Equip</td>
<td>NA</td>
</tr>
</tbody>
</table>

#### (*) Legend For Data Input

- A: fire protection
- B: deluge
- C: both
- N: none

- RF System
  - A: S Band & C Band
  - B: Ku Band
  - C: both
  - N: none

- Others
  - Y: Yes
  - N: No
  - NA: Not Applicable
  - TD: To Be Determined
Detailed Resources Identification

Task No: 1 RECEIVING AND INSPECTION

Subtask No: < 1.0000> Description: <OTV INSPECTION>
Hazard Level(*): 1 None
Activity: INSPECT AND INVENTORY OTV HARDWARE

Personnel:

<table>
<thead>
<tr>
<th>Vehicle</th>
<th>Control Station</th>
</tr>
</thead>
<tbody>
<tr>
<td>Payload Specialist(s) (0)</td>
<td>(0)</td>
</tr>
<tr>
<td>Engineering (2)</td>
<td>(0)</td>
</tr>
<tr>
<td>Shop (3)</td>
<td>(0)</td>
</tr>
<tr>
<td>Inspector (1)</td>
<td>(0)</td>
</tr>
<tr>
<td>Other (0)</td>
<td>(0)</td>
</tr>
<tr>
<td>Sub Total: 6</td>
<td>Total: 0</td>
</tr>
</tbody>
</table>

Serial Time To Complete: 480 min
Total Manhours (480)

Automation Need: (Primary Key)
Automation Secondary Key(s):

Detailed Facility Resources

<table>
<thead>
<tr>
<th>Physical Size:</th>
<th>Crane Capacity:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air Lock: 0 0 0 [W/D/H][ft]</td>
<td>0 Ton 0 Ft.Hook Height</td>
</tr>
<tr>
<td>Doors: 0 0 [W/H][ft]</td>
<td></td>
</tr>
<tr>
<td>High Bay: 70 100 85 [W/D/H][ft]</td>
<td>0 Ton 0 Ft.Hook Height</td>
</tr>
</tbody>
</table>

Standard Commercial Power: Y Instrumentation Power [Uninterrupted]: NA

Cleanliness: 100K E.C.S: Humidity: 50 +/- 5 %
Closed Circuit Television: NA Power Cutoff: NA
Fuel/Oxidizer Disposal: N Facility GN2: NA
Fire Protection/Deluge(*): A Shower/Eye Wash: NA
Lightning Protection: Y Potable Water: NA
Commercial Telephone: Y Paging: Y
Personnel Airlock: Y Grounding: Y

Detailed Equipment Resources

Special Tool Kit: NA Slings: NA
Breakout Boxes: NA Adapter Cables: NA
Air Pallet: NA Work Stands: NA
NASA Canister: NA OTV Canister: NA

(*) Legend For Data Input
Fire Protection/Deluge= A: fire protection or B: deluge or C: both or N: none
RF System= A: S Band & C Band or B: Ku Band or C: both or N: none
Hazard Level= 1: None or 2: Local Clear or 3: Area Clear or 4: Facility Clear
Others= Y: Yes or N: No

20
Task No: 2  
OTV MECHANICAL ASSEMBLY

Description: INSTALL ASSEMBLY STRUCTURE

Subtask No: <2.0100>

Hazard Level(*): 2 Local Clear

Activity: ATTACH SLING TO ASSEMBLY STRUCTURE-ATTACH SLING TO O/H CRANE-REMOVE HOLDDOWN HARDWARE-REMOVE FROM PALLET INSPECT GUIDE PINS AND ATTACH POINTS

Personnel:

<table>
<thead>
<tr>
<th>Vehicle</th>
<th>Control Station</th>
</tr>
</thead>
<tbody>
<tr>
<td>Payload Specialist(s)</td>
<td>0</td>
</tr>
<tr>
<td>Engineering</td>
<td>2</td>
</tr>
<tr>
<td>Shop</td>
<td>5</td>
</tr>
<tr>
<td>Inspector</td>
<td>2</td>
</tr>
<tr>
<td>Other</td>
<td>0</td>
</tr>
<tr>
<td>Sub Total</td>
<td>9</td>
</tr>
</tbody>
</table>

Total Manhours (144.0)

Serial Time To Complete: 960 min

Automation Need: (Primary Key)

Automation Secondary Key(s):

Detailed Facility Resources

Physical Size:
- Air Lock: 0 0 0 [W/D/H][ft]
- Doors: 0 0 [W/H][ft]
- High Bay: 70 100 85 [W/D/H][ft]

Crane Capacity:
- 0 Ton 0 Ft.Hook Height
- 20 Ton 70 Ft.Hook Height

Standard Commercial Power: Y

Cleanliness: 100K

Closed Circuit Television: NA

Fuel/Oxidizer Disposable: N

Fire Protection/Deluge(*): A

Fire Lightning Protection: Y

Commercial Telephone: Y

Personnel Airlock: Y

Instrumentation Power [Uninterrupted]: NA

E.C.S. Humidity: 50 +/- 5%

Power Cutoff: NA

Shop Air: NA

Shower/Eye Wash: NA

Potable Water: NA

RF System(*): N

OIS: NA

Grounding: Y

Explosion Proof: NA

Special Tool Kit: Y

Sling: Y

OTV Adapter: NA

Breakout Boxes: NA

Adapter Cables: NA

Ground Power Unit: NA

Air Pallet: NA

Work Stands: Y

Special Hoisting Equip: Y

NASA Canister: NA

OTV Canister: NA

Legend For Data Input:

Fire Protection/Deluge(*): A: fire protection
or B: deluge
or C: both
or N: none

RF System(*): A: S Band & C Band
or B: Ku Band
or C: both
or N: none

Hazard Level(*): 1: None
or 2: Local Clear
or 3: Area Clear
or 4: Facility Clear

Others: Y: Yes
or N: No

NA: Not Applicable

TD: To Be Determined
Detailed Resources Identification

Task No: 2 MECHANICAL ASSEMBLY

Subtask No: <2.0200> Description: INSTALL CRYO TANK SET

Activity: ATTACH SLING TO TANK SET LIFT POINTS-LIFT FROM PALLET-INSPECT DISCONNECT GUIDE PINS AND STRUCTURE ATTACH POINTS-LIFT INTO POSITION, SECURE, SAFE

Personnel:

<table>
<thead>
<tr>
<th>Vehicle</th>
<th>Control Station</th>
</tr>
</thead>
<tbody>
<tr>
<td>Payload Specialist(s)</td>
<td>0</td>
</tr>
<tr>
<td>Engineering</td>
<td>0</td>
</tr>
<tr>
<td>Shop</td>
<td>0</td>
</tr>
<tr>
<td>Inspector</td>
<td>0</td>
</tr>
<tr>
<td>Other</td>
<td>0</td>
</tr>
</tbody>
</table>

Sub Total | 9 |

Total | 9 |

Serial Time To Complete: 720 min

Total Manhours (108.0)

Automation Need: (Primary Key)

Automation Secondary Key(s)

Detailed Facility Resources

Physical Size:

<table>
<thead>
<tr>
<th>Air Lock</th>
<th>Doors</th>
<th>High Bay</th>
</tr>
</thead>
</table>

Crane Capacity:

<table>
<thead>
<tr>
<th>0 Ton</th>
<th>0 Ft.Hook Height</th>
</tr>
</thead>
<tbody>
<tr>
<td>20 Ton</td>
<td>70 Ft.Hook Height</td>
</tr>
</tbody>
</table>

Standard Commercial Power: Y

Cleanliness: 100K

Closed Circuit Television: NA

Fuel/Oxidizer Disposal: N

Fire Protection/Deluge(*): A

Firefighting: NA

Lightning Protection: Y

Commerical Telephone: Y

Personnel Airlock: Y

Instrumentation Power [Uninterrupted]: NA

E.C.S: Humidity: 50 +/- 5 %

Power Cutoff: NA

Facility GN2: NA

Shop Air: NA

Shower/Eye Wash: NA

Vacuum: NA

Paging: Y

RF System(*): N

OIS: NA

Grounding: Y

Explosion Proof: NA

Detailed Equipment Resources

Special Tool Kit: Y

Slings: Y

OTV Adapter: Y

Breakout Boxes: NA

Adapter Cables: NA

Ground Power Unit: NA

Air Pallet: NA

Work Stands: Y

Special Hoisting Equip: Y

NASA Canister: NA

OTV Canister: NA

(*) Legend For Data Input

Fire Protection/Deluge= A: fire protection 
or B: deluge 
or C: both 
or N: none

RF System= A: S Band & C Band 
or B: Ku Band 
or C: both 
or N: none

Hazard Level= 1: None 
or 2: Local Clear 
or 3: Area Clear 
or 4: Facility Clear

Others= Y: Yes 
or N: No 
or NA: Not Applicable 
or TD: To Be Determined
Task No: 2 MECHANICAL ASSEMBLY

Subtask No: <2.0300> Description: <INSTALL RCS TANK SET>

Hazard Level(s): 2 Local Clear

Activity: IMPLEMENT SAFETY PROCEDURE-REMOVE TANK SET FROM SHIPPER-INSPECT-REMOVE PROTECTIVE COVER/DEVICES-INSTALL IN OTV ASSEMBLY STRUCTURE, SECURE, SAFE

Personnel:

| Vehicle Payload Specialist(s) | 0 |
| Engineering | 2 |
| Shop | 5 |
| Inspector | 2 |
| Other | 0 |

Sub Total (9) Total (9)

Serial Time To Complete: 360 min Total Manhours (54.0)

Automation Need: (Primary Key)

Automation Secondary Key(s)

Detailed Facility Resources

Physical Size:

| Air Lock | 0 0 0 [W/D/H][ft] |
| Doors | 0 0 [W/H][ft] |
| High Bay | 70 100 85 [W/D/H][ft] |

Crane Capacity:

| 0 Ton 0 Ft.Hook Height |
| 20 Ton 70 Ft.Hook Height |

Standard Commercial Power: Y Instrumentation Power [Uninterrupted]: NA

Cleanliness: 100K E.C.S: Humidity: 50 +/- 5 % Temperature: 70 +/- 5 F

Closed Circuit Television: NA Power Cutoff: NA Facility GN2: NA

Fuel/Oxidizer Disposal: N Helium Supply: NA Shop Air: Y

Fire Protection/Deluge(*): A Shower/Eye Wash: NA Vacuum: NA

Lightning Protection: Y Potable Water: NA Paging: Y

Commercial Telephone: Y RF System(*): N OIS: NA

Personnel Airlock: Y Grounding: Y Explosion Proof: NA

Detailed Equipment Resources

Special Tool Kit: Y Slings: Y OTV Adapter: Y

Breakout Boxes: NA Adapter Cables: NA Ground Power Unit: NA

Air Pallet: NA Work Stands: Y Special Hoisting Equip: Y

NASA Canister: NA OTV Canister: NA

(* Legend For Data Input

Fire Protection/Deluge(*): A: fire protection or B: deluge or C: both or N: none

RF System(*): A: S Band & C Band or B: Ku Band or C: both or N: none

Hazard Level(*): 1: None or 2: Local Clear or 3: Area Clear or 4: Facility Clear

Others(*): Y: Yes or N: No or NA: Not Applicable or TD: To Be Determined
**Detailed Resources Identification**

**Task No:** 2  
**MECHANICAL ASSEMBLY**

**Subtask No:** < 2.0400>  
**Description:** <INSTL PROPL SYS PLMB & CONTROLS>

**Activity:** ATTACH SLING TO LIFT POINTS, ATTACH TO O/H HARDWARE, SPECIAL W/S, INSPECT GUIDE PINS AND ASSY STRUCT.—ATTACH POINTS. LIFT TO POSITION, ALIGN GUIDE PINS

**Personnel:**

<table>
<thead>
<tr>
<th>Vehicle</th>
<th>Control Station</th>
</tr>
</thead>
<tbody>
<tr>
<td>Payload Specialist(s)</td>
<td>(6)</td>
</tr>
<tr>
<td>Engineering</td>
<td>(2)</td>
</tr>
<tr>
<td>Shop</td>
<td>(5)</td>
</tr>
<tr>
<td>Inspector</td>
<td>(2)</td>
</tr>
<tr>
<td>Other</td>
<td>(6)</td>
</tr>
<tr>
<td><strong>Sub Total</strong></td>
<td>(9)</td>
</tr>
</tbody>
</table>

**Serial Time To Complete:** 480 min  
**Total Manhours:** (72.0)

**Automation Need:** (Primary Key)

**Automation Secondary Key(s):**

**Detailed Facility Resources**

<table>
<thead>
<tr>
<th>Physical Size:</th>
<th>Crane Capacity:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air Lock: 0 0 0 [W/D/H][ft]</td>
<td>0 Ton 0 Ft.Hook Height</td>
</tr>
<tr>
<td>Doors: 0 0 [W/H][ft]</td>
<td></td>
</tr>
<tr>
<td>High Bay: 70 100 80 [W/D/H][ft]</td>
<td>20 Ton 70 Ft.Hook Height</td>
</tr>
</tbody>
</table>

**Standard Commercial Power:** Y  
**Instrumentation Power [Uninterrupted]:** NA

**Cleanliness:** 100K  
**E.C.S:** Humidity: 50 +/- 5 %  
**Power Cutoff:** NA  
**Facility GN2:** NA

**Closed Circuit Television:** NA  
**Power:** NA  
**Shop Air:** Y

**Fuel/Oxidizer Disposal:** N  
**Humidity:** 50 +/- 5 %  
**Facility GN2:** NA

**Fire Protection/Deluge:** A  
**Power Cutoff:** NA  
**Facility GN2:** NA

**Lightning Protection:** Y  
**Facility GN2:** NA

**Commercial Telephone:** Y  
**Facility GN2:** NA

**Personnel Airlock:** Y  
**Facility GN2:** NA

**Detailed Equipment Resources**

<table>
<thead>
<tr>
<th>Special Tool Kit: Y</th>
<th>Slings: Y</th>
<th>OTV Adapter: Y</th>
</tr>
</thead>
<tbody>
<tr>
<td>Breakout Boxes: NA</td>
<td>Adapter Cables: NA</td>
<td>Ground Power Unit: NA</td>
</tr>
<tr>
<td>Air Pallet: NA</td>
<td>Work Stands: Y</td>
<td>Special Hoisting Equip: Y</td>
</tr>
<tr>
<td>NASA Canister: NA</td>
<td>OTV Canister: NA</td>
<td></td>
</tr>
</tbody>
</table>

**(*): Legend For Data Input**

**Fire Protection/Deluge:**
A: fire protection  
B: deluge  
C: both  
N: none

**RF System:**
A: S Band & C Band  
B: Ku Band  
C: both  
N: none

**Hazard Level:**
1: None  
2: Local Clear  
3: Area Clear  
4: Facility Clear  
N: No

**Others:**
Y: Yes  
N: No  
NA: Not Applicable  
TD: To Be Determined
Task No: 2 MECHANICAL ASSEMBLY

Subtask No: < 2.0500>

Description: <INSTALL RCS/ENGINES>

Hazard Level(*): 2 Local Clear

Activity: INSTALL RCS NOZZLES AND ENGINES PER INSTALLATION PROCEDURES

Personnel:

<table>
<thead>
<tr>
<th>Personnel</th>
<th>Control Station</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vehicle Payload Specialist(s)</td>
<td>(8)</td>
</tr>
<tr>
<td>Engineering Shop Inspector</td>
<td>(0)</td>
</tr>
<tr>
<td>Shop Inspector</td>
<td>(0)</td>
</tr>
<tr>
<td>Other Personnel</td>
<td>(0)</td>
</tr>
</tbody>
</table>

Sub Total (9) Total (9)

Serial Time To Complete: 480 min Total Manhours (72.0)

Automation Need: (Primary Key)

Automation Secondary Key(s): 

Detailed Facility Resources

<table>
<thead>
<tr>
<th>Physical Size</th>
<th>Crane Capacity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air Lock: 0 [W/D/H][ft]</td>
<td>0 Ton 0 Ft.Hook Height</td>
</tr>
<tr>
<td>Doors: 0 [W/H][ft]</td>
<td></td>
</tr>
<tr>
<td>High Bay: 70 100 85 [W/H][ft]</td>
<td>20 Ton 70 Ft.Hook Height</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Standard Commercial Power</th>
<th>Instrumentation Power [Uninterrupted]: NA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cleanliness: 100K</td>
<td>E.C.S: Humidity: 50 +/- 5 % Temperature: 70 +/- 5 F</td>
</tr>
<tr>
<td>Closed Circuit Television: NA</td>
<td>Power Cutoff: NA Facility GN2: NA</td>
</tr>
<tr>
<td>Fuel/Oxidizer Disposal: N</td>
<td>Helium Supply: NA Shop Air: Y</td>
</tr>
<tr>
<td>Fire Protection/Deluge(*): A</td>
<td>Shower/Eye Wash: NA Vacuum: NA</td>
</tr>
<tr>
<td>Lightning Protection: Y</td>
<td>Potable Water: NA Paging: Y</td>
</tr>
<tr>
<td>Commercial Telephone: Y</td>
<td>RF System(*): N OIS: NA</td>
</tr>
<tr>
<td>Personnel Airlock: Y</td>
<td>Grounding: Y Explosion Proof: NA</td>
</tr>
</tbody>
</table>

Detailed Equipment Resources

<table>
<thead>
<tr>
<th>Special Tool Kit: Y</th>
<th>Slings: Y</th>
<th>OTV Adapter: Y</th>
</tr>
</thead>
<tbody>
<tr>
<td>Breakout Boxes: NA</td>
<td>Adapter Cables: NA</td>
<td>Ground Power Unit: NA</td>
</tr>
<tr>
<td>Air Pallet: NA</td>
<td>Work Stands: Y</td>
<td>Special Hoisting Equip: Y</td>
</tr>
<tr>
<td>NASA Canister: NA</td>
<td>OTV Canister: NA</td>
<td></td>
</tr>
</tbody>
</table>

(*) Legend For Data Input

<table>
<thead>
<tr>
<th>Fire Protection/Deluge(*)</th>
<th>RF System(*)</th>
<th>Others(*)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A: fire protection</td>
<td>A: S Band &amp; C Band</td>
<td>Y: Yes</td>
</tr>
<tr>
<td>or B: deluge</td>
<td>or B: Ku Band</td>
<td>N: No</td>
</tr>
<tr>
<td>or C: both</td>
<td>or C: both</td>
<td>NA: Not Applicable</td>
</tr>
<tr>
<td>or N: none</td>
<td>or N: none</td>
<td>TD: To Be Determined</td>
</tr>
</tbody>
</table>

Hazard Level: 1: None

or 2: Local Clear

or 3: Area Clear

or 4: Facility Clear

25
Detailed Resources Identification

Task No: 2  MECHANICAL ASSEMBLY

Subtask No: < 2.0808> Description: <INSTALL RCS NOZZLE COVERS >

Hazard Level(«): 1 None
Activity: INSTALL PROTECTIVE COVERS ON RCS NOZZLES

Personnel:

<table>
<thead>
<tr>
<th>Control Station</th>
<th>Vehicle</th>
</tr>
</thead>
<tbody>
<tr>
<td>Payload Specialist(s)</td>
<td>(0)</td>
</tr>
<tr>
<td>Engineering</td>
<td>(3)</td>
</tr>
<tr>
<td>Shop</td>
<td>(1)</td>
</tr>
<tr>
<td>Inspector</td>
<td>(1)</td>
</tr>
<tr>
<td>Other</td>
<td>(0)</td>
</tr>
</tbody>
</table>

Sub Total (5)  Total (5)

Serial Time To Complete: 60 min  Total Manhours (5.0)

Automation Need: (Primary Key)

Automation Secondary Key(s)

Detailed Facility Resources

<table>
<thead>
<tr>
<th>Physical Size</th>
<th>Crane Capacity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air Lock: [W/D/H][ft]</td>
<td>0 Ton 0 Ft.Hook Height</td>
</tr>
<tr>
<td>Doors: [W/H][ft]</td>
<td></td>
</tr>
<tr>
<td>High Bay: 70 100 85 [W/D/H][ft]</td>
<td>0 Ton 0 Ft.Hook Height</td>
</tr>
</tbody>
</table>

Standard Commercial Power: Y
Instrumentation Power [Uninterrupted]: NA

Cleanliness: 100K
E.C.S: Humidity: 50 +/- 5 %
Closed Circuit Television: NA
Power Cutoff: NA
Fuel/Oxidizer Disposal: N
Shop Air: NA
Fire Protection/Deluge(«): A
Shower/Eye Wash: NA
Lightning Protection: Y
Potable Water: NA
Commerical Telephone: Y
Paging: Y
Personnel Airlock: Y
Grounding: Y

Explosion Proof: NA
Detailed Equipment Resources

| Special Tool Kit: Y | Slings: NA |= OTV Adapter: NA |
| Breakout Boxes: NA | Adapter Cables: NA |= Ground Power Unit: NA |
| Air Pallet: NA | Work Stands: Y |= Special Hoisting Equip: NA |
| NASA Canister: NA | OTV Canister: NA |

(*) Legend For Data Input

| Fire Protection/Deluge= A: fire protection or B: deluge or C: both or N: none |
|--------------------------|--------------------------|
| RF System= A: S Band & C Band or B: Ku Band or C: both or N: none |
| Hazard Level= 1: None or 2: Local Clear or 3: Area Clear or 4: Facility Clear |
| Others= Y: Yes or N: No or NA: Not Applicable or TD: To Be Determined |
Detailed Resources Identification

Task No: 2  MECHANICAL ASSEMBLY

Description: CONNECT MECHANICAL CONNECTIONS TO 44ATE MECHANICAL CONNECTIONS INCLUDING RCS LOAD LINES.

Activity: CONNECT CRYO PORTS AND ALL OTHER MECHANICAL CONNECTIONS INCLUDING PCS LOAD LINES.

Personnel:

<table>
<thead>
<tr>
<th>Vehicle</th>
<th>Control Station</th>
</tr>
</thead>
<tbody>
<tr>
<td>Payload Specialist(s)</td>
<td>0</td>
</tr>
<tr>
<td>Engineering</td>
<td>1</td>
</tr>
<tr>
<td>Shop</td>
<td>3</td>
</tr>
<tr>
<td>Inspector</td>
<td>1</td>
</tr>
<tr>
<td>Other</td>
<td>0</td>
</tr>
<tr>
<td><strong>Sub Total</strong></td>
<td><strong>5</strong></td>
</tr>
</tbody>
</table>

Serial Time To Complete: 300 min  Total Manhours: **25.0**

Automation Need: (Primary Key)

Automation Secondary Key(s):

Detailed Facility Resources

Physical Size:
- Air Lock: 0 0 0 [W/D/H][ft]
- Doors: 0 0
- High Bay: 70 100 85 [W/D/H][ft]

Crane Capacity:
- 0 Ton 0 Ft. Hook Height

Standard Commercial Power: Y

Cleanliness: 100K

Closed Circuit Television: NA

Fuel/Oxidizer Disposal: N

Fire Protection/Deluge(•): A

Lightning Protection: Y

Commerical Telephone: Y

Personnel Airlock: Y

Detailed Equipment Resources

Special Tool Kit: Y

Breakout Boxes: NA

Air Pallet: NA

NASA Canister: NA

Slings: NA

Adapter Cables: NA

Ground Power Unit: NA

Work Stands: Y

OTV Canister: NA

OTV Adapter: NA

Ground Power Unit: NA

Special Hoisting Equip: NA

Legend For Data Input

Fire Protection/Deluge= A: fire protection  RF System= A: S Band & C Band
or B: deluge               or B: Ku Band
or C: both                 or C: both
or N: none                  or N: none

Hazard Level= 1: None
or 2: Local Clear           Others:= Y: Yes
or 3: Area Clear            or N: No
or 4: Facility Clear        NA: Not Applicable

TD: To Be Determined
### Detailed Resources Identification

**Task No:** 3  
**ELECTRICAL ASSEMBLY**

**Subtask No:** < 3.010>  
**Description:** <INSTALL CABLE HARNESS>

**Activity:** INSTALL/CONNECT CABLE HARNESS ASSEMBLY

#### Personnel:

<table>
<thead>
<tr>
<th>Personnel Type</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vehicle</td>
<td>0</td>
</tr>
<tr>
<td>Payload Specialist(s)</td>
<td>0</td>
</tr>
<tr>
<td>Engineering</td>
<td>1</td>
</tr>
<tr>
<td>Shop</td>
<td>0</td>
</tr>
<tr>
<td>Inspector</td>
<td>0</td>
</tr>
<tr>
<td>Other</td>
<td>0</td>
</tr>
<tr>
<td><strong>Sub Total</strong></td>
<td>5</td>
</tr>
</tbody>
</table>

**Serial Time To Complete:** 360 min  
**Total Manhours:** (36.0)

**Hazard Level(»):** 1 None

**Automation Need:** (Primary Key)

**Automation Secondary Key(s):**

### Detailed Facility Resources

#### Physical Size:

<table>
<thead>
<tr>
<th>Facility Type</th>
<th>Dimensions [W/D/H][ft]</th>
<th>Crane Capacity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air Lock</td>
<td>0 0 0</td>
<td>0 Ton 0 Ft.Hook Height</td>
</tr>
<tr>
<td>Doors</td>
<td>0 0</td>
<td>20 Ton 70 Ft.Hook Height</td>
</tr>
<tr>
<td>High Bay</td>
<td>70 100 85</td>
<td></td>
</tr>
</tbody>
</table>

**Standard Commercial Power:** Y  
**Cleanliness:** 100K

**Closed Circuit Television:** NA  
**Fuel/Oxidizer Disposal:** N  
**Fire Protection/Deluge(»):** A

**Lightning Protection:** Y  
**Commercial Telephone:** Y  
**Personnel Airlock:** Y

**Instrumentation Power [Uninterrupted]:** NA  
**E.C.S.:** Humidity: 50 +/- 5%

**Power Cutoff:** NA  
**Facility GN2:** NA

**Shop Air:** NA  
**Vacuum:** NA  
**Paging:** Y

**Ground:** Y  
**Operation Interface System:** N

**Facility GN2:** NA  
**Shop Air:** NA

**Fire Protection/Deluge- A: fire protection or B: deluge or C: both or N: none**

**Fire Protection/Deluge- A: fire protection or B: deluge or C: both or N: none**

**Others- Y: Yes or N: No or TD: To Be Determined**

### Detailed Equipment Resources

<table>
<thead>
<tr>
<th>Equipment Type</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Special Tool Kit</td>
<td>Y</td>
</tr>
<tr>
<td>Breakout Boxes</td>
<td>NA</td>
</tr>
<tr>
<td>Air Pallet</td>
<td>NA</td>
</tr>
<tr>
<td>NASA Canister</td>
<td>NA</td>
</tr>
</tbody>
</table>

| Slings           | NA    |
| Adapter Cables   | NA    |
| Work Stands      | Y     |
| OTV Adapter      | NA    |
| Ground Power Unit| NA    |
| Special Hoisting Equip | NA |

### Legend For Data Input

- **Fire Protection/Deluge:** A: fire protection or B: deluge or C: both or N: none
- **Hazard Level:** 1: None or 2: Local Clear or 3: Area Clear or 4: Facility Clear
- **Others:** Y: Yes or N: No or TD: To Be Determined

---

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Detailed Resources Identification

Task No: 3  ELECTRICAL ASSEMBLY

Subtask No: < 3.0200>  Description: <INSTALL POWER SYSTEM >

Hazard Level(s): 2 Local Clear
Activity: ATTACH SLING TO LIFT POINTS AND O/H CRANE, INSPECT GUIDE PINS, ATTACH POINTS AND INTERFACES, LIFT TO POSITION, INSTALL, SECURE AND SAFE

Personnel:

<table>
<thead>
<tr>
<th>Vehicle</th>
<th>Control Station</th>
</tr>
</thead>
<tbody>
<tr>
<td>Payload Specialist(s)</td>
<td>0</td>
</tr>
<tr>
<td>Engineering</td>
<td>1</td>
</tr>
<tr>
<td>Shop</td>
<td>3</td>
</tr>
<tr>
<td>Inspector</td>
<td>1</td>
</tr>
<tr>
<td>Other</td>
<td>0</td>
</tr>
</tbody>
</table>

Sub Total (5)

Total (5)

Serial Time To Complete: 480 min  Total Manhours (40.0)

Automation Need: (Primary Key)

Automation Secondary Key(s)

Detailed Facility Resources

<table>
<thead>
<tr>
<th>Physical Size:</th>
<th>Crane Capacity:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air Lock: 0 0 0 [W/D/H][ft]</td>
<td>0 Ton 0 Ft.Hook Height</td>
</tr>
<tr>
<td>Doors: 0 0</td>
<td></td>
</tr>
<tr>
<td>High Bay: 70 100 85 [W/H][ft]</td>
<td>20 Ton 70 Ft.Hook Height</td>
</tr>
</tbody>
</table>

Standard Commercial Power: Y  Instrumentation Power [Uninterrupted]: NA

Cleanliness: 100K  E.C.S: Humidity: 50 +/- 5 %

Closed Circuit Television: NA  Power Cutoff: NA

Fuel/Oxidizer Disposal: N  Facility GN2: NA

Fire Protection/Deluge(s): A  Helium Supply: NA

Lightning Protection: Y  Shop Air: NA

Commerical Telephone: Y  Reasonable Power Supply: NA

Personnel Airlock: Y  Grounding: Y

Explosion Proof: NA

Detailed Equipment Resources

<table>
<thead>
<tr>
<th>Special Tool Kit: Y</th>
<th>Slings: Y</th>
<th>OTV Adapter: Y</th>
</tr>
</thead>
<tbody>
<tr>
<td>Breakout Boxes: NA</td>
<td>Adapter Cables: NA</td>
<td>Ground Power Unit: NA</td>
</tr>
<tr>
<td>Air Pallet: NA</td>
<td>Work Stands: Y</td>
<td>Special Hoisting Equip: Y</td>
</tr>
<tr>
<td>NASA Canister: NA</td>
<td>OTV Canister: NA</td>
<td></td>
</tr>
</tbody>
</table>

(*) Legend For Data Input

Fire Protection/Deluge: A: fire protection  RF System: A: S Band & C Band
or B: deluge  or B: Ku Band
or C: both  or C: both
or N: none  or N: none

Hazard Level: 1: None  Others: Y: Yes
or 2: Local Clear  N: No
or 3: Area Clear  NA: Not Applicable
or 4: Facility Clear  TD: To Be Determined

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Task No: 3 ELECTRICAL ASSEMBLY

Subtask No: < 3.0300> Description: INSTALL GN2C SYSTEM

Hazard Level(*): 2 Local Clear
Activity: ATTACH SLING TO LIFT POINTS AND O/H CRANE, INSPECT GUIDE PINS, ATTACH POINTS AND INTERFACES, LIFT TO POSITION, INSTALL SECURE AND SAFE

Personnel:

<table>
<thead>
<tr>
<th>Vehicle</th>
<th>Control Station</th>
</tr>
</thead>
<tbody>
<tr>
<td>Payload Specialist(s) (0)</td>
<td>(0)</td>
</tr>
<tr>
<td>Engineering (1)</td>
<td>(0)</td>
</tr>
<tr>
<td>Shop (5)</td>
<td>(0)</td>
</tr>
<tr>
<td>Inspector (1)</td>
<td>(0)</td>
</tr>
<tr>
<td>Other (0)</td>
<td>(5)</td>
</tr>
</tbody>
</table>

Sub Total: (5) Total: (5)

Serial Time To Complete: 240 min Total Manhours (20.0)

Automation Need: (Primary Key)
Automation Secondary Key(s): 

Detailed Facility Resources

Physical Size:
- Air Lock: 0 0 0 [W/D/H][ft] 0 Ton 0 Ft.Hook Height
- Doors: 0 0 [W/H][ft] 20 Ton 70 Ft.Hook Height

Extended Conner lea I Power: Y
Cleanliness: 100K
Closed Circuit Television: NA
Fuel/Oxidizer Disposal: N
Fire Protection/Deluge(*): A
Lightning Protection: Y
Commmerical Telephone: Y
Personnel Airlock: Y

Instrumentation Power [Uninterrupted]: NA
E.C.S: Humidity: 50 +/- 5 %
Power Cutoff: NA
Shower/Eye Wash: NA
Helium Supply: NA
Shop Air: NA
Vacuum: NA
Potable Water: NA
Paging: Y
RF System(*): N
OIS: NA

Ground: Y

Detailed Equipment Resources

Special Tool Kit: Y
Breakout Boxes: NA
Air Pallet: NA
NASA Canister: NA

Slings: Y
Adapter Cables: NA
Work Stands: Y

OTV Adapter: Y
Ground Power Unit: NA
Special Hoisting Equip: Y
OTV Canister: NA

(*) Legend For Data Input

- Fire Protection/Deluge(*): A: fire protection or B: deluge or C: both or N: none
- Hazard Level: 1: None or 2: Local Clear or 3: Area Clear or 4: Facility Clear
- Others: Y: Yes or N: No or NA: Not Applicable or TD: To Be Determined
Detailed Resources Identification

Task No: 3 ELECTRICAL ASSEMBLY

Subtask No: <3.0400> Description: INSTALL AVIONICS SYSTEM

Hazard Level(*): 2 Local Clear

Activity: ATTACH SLING TO LIFT POINTS AND O/H CRANE, INSPECT GUIDE PINS, ATTACH POINTS AND INTERFACES, LIFT TO POSITION, INSTALL, SECURE AND SAFE

Personnel:

<table>
<thead>
<tr>
<th>Vehicle</th>
<th>Control Station</th>
</tr>
</thead>
<tbody>
<tr>
<td>Payload Specialist(s)</td>
<td>(0)</td>
</tr>
<tr>
<td>Engineering</td>
<td>(0)</td>
</tr>
<tr>
<td>Shop</td>
<td>(0)</td>
</tr>
<tr>
<td>Inspector</td>
<td>(1)</td>
</tr>
<tr>
<td>Other</td>
<td>(0)</td>
</tr>
<tr>
<td>Sub Total</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>Total (5)</td>
</tr>
</tbody>
</table>

Serial Time To Complete: 240 min

Automation Need: (Primary Key)

Automation Secondary Key(s):

<table>
<thead>
<tr>
<th>Detailed Facility Resources</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical Size:</td>
</tr>
<tr>
<td>Air Lock: 0 0 0 [W/D/H][ft]</td>
</tr>
<tr>
<td>Doors: 0 0 [W/H][ft]</td>
</tr>
<tr>
<td>High Bay: 70 100 85 [W/D/H][ft]</td>
</tr>
<tr>
<td>Crane Capacity:</td>
</tr>
<tr>
<td>0 Ton 0 Ft.Hook Height</td>
</tr>
<tr>
<td>20 Ton 70 Ft.Hook Height</td>
</tr>
<tr>
<td>Standard Commercial Power:</td>
</tr>
<tr>
<td>Y</td>
</tr>
<tr>
<td>Instrumentation Power [Uninterrupted]: NA</td>
</tr>
<tr>
<td>E.C.S: 50 +/- 5%</td>
</tr>
<tr>
<td>Temperature: 70 +/- 5 F</td>
</tr>
<tr>
<td>Cleanliness: 180K</td>
</tr>
<tr>
<td>Fuel/Oxidizer Disposal: N</td>
</tr>
<tr>
<td>Closed Circuit Television: NA</td>
</tr>
<tr>
<td>Fire Protection/Deluge(*): A</td>
</tr>
<tr>
<td>Lightning Protection: Y</td>
</tr>
<tr>
<td>Commercial Telephone: Y</td>
</tr>
<tr>
<td>Personnel Airlock: Y</td>
</tr>
<tr>
<td>Grounding: Y</td>
</tr>
<tr>
<td>Explosion Proof: NA</td>
</tr>
</tbody>
</table>

Detailed Equipment Resources

<table>
<thead>
<tr>
<th>Special Tool Kit: Y</th>
</tr>
</thead>
<tbody>
<tr>
<td>Slings: Y</td>
</tr>
<tr>
<td>OTV Adapter: Y</td>
</tr>
<tr>
<td>Breakout Boxes: NA</td>
</tr>
<tr>
<td>Adapter Cables: NA</td>
</tr>
<tr>
<td>Ground Power Unit: NA</td>
</tr>
<tr>
<td>Air Pallet: NA</td>
</tr>
<tr>
<td>Work Stands: Y</td>
</tr>
<tr>
<td>Special Hoisting Equip: Y</td>
</tr>
<tr>
<td>NASA Canister: NA</td>
</tr>
<tr>
<td>OTV Canister: NA</td>
</tr>
</tbody>
</table>

(* Legend For Data Input

Fire Protection/Deluge= A: fire protection or B: deluge or C: both or N: none

RF System= A: S Band & C Band or B: Ku Band or C: both or N: none

Hazard Level= 1: None or 2: Local Clear or 3: Area Clear or 4: Facility Clear

Others= Y: Yes or N: No or NA: Not Applicable or TD: To Be Determined
Detailed Resources Identification

Task No: 3  ELECTRICAL ASSEMBLY

Subtask No: <3.0500>  Description: <MAKE ALL ELECTRICAL CONNECTORS>

Hazard Level: 2  Local Clear

Activity: CONNECT ALL ELECTRICAL CONNECTORS NECESSARY TO APPLY POWER AND PROVIDE COMMUNICATION FOR OTV CHECKOUT

Personnel:

<table>
<thead>
<tr>
<th>Vehicle Payload Specialist(s)</th>
<th>Control Station</th>
</tr>
</thead>
<tbody>
<tr>
<td>(0)</td>
<td>(0)</td>
</tr>
<tr>
<td>Engineering</td>
<td>(0)</td>
</tr>
<tr>
<td>Shop</td>
<td>(0)</td>
</tr>
<tr>
<td>Inspector</td>
<td>(0)</td>
</tr>
<tr>
<td>Other</td>
<td>(0)</td>
</tr>
</tbody>
</table>

Sub Total: (5)

Total: (5)

Serial Time To Complete: 300 min

Automation Need: (Primary Key)

Automation Secondary Key(s):

Total Manhours: (25.0)

Detailed Facility Resources

Physical Size:

- Air Lock: 0 0 0 [W/D/H][ft]
- Doors: 0 0 0 [W/H][ft]
- High Boy: 70 100 85 [W/D/H][ft]

Crane Capacity:

- 0 Ton 0 Ft.Hook Height

Standard Commercial Power: Y

Cleanliness: 100K

Closed Circuit Television: NA

Fuel/Oxidizer Disposal: N

Fire Protection/Deluge(*): A

Lightning Protection: Y

Commercial Telephone: Y

Personnel Airlock: Y

Instrumentation Power [Uninterrupted]: NA

E.C.S: Humidity: 50 +/- 5 %

Power Cutoff: NA

Facility GN2: NA

Helium Supply: NA

Oxygen: NA

Shop Air: NA

Vacuum: NA

Paging: Y

OIS: NA

Explosion Proof: NA

Detailed Equipment Resources

- Special Tool Kit: Y
- Slings: NA
- OTV Adapter: NA
- Breakout Boxes: Y
- Adapter Cables: Y
- Ground Power Unit: NA
- Air Pallet: NA
- Work Stands: Y
- Special Hoisting Equip: NA
- NASA Canister: NA
- OTV Canister: NA

(*) Legend For Data Input

Fire Protection/Deluge: A: fire protection
or B: deluge
or C: both
or N: none

RF System: A: S Band
or B: Ku Band
or C: both
or N: none

Hazard Level: 1: None
or 2: Local Clear
or 3: Area Clear
or 4: Facility Clear

Others: Y: Yes
or N: No

Other: NA: Not Applicable

TD: To Be Determined

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### Detailed Resources Identification

**Task No:** 4  **MECHANICAL SYSTEMS TEST**

**Subtask No:** < 4.0100>

**Description:** <LEAK AND PRESSURE CHECKS >

**Hazard Level:** 2  Local Clear

**Activity:** VERIFY PLUMBING CONNECTIONS, CONFIGURE N2 SYSTEM, PRESSURIZE TANK SET AND PROPOSITION SYSTEM PLUMBING

#### Personnel:

<table>
<thead>
<tr>
<th>Vehicle</th>
<th>Control Station</th>
</tr>
</thead>
<tbody>
<tr>
<td>Payload Specialist(s) (0)</td>
<td>(0)</td>
</tr>
<tr>
<td>Engineering (2)</td>
<td>(0)</td>
</tr>
<tr>
<td>Shop (2)</td>
<td>(0)</td>
</tr>
<tr>
<td>Inspector (2)</td>
<td>(0)</td>
</tr>
<tr>
<td>Other (0)</td>
<td>(0)</td>
</tr>
</tbody>
</table>

Sub Total: (6)  Total: (6)

**Serial Time To Complete:** 1380 min  **Total Manhours:** (138.0)

**Automation Need:** (Primary Key)

**Automation Secondary Key(s):**

### Detailed Facility Resources

<table>
<thead>
<tr>
<th>Physical Size:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air Lock: 0 0 0 [W/D/H][ft]</td>
</tr>
<tr>
<td>Doors: 0 0 [W/H][ft]</td>
</tr>
<tr>
<td>High Bay: 70 100 85 [W/D/H][ft]</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Crane Capacity:</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 Ton 0 Ft.Hook Height</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Standard Commercial Power:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Y</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Instrumentation Power [Uninterrupted]:</th>
</tr>
</thead>
<tbody>
<tr>
<td>NA</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>E.C.S:</th>
</tr>
</thead>
<tbody>
<tr>
<td>50 +/- 5%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Humidity:</th>
</tr>
</thead>
<tbody>
<tr>
<td>50 +/-</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Temperature:</th>
</tr>
</thead>
<tbody>
<tr>
<td>70 +/- 5 F</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Facility GN2:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Y</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Shop Air:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Y</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Vacuum:</th>
</tr>
</thead>
<tbody>
<tr>
<td>NA</td>
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<table>
<thead>
<tr>
<th>Potable Water:</th>
</tr>
</thead>
<tbody>
<tr>
<td>NA</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Paging:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Y</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>OIS:</th>
</tr>
</thead>
<tbody>
<tr>
<td>NA</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Explosion Proof:</th>
</tr>
</thead>
<tbody>
<tr>
<td>NA</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Special Tool Kit:</th>
</tr>
</thead>
<tbody>
<tr>
<td>NA</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Slings:</th>
</tr>
</thead>
<tbody>
<tr>
<td>NA</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>OTV Adapter:</th>
</tr>
</thead>
<tbody>
<tr>
<td>NA</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Breakout Boxes:</th>
</tr>
</thead>
<tbody>
<tr>
<td>NA</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Adapter Cables:</th>
</tr>
</thead>
<tbody>
<tr>
<td>NA</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Ground Power Unit:</th>
</tr>
</thead>
<tbody>
<tr>
<td>NA</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Air Pallet:</th>
</tr>
</thead>
<tbody>
<tr>
<td>NA</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Work Stands:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Y</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Special Hoisting Equip:</th>
</tr>
</thead>
<tbody>
<tr>
<td>NA</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>NASA Canister:</th>
</tr>
</thead>
<tbody>
<tr>
<td>NA</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>OTV Canister:</th>
</tr>
</thead>
<tbody>
<tr>
<td>NA</td>
</tr>
</tbody>
</table>

### Detailed Equipment Resources

- Fire Protection/Deluge: A: fire protection  or B: deluge  or C: both  or N: none
- RF System: A: S Band & C Band  or B: Ku Band  or C: both  or N: none
- Hazard Level: 1: None  or 2: Local Clear  or 3: Area Clear  or 4: Facility Clear
- Others: Y: Yes  N: No  NA: Not Applicable  TD: To Be Determined
Detailed Resources Identification

Task No: 5  ELECTRICAL SYSTEMS TEST

Subtask No: < 5.0100> Description: <GROUND POWER APPLICATION >
Hazard Level(s): 1 None
Activity: APPLY POWER ON THE GROUND POWER UNIT. CONNECT LOAD BOXES TO ADAPTER CABLES AND ATTACH TO CPU OUTPUT—APPLY SIMULATED OTV LOAD

Personnel:

<table>
<thead>
<tr>
<th>Vehicle</th>
<th>Control Station</th>
</tr>
</thead>
<tbody>
<tr>
<td>Payload Specialist(s)</td>
<td>0</td>
</tr>
<tr>
<td>Engineering</td>
<td>1</td>
</tr>
<tr>
<td>Shop</td>
<td>2</td>
</tr>
<tr>
<td>Inspector</td>
<td>1</td>
</tr>
<tr>
<td>Other</td>
<td>0</td>
</tr>
<tr>
<td>Sub Total</td>
<td>4</td>
</tr>
</tbody>
</table>

Serial Time To Complete: 240 min  Total Manhours ( 16.0)

Automation Need: (Primary Key)

Automation Secondary Key(s): 0

Detailed Facility Resources

Physical Size:

<table>
<thead>
<tr>
<th>Air Lock</th>
<th>Doors</th>
<th>High Bay</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 0 0 [W/D/H][ft]</td>
<td>0 0 [W/H][ft]</td>
<td>70 100 85 [W/D/H][ft]</td>
</tr>
</tbody>
</table>

Crane Capacity: 0 Ton 0 Ft.Hook Height

Standard Commerical Power: Y  Instrumentation Power [Uninterrupted]: Y

Cleanliness: 100K  E.C.S: Humidity: 50 +/- 5 %  Temperature: 70 +/- 5 F

Closed Circuit Television: NA  Power Cutoff: Y  Facility GN2: NA

Fuel/Oxidizer Disposal: N  Helium Supply: NA  Shop Air: NA

Fire Protection/Deluge(*): A  Shower/Eye Wash: NA  Vacuum: NA

Lightning Protection: Y  Potable Water: NA  Paging: Y

Commerical Telephone: Y  RF System(*): A  OIS: NA

Personnel Airlock: Y  Grounding: Y  Explosion Proof: NA

Detailed Equipment Resources

Special Tool Kit: NA  Slings: NA  OTV Adapter: NA

Breakout Boxes: Y  Adapter Cables: Y  Ground Power Unit: Y

Air Pallet: NA  Work Stands: Y  Special Hoisting Equip: NA

NASA Canister: NA  OTV Canister: NA

(*) Legend For Data Input

Fire Protection/Deluge= A: fire protection  or B: deluge  or C: both  or N: none

Hazard Level= 1: None  or 2: Local Clear  or 3: Area Clear  or 4: Facility Clear

Others= Y: Yes  or N: No

RF System= A: S Band & C Band  or B: Ku Band  or C: both  or N: none

Legend for Data Input

Fire Protection/Deluge = A: fire protection  or B: deluge  or C: both  or N: none

Hazard Level = 1: None  or 2: Local Clear  or 3: Area Clear  or 4: Facility Clear

Others = Y: Yes  or N: No

Serial Time To Complete = 240 min  Total Manhours = 16.0

Automation Need = (Primary Key)

Automation Secondary Key(s) = 0

Detailed Facility Resources

Physical Size:

<table>
<thead>
<tr>
<th>Air Lock</th>
<th>Doors</th>
<th>High Bay</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 0 0 [W/D/H][ft]</td>
<td>0 0 [W/H][ft]</td>
<td>70 100 85 [W/D/H][ft]</td>
</tr>
</tbody>
</table>

Crane Capacity: 0 Ton 0 Ft.Hook Height

Standard Commerical Power: Y  Instrumentation Power [Uninterrupted]: Y

Cleanliness: 100K  E.C.S: Humidity: 50 +/- 5 %  Temperature: 70 +/- 5 F

Closed Circuit Television: NA  Power Cutoff: Y  Facility GN2: NA

Fuel/Oxidizer Disposal: N  Helium Supply: NA  Shop Air: NA

Fire Protection/Deluge(*): A  Shower/Eye Wash: NA  Vacuum: NA

Lightning Protection: Y  Potable Water: NA  Paging: Y

Commercial Telephone: Y  RF System(*): A  OIS: NA

Personnel Airlock: Y  Grounding: Y  Explosion Proof: NA

Detailed Equipment Resources

Special Tool Kit: NA  Slings: NA  OTV Adapter: NA

Breakout Boxes: Y  Adapter Cables: Y  Ground Power Unit: Y

Air Pallet: NA  Work Stands: Y  Special Hoisting Equip: NA

NASA Canister: NA  OTV Canister: NA
Detailed Resources Identification

Task No: 5  ELECTRICAL SYSTEMS TEST

Subtask No: < 5.0200>

Description: <SINGLE POINT GROUND CHECKS>

Activity: PERFORM SINGLE POINT GROUND CHECKS

Personnel:

<table>
<thead>
<tr>
<th>Role</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Payload Specialist(s)</td>
<td>(0)</td>
</tr>
<tr>
<td>Engineering</td>
<td>(1)</td>
</tr>
<tr>
<td>Shop</td>
<td>(2)</td>
</tr>
<tr>
<td>Inspector</td>
<td>(1)</td>
</tr>
<tr>
<td>Other</td>
<td>(0)</td>
</tr>
<tr>
<td>Sub Total</td>
<td>(4)</td>
</tr>
</tbody>
</table>

Serial Time To Complete: 180 min

Automation Need: (Primary Key)

Automation Secondary Key(s)

Detailed Facility Resources

Physical Size:

<table>
<thead>
<tr>
<th>Component</th>
<th>Dimensions [W/D/H][ft]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air Lock</td>
<td>0 0 0</td>
</tr>
<tr>
<td>Doors</td>
<td>0 0 0</td>
</tr>
<tr>
<td>High Bay</td>
<td>70 100 85</td>
</tr>
</tbody>
</table>

Crane Capacity:

<table>
<thead>
<tr>
<th>Capacity [Ton]</th>
<th>Hook Height [Ft.]</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

Standard Commercial Power: Y

Cleanliness: 100K

Closed Circuit Television: NA

Fuel/Oxidizer Disposal: N

Fire Protection/Deluge(*): A

Lightning Protection: Y

Commercial Telephone: Y

Personnel Airlock: Y

Detailed Equipment Resources

<table>
<thead>
<tr>
<th>Component</th>
<th>NA</th>
<th>Y</th>
<th>NA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Special Tool Kit</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Breakout Boxes</td>
<td>Y</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Air Pallet</td>
<td>NA</td>
<td></td>
<td></td>
</tr>
<tr>
<td>NASA Canister</td>
<td>NA</td>
<td></td>
<td></td>
</tr>
<tr>
<td>OTV Adapter</td>
<td>NA</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adapter Cables</td>
<td>Y</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Work Stands</td>
<td>Y</td>
<td></td>
<td></td>
</tr>
<tr>
<td>OTV Canister</td>
<td>NA</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ground Power Unit</td>
<td>Y</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(*) Legend For Data Input

Fire Protection/Deluge: A: fire protection
or B: deluge
or C: both
or N: none

Hazard Level: 1: None
or 2: Local Clear
or 3: Area Clear
or 4: Facility Clear

RF System: A: S Band & C Band
or B: Ku Band
or C: both
or N: none

Others: Y: Yes
or N: No

TD: To Be Determined
**Detailed Resources Identification**

**Task No:** 5  **ELECTRICAL SYSTEMS TEST**

<table>
<thead>
<tr>
<th>Subtask No: &lt; 5.0300&gt;</th>
<th>Description: &lt;ACTIVATE POWER/ESSENTIAL BUS &gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hazard Level(*) : 1</td>
<td>None</td>
</tr>
<tr>
<td>Activity: POWER ON THE POWER BUS AND VERIFY POWER PROFILE. POWER ON THE ESSENTIAL BUS AND VERIFY POWER PROFILE.</td>
<td></td>
</tr>
</tbody>
</table>

**Personnel:**

<table>
<thead>
<tr>
<th>Vehicle</th>
<th>Control Station</th>
</tr>
</thead>
<tbody>
<tr>
<td>Payload Specialist(s): (0)</td>
<td>(0)</td>
</tr>
<tr>
<td>Engineering : (1)</td>
<td>(2)</td>
</tr>
<tr>
<td>Shop : (2)</td>
<td>(2)</td>
</tr>
<tr>
<td>Inspector : (1)</td>
<td>(2)</td>
</tr>
<tr>
<td>Other : (0)</td>
<td></td>
</tr>
<tr>
<td>Sub Total : (4)</td>
<td>Total : (6)</td>
</tr>
</tbody>
</table>

**Serial Time To Complete:** 60 min  **Total Manhours:** (10.0)

**Automation Need:** (Primary Key)

**Automation Secondary Key(s):**

<table>
<thead>
<tr>
<th>Control Station</th>
<th>0</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>2</td>
<td></td>
</tr>
</tbody>
</table>

**Detailed Facility Resources**

<table>
<thead>
<tr>
<th>Physical Size:</th>
<th>Crane Capacity:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air Lock: 0 0 0 [W/D/H][ft]</td>
<td>0 Ton 0 Ft.Hook Height</td>
</tr>
<tr>
<td>Doors: 0 0 [H][ft]</td>
<td></td>
</tr>
<tr>
<td>High Bay: 70 100 85 [W/D/H][ft]</td>
<td>0 Ton 0 Ft.Hook Height</td>
</tr>
</tbody>
</table>

**Standard Commercial Power:** Y  **Instrumentation Power [Uninterrupted]:** Y

**Cleanliness:** 100K  **E.C.S:** Humidity: 50 +/- 5 %  **Temperature:** 70 +/- 5 F  **Facility GN2:** NA

**Closed Circuit Television:** NA  **Power Cutoff:** Y  **Shop Air:** NA

**Fuel/Oxidizer Disposal:** N  **Shower/Eye Wash:** NA  **Vacuum:** NA

**Fire Protection/Deluge(*):** A  **Lightning Protection:** Y  **OIS:** NA

**Commercial Telephone:** Y  **Personnel Airlock:** Y  **Explosion Proof:** NA

**Facility GN2:** NA

**Grounding:** Y  **OTV Adapter:** NA

**Special Tool Kit:** NA  **OIS:** NA

**Breakout Boxes:** Y  **Work Stands:** Y  **Special Hoisting Equip:** NA

**Air Pallet:** NA  **Ground Power Unit:** Y

**NASA Canister:** NA  **OTV Canister:** NA

<table>
<thead>
<tr>
<th>(*) Legend For Data Input</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fire Protection/Deluge:* A: fire protection or B: deluge or C: both or N: none</td>
</tr>
<tr>
<td>Hazard Level: 1: None or 2: Local Clear or 3: Area Clear or 4: Facility Clear</td>
</tr>
<tr>
<td>Others: Y: Yes or N: No or NA: Not Applicable or TD: To Be Determined</td>
</tr>
</tbody>
</table>

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Detailed Resources Identification

Task No: 5  ELECTRICAL SYSTEMS TEST

Subtask No: < 5.0400>  Description: <AVIONICS POWER ON CHECKS >

Hazard Level(*): 1 None
Activity: APPLY OTV AVIONICS BUS POWER FROM THE TEST SET OR THE OTVCS

Personnel:

<table>
<thead>
<tr>
<th>Vehicle</th>
<th>Control Station</th>
</tr>
</thead>
<tbody>
<tr>
<td>Payload Specialist(s)</td>
<td>(0)</td>
</tr>
<tr>
<td>Engineering</td>
<td>(1)</td>
</tr>
<tr>
<td>Shop</td>
<td>(2)</td>
</tr>
<tr>
<td>Inspector</td>
<td>(1)</td>
</tr>
<tr>
<td>Other</td>
<td>(0)</td>
</tr>
<tr>
<td>Sub Total</td>
<td>(4)</td>
</tr>
</tbody>
</table>

Serial Time To Complete: 180 min  Total Manhours (30.0)

Automation Need: (Primary Key)
Automation Secondary Key(s):  

Detailed Facility Resources

<table>
<thead>
<tr>
<th>Physical Size</th>
<th>Crane Capacity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air Lock: 0 0 0 [W/D/H][ft]</td>
<td>0 Ton 0 Ft.Hook Height</td>
</tr>
<tr>
<td>Doors: 0 0 [W/H][ft]</td>
<td>0 Ton 0 Ft.Hook Height</td>
</tr>
<tr>
<td>High Boy: 70 100 85 [W/D/H][ft]</td>
<td>0 Ton 0 Ft.Hook Height</td>
</tr>
</tbody>
</table>

Standard Commerical Power: Y  Instrumentation Power [Uninterrupted]: Y

Cleanliness: 100K  E.C.S: Humidity: 50 +/- 5%
Closed Circuit Television: NA  Temperature: 78 +/- 5 F
Fuel/Oxidizer Disposal: N  Power Cutoff: Y
Fire Protection/Deluge(*): A  Facility GN2: NA
Lightning Protection: Y  Shop Air: NA
Commercial Telephone: Y  Helium Supply: NA
Personnel Airlock: Y  Shower/Eye Wash: NA

Detailed Equipment Resources

Special Tool Kit: NA  Slings: NA
Breakout Boxes: Y  Adapter Cables: Y
Air Pallet: NA  Ground Power Unit: Y
NASA Canister: NA  OTV Canister: NA

(*) Legend For Data Input

Fire Protection/Deluge(*): A: fire protection
or B: deluge
or C: both
or N: none

RF System(*): A: S Band & C Band
or B: Ku Band
or C: both
or N: none

Hazard Level(*): 1: None
or 2: Local Clear
or 3: Area Clear
or 4: Facility Clear

Others(*): Y: Yes
or N: No
or NA: Not Applicable
or TD: To Be Determined
Detailed Resources Identification

Task No: 5 ELECTRICAL SYSTEM TEST

Subtask No: < 5.0500> Description: <DPA SUBSYSTEM CHECKS>

Hazard Level(*): 1 None
Activity: VERIFY ALL AVIONICS ARE ON AND TELEMETRY MEASUREMENTS ARE PROPER.

Personnel:

<table>
<thead>
<tr>
<th>Vehicle</th>
<th>Control Station</th>
</tr>
</thead>
<tbody>
<tr>
<td>Payload Specialist(s)</td>
<td>(0)</td>
</tr>
<tr>
<td>Engineering</td>
<td>(1)</td>
</tr>
<tr>
<td>Shop</td>
<td>(2)</td>
</tr>
<tr>
<td>Inspector</td>
<td>(1)</td>
</tr>
<tr>
<td>Other</td>
<td>(0)</td>
</tr>
<tr>
<td>Sub Total</td>
<td>(4)</td>
</tr>
</tbody>
</table>

Serial Time To Complete: 30 min
Total Manhours: (5.0)

Automation Need: (Primary Key)

Automation Secondary Key(s): NA

Detailed Facility Resources

Physical Size:
- Air Lock: 0 0 0 [W/D/H][ft]
- Doors: 0 0 [W/H][ft]
- High Bay: 70 100 85 [W/D/H][ft]

Crane Capacity:
- 0 Ton 0 Ft.Hook Height

Standard Commercial Power: Y

Cleanliness: 100K

Closed Circuit Television: NA

Fuel/Oxidizer Disposal: N

Fire Protection/Deluge(*): A

Lightning Protection: Y

Commerical Telephone: Y

Personnel Airlock: Y

Instrumentation Power [Uninterrupted]: Y

E.C.S.: Humidity: 50 +/- 5 %

Power Cutoff: Y

Facility GN2: NA

Heilum Supply: NA

Shop Air: NA

Shower/Eye Wash: NA

Vacuum: NA

Paging: Y

OIS: Y

Explosion Proof: NA

Temperature: 70 +/- 5 F

Facility GN2: NA

Special Hoisting Equip: NA

Ground Power Unit: Y

Special Hoisting Equip: NA

OTV Canister: NA

(*) Legend For Data Input

Fire Protection/Deluge= A: fire protection or B: deluge or C: both or N: none

RF System= A: S Band & C Band or B: Ku Band or C: both or N: none

Hazard Level= 1: None or 2: Local Clear or 3: Area Clear or 4: Facility Clear or 5: Area Clear or N: None

Others= Y: Yes or N: No

NA: Not Applicable

TO: To Be Determined

38
Detailed Resources Identification

Task No: 6 INTEGRATED SYSTEM TEST

Subtask No: < 6.0100>

Description: <AEROBRAKE CONTROL CHECKS>

Activity: PERFORM AEROBRAKE CHECKS TO VERIFY PROPER OPERATION OF ALL COMPONENTS.

Personnel:

<table>
<thead>
<tr>
<th>Vehicle</th>
<th>Control Station</th>
</tr>
</thead>
<tbody>
<tr>
<td>Payload Specialist(s)</td>
<td>0</td>
</tr>
<tr>
<td>Engineering</td>
<td>2</td>
</tr>
<tr>
<td>Shop</td>
<td>6</td>
</tr>
<tr>
<td>Inspector</td>
<td>2</td>
</tr>
<tr>
<td>Other</td>
<td>0</td>
</tr>
<tr>
<td><strong>Sub Total</strong></td>
<td><strong>(16)</strong></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>(6)</strong></td>
</tr>
</tbody>
</table>

Serial Time To Complete: 480 min

Total Manhours: (128.0)

Automation Need: (Primary Key)

Automation Secondary Key(s): 

---

Detailed Facility Resources

Physical Size:

<table>
<thead>
<tr>
<th>Air Lock</th>
<th>0 0 0</th>
<th>[W/D/H][ft]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Doors</td>
<td>0 0</td>
<td>[W/H][ft]</td>
</tr>
<tr>
<td>High Bay</td>
<td>70 100 85</td>
<td>[W/D/H][ft]</td>
</tr>
</tbody>
</table>

Crane Capacity:

| 0 Ton 0 Ft.Hook Height |

Standard Commercial Power: Y

Cleanliness: 100K

Closed Circuit Television: Y

Fuel/Oxidizer Disposal: N

Fire Protection/Deluge(«): A

Lightning Protection: Y

Commercial Telephone: Y

Personnel Airlock: Y

Instrumentation Power [Uninterrupted]: Y

E.C.S: Humidity: 50 +/− 5 %

Power Cutoff: Y

Facility GN2: Y

Shop Air: NA

Shower/Eye Wash: NA

Potable Water: NA

OIS: Y

Explosion Proof: NA

Grounding: Y

Temperature: 70 +/− 5 F

Focility GN2: Y

Shop Air: NA

Vacuum: NA

Paging: Y

OIS: Y

Explosion Proof: NA

---

Detailed Equipment Resources

Special Tool Kit: NA

Slings: NA

OTV Adapter: NA

Breakout Boxes: Y

Adapter Cables: Y

Ground Power Unit: Y

Air Pallet: NA

Work Stands: Y

Special Hoisting Equip: NA

NASA Canister: NA

OTV Canister: NA

---

Legend For Data Input

Fire Protection/Deluge(«): A: fire protection or B: deluge or C: both or N: none

RF System(«): A: S Band & C Band or B: Ku Band or C: both or N: none

Hazard Level: 1: None or 2: Local Clear or 3: Area Clear or 4: Facility Clear

Others: Y: Yes or N: No or TD: To Be Determined

---

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## Detailed Resources Identification

**Task No:** 6  
**INTEGRATED SYSTEM TEST**  

**Subtask No:** 6.0200  
**Description:** <EXTENDABLE EXIT CONE CHECKS>  
**Hazard Level:** 2  
**Activity:** EXTEND/RETRACT EEC-VERIFY ALL COMPONENTS ARE OPERATING PROPERLY.

### Personnel

<table>
<thead>
<tr>
<th>Vehicle</th>
<th>Control Station</th>
</tr>
</thead>
<tbody>
<tr>
<td>Payload Specialist(s)</td>
<td>(0)</td>
</tr>
<tr>
<td>Engineering</td>
<td>(2)</td>
</tr>
<tr>
<td>Shop</td>
<td>(1)</td>
</tr>
<tr>
<td>Inspector</td>
<td>(0)</td>
</tr>
<tr>
<td><strong>Sub Total</strong></td>
<td>(5)</td>
</tr>
</tbody>
</table>

### Automation Need:

- **Automation Need:** (Primary Key)

### Automation Secondary Key(s):

- : 
- : 
- : 

### Detailed Facility Resources

<table>
<thead>
<tr>
<th>Physical Size:</th>
<th>Crane Capacity:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air Lock:  0 0 0 [W/D/H][ft]</td>
<td>0 Ton 0 Ft.Hook Height</td>
</tr>
<tr>
<td>Doors: 0 0 [W/H][ft]</td>
<td></td>
</tr>
<tr>
<td>High Bay: 70 100 85 [W/D/H][ft]</td>
<td>0 Ton 0 Ft.Hook Height</td>
</tr>
</tbody>
</table>

### Standard Commercial Power: Y  
- Instrumentation Power [Uninterrupted]: Y  

- **Cleanliness:** 100K  
- **E.C.S.:** Humidity: 50 +/- 5%  
- **Power Cutoff:** Y  
- **Facility GN2:** NA  
- **Temperature:** 70 +/- 5 F  
- **Helium Supply:** NA  
- **Shop Air:** NA  
- **Potable Water:** NA  
- **RF System:** C  
- **OIS:** Y  
- **Explosion Proof:** NA

### Detailed Equipment Resources

- **Special Tool Kit:** NA  
- **Slings:** NA  
- **OTV Adapter:** NA  
- **Breakout Boxes:** Y  
- **Adapter Cables:** Y  
- **Ground Power Unit:** Y  
- **Air Pallet:** NA  
- **Work Stands:** Y  
- **Special Hoisting Equip:** NA  
- **NASA Canister:** NA  
- **OTV Canister:** NA

### Legend For Data Input

- **Fire Protection/Deluge**  
  - A: fire protection  
  - B: deluge  
  - C: both  
  - N: none

- **Hazard Level:**  
  - 1: None  
  - 2: Local Clear  
  - 3: Area Clear  
  - 4: Facility Clear  

- **Others:**  
  - Y: Yes  
  - N: No  
  - NA: Not Applicable  
  - TD: To Be Determined
**Detailed Resources Identification**

**Task No:** 6  
**INTEGRATED SYSTEM TEST**

**Subtask No:** 6.0300  
**Description:** <ENGINE GIMBLE CHECKS>

**Hazard Level(s):** 2  
**Local Clear**

**Activity:** CONFIGURE GPS/OTV GSE AND TRANSMISSION SYSTEM, TRANSMIT COMMAND (Ku-BAND CLR)

**Personnel:**

<table>
<thead>
<tr>
<th>Role</th>
<th>Pay Load Specialist(s)</th>
<th>Engineering</th>
<th>Shop</th>
<th>Inspector</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(0)</td>
<td>(2)</td>
<td>(2)</td>
<td>(1)</td>
<td>(0)</td>
</tr>
<tr>
<td><strong>Sub Total</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(5)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(6)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Serial Time To Complete:** 120 min  
**Total Manhours:** 22.0

**Automation Need:** (Primary Key)

**Automation Secondary Key(s):**

**Detailed Facility Resources**

<table>
<thead>
<tr>
<th>Physical Size:</th>
<th>Crane Capacity:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air Lock: 0 0 0 [W/D/H][ft]</td>
<td>0 Ton 0 Ft.Hook Height</td>
</tr>
<tr>
<td>Doors: 0 0 [W/H][ft]</td>
<td></td>
</tr>
<tr>
<td>High Bay: 70 100 85 [W/D/H][ft]</td>
<td></td>
</tr>
</tbody>
</table>

**Standard Commercial Power:** Y  
**Instrumentation Power [Uninterrupted]:** Y

**Cleanliness:** 100K

**Closed Circuit Television:** Y  
**E.C.S.:** Humidity: 50 +/- 5%  
**Power Cutoff:** Y  
**Facility GN2:** NA

**Fire Protection/Deluge:** A  
**Potable Water:** NA  
**Paging:** Y

**Lightning Protection:** Y  
**Helium Supply:** NA  
**Shop Air:** NA

**Commerical Telephone:** Y  
**RF System:** C  
**OIS:** Y

**Personnel Airlock:** Y  
**Grounding:** Y  
**Explosion Proof:** NA

**Detailed Equipment Resources**

<table>
<thead>
<tr>
<th>Special Tool Kit: NA</th>
<th>Slings: NA</th>
<th>OTV Adapter: NA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Breakout Boxes: Y</td>
<td>Adapter Cables: Y</td>
<td>Ground Power Unit: Y</td>
</tr>
<tr>
<td>Air Pallet: NA</td>
<td>Work Stands: Y</td>
<td>Special Hoisting Equip: NA</td>
</tr>
<tr>
<td>NASA Canister: NA</td>
<td>OTV Canister: NA</td>
<td></td>
</tr>
</tbody>
</table>

**Legend For Data Input**

- **Fire Protection/Deluge:** A: fire protection  
  or B: deluge  
  or C: both  
  or N: none

- **Hazard Level:** 1: None  
  or 2: Local Clear  
  or 3: Area Clear  
  or 4: Facility Clear

- **Others:** Y: Yes  
  N: No  
  NA: Not Applicable  
  TD: To Be Determined

---

41
Detailed Resources Identification

Task No: 6  INTEGRATED SYSTEM TEST

Subtask No: < 6.0400>  Description: <INTEGRATED SYSTEMS CHECKS >

Hazard Level(*): 1  None
Activity: CONFIGURE GPS/OTV GSE AND TRANSMISSION SYSTEMS. TRANSMIT COMMAND (Ku-BAND CLR)

Personnel:

<table>
<thead>
<tr>
<th>Vehicle</th>
<th>Control Station</th>
</tr>
</thead>
<tbody>
<tr>
<td>Payload Specialist(s) (0)</td>
<td>(0)</td>
</tr>
<tr>
<td>Engineering (2)</td>
<td>(2)</td>
</tr>
<tr>
<td>Shop (2)</td>
<td>(2)</td>
</tr>
<tr>
<td>Inspector (1)</td>
<td>(1)</td>
</tr>
<tr>
<td>Other (0)</td>
<td>(0)</td>
</tr>
</tbody>
</table>

Sub Total (5)  Total (6)

Serial Time To Complete: 1438 min  Total Manhours (263.6)

Automation Need: (Primary Key)
Automation Secondary Key(s)

Detailed Facility Resources

<table>
<thead>
<tr>
<th>Physical Size:</th>
<th>Crane Capacity:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air Lock: 0 0 0 [W/D/H][ft]</td>
<td>0 Ton 0 Ft.Hook Height</td>
</tr>
<tr>
<td>Doors: 0 0 [W/H][ft]</td>
<td></td>
</tr>
<tr>
<td>High Bay: 70 100 85 [W/D/H][ft]</td>
<td>0 Ton 0 Ft.Hook Height</td>
</tr>
</tbody>
</table>

Standard Commercial Power: Y  Instrumentation Power [Uninterrupted]: Y

Cleanliness: 100K  E.C.S: Humidity: 50 +/- 5 %  Temperature: 70 +/- 5 F
Closed Circuit Television: NA  Power Cutoff: Y  Facility GN2: NA
Fuel/Oxidizer Disposal: N  Shop Air: NA
Fire Protection/Deluge(*): A  Shower/Eye Wash: NA  Vacuum: NA
Lightning Protection: Y  Potable Water: NA  Paging: Y
Commercial Telephone: Y  RF System(*): C  OIS: Y
Personnel Airlock: Y  Grounding: Y  Explosion Proof: NA

Detailed Equipment Resources

Special Tool Kit: NA  Slings: NA  OTV Adapter: NA
Breakout Boxes: Y  Adapter Cables: Y  Ground Power Unit: Y
Air Pallet: NA  Work Stands: Y  Special Hoisting Equip: NA
NASA Canister: NA  OTV Canister: NA

(*) Legend For Data Input

Fire Protection/Deluge: A: fire protection  RF System: A: S Band & C Band
or B: deluge  or B: Ku Band
or C: both  or C: both
or N: none  or N: none

Hazard Level: 1: None
 or 2: Local Clear
 or 3: Area Clear
 or 4: Facility Clear

Others: Y: Yes  N: No
 NA: Not Applicable  T/D: To Be Determined

42
Detailed Resources Identification

Task No: 6  INTEGRATED SYSTEM TEST

Subtask No: <6.0500>  Description: <GPS OPERATION CHECKS>

Hazard Level(*) : 1  None
Activity: CONFIGURE GPS/OTV/GSE AND TRANSMISSION SYSTEM

Personnel:

<table>
<thead>
<tr>
<th>Subtask</th>
<th>Activity</th>
<th>Vehicle</th>
<th>Control Station</th>
</tr>
</thead>
<tbody>
<tr>
<td>6.0500</td>
<td>CONFIGURE GPS/OTV/GSE AND TRANSMISSION SYSTEM</td>
<td>6</td>
<td>6</td>
</tr>
</tbody>
</table>

Personnel:

<table>
<thead>
<tr>
<th>Personnei</th>
<th>Vehicle</th>
<th>Control Station</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Payload Specialist(s)</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>Engineering</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Shop</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Inspector</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Other</td>
<td>0</td>
</tr>
<tr>
<td>Sub Total</td>
<td></td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>6</td>
</tr>
</tbody>
</table>

Serial Time To Complete: 720 min  Total Manhours (132.0)

Automation Need: (Primary Key)

Automation Secondary Key(s):

Detailed Facility Resources

Physical Size:

<table>
<thead>
<tr>
<th>Air Lock: 0 0 0 [W/D/H][ft]</th>
<th>Crane Capacity: 0 Ton 0 Ft.Hook Height</th>
</tr>
</thead>
<tbody>
<tr>
<td>Doors: 0 0 [W/H][ft]</td>
<td></td>
</tr>
<tr>
<td>High Bay: 70 100 85 [W/D/H][ft]</td>
<td>0 Ton 0 Ft.Hook Height</td>
</tr>
</tbody>
</table>

Standard Commercial Power: Y  Instrumentation Power [Uninterrupted]: Y

Cleanliness: 100K  E.C.S.: Humidity: 50 +/- 5%  Temperature: 70 +/- 5 F

Closed Circuit Television: NA  Power Cutoff: Y  Facility GN2: NA

Fuel/Oxidizer Disposal: N  Helium Supply: NA  Shop Air: NA

Fire Protection/DeIuge(*) : A  Shower/Eye Wash: NA  Vacuum: NA

Lightning Protection: Y  Potable Water: NA  Paging: Y

Commercial Telephone: Y  RF System(*) : C  OIS: Y

Personnel Airlock: Y  Grounding: Y  Explosion Proof: NA

Detailed Equipment Resources

<table>
<thead>
<tr>
<th>Special Tool Kit: NA</th>
<th>Slings: NA</th>
<th>OTV Adapter: NA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Breakout Boxes: Y</td>
<td>Adapter Cables: Y</td>
<td>Ground Power Unit: Y</td>
</tr>
<tr>
<td>Air Pallet: NA</td>
<td>Work Stands: Y</td>
<td>Special Hoisting Equip: NA</td>
</tr>
<tr>
<td>NASA Canister: NA</td>
<td>OTV Canister: NA</td>
<td></td>
</tr>
</tbody>
</table>

(*) Legend For Data Input

Fire Protection/DeIuge(*) : A: fire protection
or B: deluge
or C: both
or N: none

RF System(*) : A: S Band & C Band
or B: Ku Band
or C: both
or N: none

Hazard Level(*) : 1: None
or 2: Local Clear
or 3: Area Clear
or 4: Facility Clear

Others(*) : Y: Yes
or N: No
or NA: Not Applicable
or TD: To Be Determined
### Detailed Resources Identification

**Task No:** 7  
**OTV/CS-G TEST**

**Subtask No:** < 7.0100>  
**Description:** <OTVCS RF TEST>

**Activity:** CONFIGURE OTV/GPS/GSE AND TRANSMISSION SYSTEM, TRANSMIT COMMANDS

#### Personnel:

<table>
<thead>
<tr>
<th>Vehicle</th>
<th>Control Station</th>
</tr>
</thead>
<tbody>
<tr>
<td>Payload Specialist(s)</td>
<td>0</td>
</tr>
<tr>
<td>Engineering</td>
<td>2</td>
</tr>
<tr>
<td>Shop</td>
<td>2</td>
</tr>
<tr>
<td>Inspector</td>
<td>1</td>
</tr>
<tr>
<td>Other</td>
<td>0</td>
</tr>
<tr>
<td><strong>Sub Total</strong></td>
<td>5</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Total</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
</tr>
</tbody>
</table>

**Serial Time To Complete:** 960 min  
**Total Manhours:** (176.0)

**Automation Need:** (Primary Key)

**Automation Secondary Key(s):**

#### Detailed Facility Resources

**Physical Size:**

<table>
<thead>
<tr>
<th>Air Lock</th>
<th>Doors</th>
<th>High Bay</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 0 0</td>
<td>0 0</td>
<td>70 100</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>[W/D/H][ft]</th>
</tr>
</thead>
<tbody>
<tr>
<td>W/H][ft]</td>
</tr>
<tr>
<td>W/D/H][ft]</td>
</tr>
</tbody>
</table>

**Crane Capacity:**

| 0 Ton | 0 Ft.Hook Height |

**Standard Commercial Power:** Y  
**Instrumentation Power [Uninterrupted]:** Y

**Cleanliness:** 100K  
**E.C.S.:** Humidity: 50 +/- 5 %

**Closed Circuit Television:** NA  
**Power Cutoff:** Y

**Fuel/Oxidizer Disposal:** N  
**Facility GN2:** NA

**Fire Protection/Deluge(•):** A  
**Shop Air:** NA

**Lightning Protection:** Y  
**Vacuum:** NA

**Commercial Telephone:** Y  
**Paging:** Y

**Personnel Airlock:** Y  
**RF System(•):** C

**Grounding:** Y  
**OIS:** Y

**Detailed Equipment Resources**

<table>
<thead>
<tr>
<th>Special Tool Kit</th>
<th>Slings</th>
<th>OTV Adapter</th>
<th>Breakout Boxes</th>
<th>Adapter Cables</th>
<th>Ground Power Unit</th>
<th>Air Pallet</th>
<th>Work Stands</th>
</tr>
</thead>
<tbody>
<tr>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>NA</td>
<td>Y</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>NASA Canister</th>
<th>OIS Canister</th>
</tr>
</thead>
<tbody>
<tr>
<td>NA</td>
<td>NA</td>
</tr>
</tbody>
</table>

#### (*) Legend For Data Input

- **Fire Protection/Deluge: A:** fire protection  
  - B: deluge
  - C: both
  - N: none

- **Hazard Level:** 1: None
  - 2: Local Clear
  - 3: Area Clear
  - 4: Facility Clear

- **Others:** Y: Yes
  - N: No
  - NA: Not Applicable
  - TD: To Be Determined

---

44
Detailed Resources Identification

Task No: 8  MOVE TO CRYO LOAD FACILITY

Subtask No: < 8.0100> Description: <PREP FOR TRANSPORT TO CRYO FAC>

Hazard Level(s): 1 None
Activity: BREAK TEST CONFIGURATION-INSTALL PROTECTIVE COVERS/DEVICES-INSTALL SLING FITTING FIXTURE-REMOVE HOLDDOWN HARDWARE

Personnel:

Vehicle
Payload Specialist(s) (0) 0
Engineering (1) 0
Shop (5) 0
Inspector (2) 0
Other (0) 0

Sub Total (8) 0

Total (8) 0

Serial Time To Complete: 240 min
Total Manhours (32.0)

Automation Need: (Primary Key)
Automation Secondary Key(s)

Detailed Facility Resources

Physical Size:
Air Lock: 0 0 0 [W/D/H][ft] 0 Ton 0 Ft. Hook Height
Doors: 0 0 [W/H][ft]
High Bay: 70 100 85 [W/D/H][ft] 20 Ton 70 Ft. Hook Height

Standard Commercial Power: Y
Cleanliness: 100K
Closed Circuit Television: NA
Fuel/Oxidizer Disposal: N
Fire Protection/Deluge(*): A
Lightning Protection: Y
Commercial Telephone: Y
Personnel Airlock: Y

Instrumentation Power [Uninterrupted]: NA
E.C.S.: Humidity: 50 +/- 5 %
Power Cutoff: NA
Facility GN2: NA
Helium Supply: NA
Shop Air: NA
Shower/Eye Wash: NA
Vacuum: NA
Paging: Y
OIS: NA

Detailed Equipment Resources

Special Tool Kit: Y
Breakout Boxes: NA
Air Pallet: NA
NASA Canister: NA
Slings: Y
Adapter Cables: NA
Work Stands: Y
OTV Canister: NA

OTV Adapter: Y
Ground Power Unit: NA
Special Hoisting Equip: NA

(*): Legend For Data Input

Fire Protection/Deluge A: fire protection
or B: deluge
or C: both
or N: none

RF System A: S Band & C Band
or B: Ku Band
or C: both
or N: none

Hazard Level: 1: None
or 2: Local Clear
or 3: Area Clear
or 4: Facility Clear

Others: Y: Yes
or N: No
or NA: Not Applicable
or TD: To Be Determined

45
Detailed Resources Identification

Task No: 8 MOVE TO CRYO LOAD FACILITY

Subtask No: < 8.0200> Description: <REMOVE OTV FROM WORKSTAND >

Hazard Level(s): 1 None

Activity: MOVE TRANSPORTER INTO OTV HIGH BAY—REMOVE COVER—TRANSPORT OTV FROM WORKSTAND TO CANISTER—INSTALL/SECURE OTV IN CANISTER—INSTALL COVER

Personnel:

<table>
<thead>
<tr>
<th>Vehicle</th>
<th>Control Station</th>
</tr>
</thead>
<tbody>
<tr>
<td>Payload Specialist(s)</td>
<td>(0)</td>
</tr>
<tr>
<td>Engineering</td>
<td>(0)</td>
</tr>
<tr>
<td>Shop</td>
<td>(0)</td>
</tr>
<tr>
<td>Inspector</td>
<td>(0)</td>
</tr>
<tr>
<td>Other</td>
<td>(0)</td>
</tr>
<tr>
<td>Sub Total</td>
<td>(8)</td>
</tr>
</tbody>
</table>

Serial Time To Complete: 540 min

Automation Need: (Primary Key)

Automation Secondary Key(s): 

Total Manhours (72.0)

Detailed Facility Resources

Physical Size:

- Air Lock: 40 40 50 [W/D/H][ft]
- Doors: 35 45 [W/H][ft]
- High Bay: 70 100 85 [W/D/H][ft]

Crane Capacity:

- 10 Ton 45 Ft. Hook Height
- 20 Ton 70 Ft. Hook Height

Standard Commercial Power: Y

Cleanliness: 100K

Closed Circuit Television: NA

Fuel/Oxidizer Disposal: N

Fire Protection/Deluge(•): A

Lightning Protection: Y

Commercial Telephone: Y

Personnel Airlock: Y

Instrumentation Power [Uninterrupted]: NA

E.C.S: Humidity: 50 +/- 5 %

Power Cutoff: NA

Facility GN2: NA

Shop Air: NA

Shower/Eye Wash: NA

Potable Water: NA

RF System(•): N

OIS: NA

Grounding: Y

Temperature: 70 +/- 5 F

Facility GN2: NA

Shop Air: NA

Vacuum: NA

Paging: Y

OIS: NA

Explosion Proof: NA

Detailed Equipment Resources

- Special Tool Kit: Y
- Slings: Y
- OTV Adapter: Y
- Breakout Boxes: NA
- Adapter Cables: NA
- Ground Power Unit: NA
- Air Pallet: NA
- Work Stands: Y
- Special Hoisting Equip: Y
- NASA Canister: NA
- OTV Canister: Y

(*) Legend For Data Input

Fire Protection/Deluge= A: fire protection or B: deluge or C: both or N: none

RF System= A: S Band & C Band or B: Ku Band or C: both or N: none

Hazard Level:= 1: None or 2: Local Clear or 3: Area Clear or 4: Facility Clear

Others:= Y: Yes or N: No or NA: Not Applicable or TD: To Be Determined

46
Detailed Resources Identification

Task No: 8 MOVE TO CRYO LOAD FACILITY

Subtask No: < 8:6300> Description: MOVE OTV TO CRYO FACILITY

Hazard Level(s): None

Activity: MOVE OTV TRANSPORTER AND CANISTER TO CRYO FACILITY.

Personnel:

<table>
<thead>
<tr>
<th>Vehicle</th>
<th>Control Station</th>
</tr>
</thead>
<tbody>
<tr>
<td>Payload Specialist(s)</td>
<td>0</td>
</tr>
<tr>
<td>Engineering</td>
<td>1</td>
</tr>
<tr>
<td>Shop</td>
<td>2</td>
</tr>
<tr>
<td>Inspector</td>
<td>1</td>
</tr>
<tr>
<td>Other</td>
<td>0</td>
</tr>
<tr>
<td><strong>Sub Total</strong></td>
<td><strong>4</strong></td>
</tr>
</tbody>
</table>

Total Manhours: 16.0

Serial Time To Complete: 249 min

Automation Need: (Primary Key)

Automation Secondary Key(s):

Detailed Facility Resources

<table>
<thead>
<tr>
<th>Physical Size:</th>
<th>Crane Capacity:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air Lock: 0 0 0 [W/D/H][ft]</td>
<td>0 Ton 0 Ft.Hook Height</td>
</tr>
<tr>
<td>Doors: 0 0 0 [W/H][ft]</td>
<td>0 Ton 0 Ft.Hook Height</td>
</tr>
</tbody>
</table>

Standard Commercial Power: Y

Cleanliness: 100K

Closed Circuit Television: NA

Fuel/Oxidizer Disposal: N

Fire Protection/Deluge(s): A

Lightning Protection: Y

Commercial Telephone: Y

Personnel Airlock: NA

Instrumentation Power [Uninterrupted]: NA

Temperature: 70 +/- 5 F

Power Cutoff: NA

Shop Air: NA

Vacuum: NA

Facility LN2: NA

Commercial Telephone: Y

OIS: NA

Explosion Proof: NA

Detailed Equipment Resources

<table>
<thead>
<tr>
<th>Special Tool Kit: NA</th>
<th>Slings: NA</th>
<th>OTV Adapter: NA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Breakout Boxes: NA</td>
<td>Adapter Cables: NA</td>
<td>Ground Power Unit: NA</td>
</tr>
<tr>
<td>Air Pallet: NA</td>
<td>Work Stands: NA</td>
<td>Special Hoisting Equip: Y</td>
</tr>
<tr>
<td>NASA Canister: NA</td>
<td>OTV Canister: Y</td>
<td></td>
</tr>
</tbody>
</table>

(*) Legend For Data Input

Fire Protection/Deluge: A: fire protection
or B: deluge
or C: both
or N: none

RF System: A: S Band & C Band
or B: Ku Band
or C: both
or N: none

Hazard Level: 1: None
or 2: Local Clear
or 3: Area Clear
or 4: Facility Clear

Others: Y: Yes
N: No
NA: Not Applicable
TD: To Be Determined

47
Detailed Resources Identification

Task No: 9 OTV CRYO LOAD AND DRAIN

Subtask No: < 9.0100> Description: <INSTALL OTV INTO CRYO LOAD FAC>

Hazard Level(*): 1 None

Activity: ATTACH SLING TO OTV STRUCTURE- ATTACH TO O/H CRANE-REMOVE HOLDOWN HARDWARE-LIFT OTV FROM TRANSPORTER-INSTALL OTV IN CRYO STAND

Personnel:

<table>
<thead>
<tr>
<th>Vehicle</th>
<th>Control Station</th>
</tr>
</thead>
<tbody>
<tr>
<td>Payload Specialist(s) (0)</td>
<td>(0)</td>
</tr>
<tr>
<td>Engineering (1)</td>
<td>(0)</td>
</tr>
<tr>
<td>Shop (5)</td>
<td>(0)</td>
</tr>
<tr>
<td>Inspector (2)</td>
<td>(0)</td>
</tr>
<tr>
<td>Other (0)</td>
<td></td>
</tr>
</tbody>
</table>

Total (8) |

Serial Time To Complete: 240 min |

Automation Need: (Primary Key) |

Automation Secondary Key(s) |

Total Manhours (32.0) |

Detailed Facility Resources

Physical Size:

| Air Lock: 40 40 50 [W/D/H][ft] | 10 Ton 45 Ft.Hook Height |
| Doors: 35 45 [W/H][ft] | |
| High Bay: 70 100 85 [W/D/H][ft] | 20 Ton 70 Ft.Hook Height |

Standard Commercial Power: Y Instrumentation Power [Uninterrupted]: NA

Cleanliness: 100K E.C.S: Humidity: Temperature: 50 +/- 5 % 70 +/- 5 F

Closed Circuit Television: NA Power Cutoff: NA Facility GN2: NA

Fuel/Oxidizer Disposal: Y Helium Supply: NA Shop Air: NA

Fire Protection/Deluge(*): A Shower/Eye Wash: Y Vacuum: NA

Lightning Protection: Y Potable Water: Y Paging: Y

Commercial Telephone: Y RF System(*): N OIS: NA

Personnel Airlock: Y Grounding: Y Explosion Proof: NA

Detailed Equipment Resources

| Special Tool Kit: Y | Slings: Y | OTV Adapter: Y |
| Breakout Boxes: NA | Adapter Cables: NA | Ground Power Unit: NA |
| Air Pallet: NA | Work Stands: Y | Special Hoisting Equip: Y |
| NASA Canister: NA | OTV Canister: Y |

(*): Legend For Data Input

Fire Protection/Deluge= A: fire protection or B: deluge or C: both or N: none

Hazard Level:= 1: None or 2: Local Clear or 3: Area Clear or 4: Facility Clear

Others:= Y: Yes or N: No or NA: Not Applicable or TD: To Be Determined

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### Detailed Resources Identification

**Task No:** 9  
**OTV CRYO LOAD AND DRAIN**

**Subtask No:** < 9.0200>  
**Description:** <CONNECT CRYO LINES TO VEHICLE>

**Hazard Level:** 3  
**Area Clear**

**Activity:** CONNECT CRYO LOADING LINES TO OTV.

#### Personnel:

<table>
<thead>
<tr>
<th>Role</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vehicle</td>
<td>0</td>
</tr>
<tr>
<td>Payload Specialist(s)</td>
<td>0</td>
</tr>
<tr>
<td>Engineering</td>
<td>1</td>
</tr>
<tr>
<td>Shop</td>
<td>5</td>
</tr>
<tr>
<td>Inspector</td>
<td>2</td>
</tr>
<tr>
<td>Other</td>
<td>0</td>
</tr>
<tr>
<td><strong>Sub Total</strong></td>
<td><strong>8</strong></td>
</tr>
</tbody>
</table>

**Serial Time To Complete:** 240 min  
**Total Manhours:** 32.0

**Automation Need:** (Primary Key)

**Automation Secondary Key(s):**

<table>
<thead>
<tr>
<th>Key</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Detailed Facility Resources

#### Physical Size:

<table>
<thead>
<tr>
<th>Facility</th>
<th>Dimensions [W/D/H] [ft]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air Lock</td>
<td>0 0 0</td>
</tr>
<tr>
<td>Doors</td>
<td>0 0</td>
</tr>
<tr>
<td>High Bay</td>
<td>70 100 85</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Crane Capacity</th>
<th>Crane Station</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 Ton 0 Ft.Hook Height</td>
<td></td>
</tr>
</tbody>
</table>

**Standard Commercial Power:** Y  
**Cleanliness:** 100K

**Closed Circuit Television:** Y  
**Fuel/Oxidizer Disposal:** Y

**Fire Protection/Deluge:**

- A: Fire Protection
- B: Deluge
- C: Both
- N: None

**Lightning Protection:** Y  
**Commerical Telephone:** Y

**Personnel Airlock:** Y  
**OTV Adapter:** NA

**Instrumentation Power [Uninterrupted]:** NA

<table>
<thead>
<tr>
<th>Power Cutoff</th>
<th>Facility GN2</th>
</tr>
</thead>
<tbody>
<tr>
<td>NA</td>
<td>NA</td>
</tr>
</tbody>
</table>

**E.C.S:** Humidity: 50 +/- 5 %  
**Temperature:** 70 +/- 5 F

**Helium Supply:** NA  
**Shop Air:** NA

**Potable Water:** Y  
**Paging:** Y

**RF System:** N  
**OIS:** NA

**Grounding:** Y  
**Explosion Proof:** Y

### Detailed Equipment Resources

<table>
<thead>
<tr>
<th>Equipment</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Special Tool Kit</td>
<td>NA</td>
</tr>
<tr>
<td>Breakout Boxes</td>
<td>NA</td>
</tr>
<tr>
<td>Air Pallet</td>
<td>NA</td>
</tr>
<tr>
<td>NASA Canister</td>
<td>NA</td>
</tr>
<tr>
<td>OTV Adapter</td>
<td>NA</td>
</tr>
<tr>
<td>Adapter Cables</td>
<td>NA</td>
</tr>
<tr>
<td>Ground Power Unit</td>
<td>NA</td>
</tr>
<tr>
<td>Work Stands</td>
<td>Y</td>
</tr>
<tr>
<td>Special Hoisting Equip</td>
<td>NA</td>
</tr>
<tr>
<td>OTV Canister</td>
<td>NA</td>
</tr>
</tbody>
</table>

**(*) Legend For Data Input**

- **Fire Protection/Deluge:**
  - A: Fire Protection
  - B: Deluge
  - C: Both
  - N: None

- **Hazard Level:**
  - 1: None
  - 2: Local Clear
  - 3: Area Clear
  - 4: Facility Clear

- **Others:**
  - Y: Yes
  - N: No
  - NA: Not Applicable
  - TD: To Be Determined

**49**
Detailed Resources Identification

Task No: 9  OTV CRYO LOAD AND DRAIN

Subtask No: < 9.0300> Description: LOAD CRYO IN OTV

Hazard Level(s): 4 Facility Clear
Activity: LOAD CRYO TO PREDEFINED LEVEL AND PRESSURE.

Personnel:

<table>
<thead>
<tr>
<th>Vehicle</th>
<th>Control Station</th>
</tr>
</thead>
<tbody>
<tr>
<td>Payload Specialist(s)</td>
<td>(0)</td>
</tr>
<tr>
<td>Engineering</td>
<td>(0)</td>
</tr>
<tr>
<td>Shop</td>
<td>(2)</td>
</tr>
<tr>
<td>Inspector</td>
<td>(0)</td>
</tr>
<tr>
<td>Other</td>
<td>(2)</td>
</tr>
<tr>
<td><strong>Sub Total</strong></td>
<td><strong>(0)</strong></td>
</tr>
</tbody>
</table>

Total Manhours: 240 min

Automation Need: (Primary Key)
Automation Secondary Key(s): 

- Serial Time To Complete: 240 min
- Total Manhours: 24.0

Detailed Facility Resources

**Physical Size:**
- Air Lock: 0 0 0 [W/D/H][ft]
- Doors: 0 0 [W/H][ft]
- High Boy: 70 100 85 [W/D/H][ft]

**Crane Capacity:**
- 0 Ton 0 Ft.Hook Height

**Standard Commercial Power:** Y
**E.C.S. Humidity:** Temperature:
- 50 +/- 5 % 70 +/- 5 F

**Closed Circuit Television:** Y **Power Cutoff:** Y **Facility GN2:** NA

**Fuel/Oxidizer Disposal:** Y **Helium Supply:** NA **Shop Air:** NA

**Fire Protection/Deluge:** B **Shower/Eye Wash:** Y **Vacuum:** NA

**Lightning Protection:** Y **Potable Water:** Y **Paging:** NA

**Commercial Telephone:** Y **RF System:** N **OIS:** NA

**Personnel Airlock:** Y **Grounding:** Y **Explosion Proof:** Y

Detailed Equipment Resources

- Special Tool Kit: NA **Slings:** NA **OTV Adapter:** NA
- Breakout Boxes: NA **Adapter Cables:** NA **Ground Power Unit:** Y
- Air Pallet: NA **Work Stands:** Y **Special Hoisting Equip:** NA
- NASA Canister: NA **OTV Canister:** NA

(*) Legend For Data Input

- **Fire Protection/Deluge**
  - A: fire protection
  - B: deluge
  - C: both
  - N: none

- **Hazard Level**
  - 1: None
  - 2: Local Clear
  - 3: Area Clear
  - 4: Facility Clear

- **Others**
  - Y: Yes
  - N: No
  - NA: Not Applicable
  - TD: To Be Determined

50
Detailed Resources Identification

Task No: 9 OTV CRYO LOAD AND DRAIN

Subtask No: <9.0400> Description: <VERIFY CRYO LOAD PARAMETERS>
Hazard Level(*): 4 Facility Clear
Activity: USE THE OTVCS TO VERIFY ALL CRYO LOAD PARAMETERS

Personnel:

<table>
<thead>
<tr>
<th>Vehicle</th>
<th>Control Station</th>
</tr>
</thead>
<tbody>
<tr>
<td>Payload Specialist(s)</td>
<td>0</td>
</tr>
<tr>
<td>Engineering</td>
<td>0</td>
</tr>
<tr>
<td>Shop</td>
<td>0</td>
</tr>
<tr>
<td>Inspector</td>
<td>0</td>
</tr>
<tr>
<td>Other</td>
<td>0</td>
</tr>
<tr>
<td><strong>Sub Total</strong></td>
<td><strong>0</strong></td>
</tr>
</tbody>
</table>

Serial Time To Complete: 60 min
Total Manhours (6.0)

Automation Need: (Primary Key)
Automation Secondary Key(s):

Detailed Facility Resources

<table>
<thead>
<tr>
<th>Physical Size:</th>
<th>Crane Capacity:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air Lock:</td>
<td>0 Ton 0 Ft.Hook Height</td>
</tr>
<tr>
<td>Doors:</td>
<td>0 Ton 0 Ft.Hook Height</td>
</tr>
<tr>
<td>High Bay:</td>
<td>0 Ton 0 Ft.Hook Height</td>
</tr>
</tbody>
</table>

Standard Commercial Power: Y
Cleanliness: 100K
Closed Circuit Television: Y
Fuel/Oxidizer Disposal: Y
Fire Protection/Deluge(*): B
Lightning Protection: Y
Commercial Telephone: Y
Personnel Airlock: Y

Instrumentation Power [Uninterrupted]: Y
E.C.S: Humidity: 50 +/- 5%
Temperature: 70 +/- 5 F
Power Cutoff: Y
Facility GN2: NA
Shop Air: NA
Shower/Eye Wash: Y
Vacuum: NA
Paging: Y
Potable Water: Y
OIS: NA

Detailed Equipment Resources

<table>
<thead>
<tr>
<th>Special Tool Kit: NA</th>
<th>Slings: NA</th>
<th>OTV Adapter: NA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Breakout Boxes: NA</td>
<td>Adapter Cables: NA</td>
<td>Ground Power Unit: Y</td>
</tr>
<tr>
<td>Air Pallet: NA</td>
<td>Work Stands: Y</td>
<td>Special Hoisting Equip: NA</td>
</tr>
<tr>
<td>NASA Canister: NA</td>
<td>OTV Canister: NA</td>
<td></td>
</tr>
</tbody>
</table>

(*) Legend For Data Input

Fire Protection/Deluge= A: fire protection or B: deluge or C: both or N: none
RF System(*)= A: S Band & C Band or B: Ku Band or C: both or N: none
Hazard Level:= 1: None or 2: Local Clear or 3: Area Clear or 4: Facility Clear
Others:= Y: Yes or N: No or NA: Not Applicable or TD: To Be Determined
### Detailed Resources Identification

**Task No:** 9  
**OTV CRYO DRAIN AND PURGE**

**Subtask No:** < 9.0500  
**Description:** LOAD FUEL CELLS

**Hazard Level(\*):** 4  
**Facility Clear**

**Activity:** LOAD FUEL CELLS AND VERIFY ALL LOAD PARAMETERS

#### Personnel:

<table>
<thead>
<tr>
<th>Vehicle</th>
<th>Control Station</th>
</tr>
</thead>
<tbody>
<tr>
<td>Payload Specialist(s)</td>
<td>(0)</td>
</tr>
<tr>
<td>Engineering</td>
<td>(0)</td>
</tr>
<tr>
<td>Shop</td>
<td>(0)</td>
</tr>
<tr>
<td>Inspector</td>
<td>(0)</td>
</tr>
<tr>
<td>Other</td>
<td>(0)</td>
</tr>
</tbody>
</table>

**Sub Total**  6  
**Total**  6

**Serial Time To Complete:** 240 min  
**Total Manhours**  24.0

#### Automation Need:

(Primary Key)

#### Automation Secondary Key(s):

- 

#### Detailed Facility Resources

<table>
<thead>
<tr>
<th>Physical Size:</th>
<th>Crane Capacity:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air Lock: 0 0 0 [W/H][ft]</td>
<td>0 Ton 0 Ft.Hook Height</td>
</tr>
<tr>
<td>Doors: 0 0 [W/H][ft]</td>
<td></td>
</tr>
<tr>
<td>High Bay: 70 100 85 [W/H][ft]</td>
<td>0 Ton 0 Ft.Hook Height</td>
</tr>
</tbody>
</table>

- **Standard Commercial Power:** Y
- **Instrumentation Power [Uninterrupted]:** Y
- **Cleanliness:** 100K
- **E.C.S.:** Humidity: 50 +/- 5 %  
  Temperature: 70 +/- 5 F
- **Closed Circuit Television:** Y
- **Power Cutoff:** Y  
  Facility GN2: NA
- **Fuel/Oxidizer Disposal:** Y
- **Helium Supply:** NA  
  Shop Air: NA
- **Fire Protection/Deluge(\*):** B
- **Shower/Eye Wash:** Y  
  Vacuum: NA
- **Lightning Protection:** Y
- **Potable Water:** Y  
  Paging: Y
- **Commercial Telephone:** Y
- **RF System(\*):** A  
  OIS: NA
- **Personnel Airlock:** Y  
  Explosion Proof: Y

#### Detailed Equipment Resources

- **Special Tool Kit:** NA  
  Slings: NA
- **Breakout Boxes:** NA  
  Adapter Cables: NA
- **Air Pallet:** NA  
  Work Stands: Y
- **NASA Canister:** NA  
  OTV Canister: NA
- **OTV Adapter:** NA
- **Ground Power Unit:** Y
- **Special Hoisting Equip:** NA

(\*) Legend For Data Input

- **Fire Protection/Deluge: A:** fire protection  
  or B: deluge  
  or C: both  
  or N: none
- **RF System:** A: S Band & C Band  
  or B: Ku Band  
  or C: both  
  or N: none
- **Hazard Level:** 1: None  
  or 2: Local Clear  
  or 3: Area Clear  
  or 4: Facility Clear
- **Others:** Y: Yes  
  N: No  
  NA: Not Applicable  
  TD: To Be Determined
### Detailed Resources Identification

**Task No:** 9  
**OTV CRYO DRAIN AND PURGE**

**Subtask No:** 9.0600  
**Description:** DRAIN CRYO AND PURGE

**Hazard Level:** 4  
**Activity:** USING CRYO CART, UNLOAD CRYO AND PURGE—VERIFY CRYO LIMITS PER INSPECTION KIT

**Personnel:**

<table>
<thead>
<tr>
<th>Vehicle</th>
<th>Control Station</th>
</tr>
</thead>
<tbody>
<tr>
<td>Payload Specialist(s)</td>
<td>0</td>
</tr>
<tr>
<td>Engineering</td>
<td>0 (2)</td>
</tr>
<tr>
<td>Shop</td>
<td>0 (2)</td>
</tr>
<tr>
<td>Inspector</td>
<td>0 (2)</td>
</tr>
<tr>
<td>Other</td>
<td>0 (6)</td>
</tr>
<tr>
<td><strong>Sub Total</strong></td>
<td><strong>Total</strong></td>
</tr>
<tr>
<td></td>
<td>(6) (6)</td>
</tr>
</tbody>
</table>

**Serial Time To Complete:** 240 min  
**Total Manhours:** 24.0

**Automation Need:** (Primary Key)

**Automation Secondary Key(s):**

**Detailed Facility Resources**

<table>
<thead>
<tr>
<th>Physical Size:</th>
<th>Crane Capacity:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air Lock: 0 0 0 [W/D/H][ft]</td>
<td>0 Ton 0 Ft.Hook Height</td>
</tr>
<tr>
<td>Doors: 0 0 [W/H][ft]</td>
<td></td>
</tr>
<tr>
<td>High Bay: 70 100 85 [W/D/H][ft]</td>
<td>0 Ton 0 Ft.Hook Height</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Standard Commercial Power: Y</th>
<th>Instrumentation Power [Uninterrupted]: Y</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cleanliness: 100K</td>
<td>E.C.S: Humidity: 50 +/- 5 %</td>
</tr>
<tr>
<td>Closed Circuit Television: Y</td>
<td>Power Cutoff: Y</td>
</tr>
<tr>
<td>Fuel/Oxidizer Disposal: Y</td>
<td>Facility GN2: NA</td>
</tr>
<tr>
<td>Fire Protection/Deluge(*): B</td>
<td>Helium Supply: Y</td>
</tr>
<tr>
<td>Lightning Protection: Y</td>
<td>Shop Air: NA</td>
</tr>
<tr>
<td>Commercial Telephone: Y</td>
<td>Power Cutoff: Y</td>
</tr>
<tr>
<td>Personnel Airlock: Y</td>
<td>Facility GN2: NA</td>
</tr>
<tr>
<td>Personel Airlock: Y</td>
<td></td>
</tr>
</tbody>
</table>

**Detailed Equipment Resources**

<table>
<thead>
<tr>
<th>Special Tool Kit: NA</th>
<th>Slings: NA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Breakout Boxes: NA</td>
<td>Adapter Cables: NA</td>
</tr>
<tr>
<td>Air Pallet: NA</td>
<td>Work Stands: Y</td>
</tr>
<tr>
<td>NASA Canister: NA</td>
<td>OTV Canister: NA</td>
</tr>
<tr>
<td>OTV Adapter: NA</td>
<td></td>
</tr>
</tbody>
</table>

**Legend For Data Input**

- **Fire Protection/Deluge:** A: fire protection  
  or B: deluge  
  or C: both  
  or N: none
- **RF System:** A: S Band & C Band  
  or B: Ku Band  
  or C: both  
  or N: none
- **Hazard Level:** 1: None  
  or 2: Local Clear  
  or 3: Area Clear  
  or 4: Facility Clear
- **Others:** Y: Yes  
  or N: No  
  or NA: Not Applicable  
  or TD: To Be Determined

---

53
Detailed Resources Identification

Task No: 9  OTV CRYO DRAIN AND PURGE

Subtask No: 9.0700 Description: FUEL CELL POWER TEST

Hazard Level(*): 4 Facility Clear
Activity: VERIFY OTV BUS POWER IS APPLIED VIA GPU. ACTIVATE FUEL CELLS. APPLY OTV LOAD TO FUEL CELL POWER UNIT. VERIFY, APPLY LOADS TO GPU. REMOVE POWER.

Personnel:

<table>
<thead>
<tr>
<th>Vehicle</th>
<th>Control Station</th>
</tr>
</thead>
<tbody>
<tr>
<td>Payload Specialist(s)</td>
<td>0</td>
</tr>
<tr>
<td>Engineering</td>
<td>0</td>
</tr>
<tr>
<td>Shop</td>
<td>0</td>
</tr>
<tr>
<td>Inspector</td>
<td>0</td>
</tr>
<tr>
<td>Other</td>
<td>0</td>
</tr>
</tbody>
</table>

Sub Total | 0 | 6
Total | 6

Serial Time To Complete: 240 min
Total Manhours: 24.0

Automation Need: (Primary Key)
Automation Secondary Key(s): 

Detailed Facility Resources

Physical Size:

- Air Lock: 0 0 0 [W/D/H][ft] 0 Ton 0 Ft.Hook Height
- Doors: 0 0 [W/H][ft] 0 Ton 0 Ft.Hook Height
- High Boy: 70 100 85 [W/D/H][ft]

Standard Commercial Power: Y
Instrumentation Power [Uninterrupted]: Y

Cleanliness: 100K
E.C.S.: Humidity: 50 +/- 5%
Power Cutoff: Y
Facility GN2: NA

Closed Circuit Television: Y
Power Cutoff: Y
Helium Supply: NA

Fuel/Oxidizer Disposal: Y
Power Cutoff: Y
Shop Air: NA

Fire Protection/Deluge(*): B
Power Cutoff: Y
Vacuum: NA

Lightning Protection: Y
Power Cutoff: Y

Commerical Telephone: Y
Power Cutoff: Y

Personnel Airlock: Y
Power Cutoff: Y

Detailed Equipment Resources

- Special Tool Kit: NA
- Slings: NA
- OTV Adapter: NA
- Breakout Boxes: Y
- Adapter Cables: Y
- Ground Power Unit: Y
- Air Pallet: NA
- Work Stands: Y
- Special Hoisting Equip: NA
- NASA Canister: NA
- OTV Canister: NA

(* Legend for Data Input

Fire Protection/Deluge: A: fire protection or B: deluge or C: both or N: none
RF System: A: S Band & C Band or B: Ku Band or C: both or N: none

Hazard Level: 1: None or 2: Local Clear or 3: Area Clear or 4: Facility Clear
Others: 1: Yes or 2: No or 3: NA, Not Applicable or 4: To Be Determined

54
Detailed Resources Identification

Task No: 9  OTV CRYO LOAD AND DRAIN

Subtask No: < 9.0000 > Description: < DISCONNECT CRYO LINES >
Hazard Level(*): 3  Area Clear
Activity: DISCONNECT ALL CRYO LINES FROM OTV

Personnel:

<table>
<thead>
<tr>
<th>Personnel Type</th>
<th>Vehicle</th>
<th>Control Station</th>
</tr>
</thead>
<tbody>
<tr>
<td>Payload Specialist(s)</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Engineering</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Shop</td>
<td>5</td>
<td>0</td>
</tr>
<tr>
<td>Inspector</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>Other</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>8</strong></td>
<td><strong>8</strong></td>
</tr>
</tbody>
</table>

Serial Time To Complete: 60 min  Total Manhours (8.0)

Automation Need: (Primary Key)
Automation Secondary Key(s): 

Detailed Facility Resources

<table>
<thead>
<tr>
<th>Physical Size:</th>
<th>Crane Capacity:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air Lock: 0 0 0 [W/D/H][ft]</td>
<td>0 Ton 0 Ft.Hook Height</td>
</tr>
<tr>
<td>Doors: 0 0 [W/H][ft]</td>
<td></td>
</tr>
<tr>
<td>High Bay: 70 100 85 [W/D/H][ft]</td>
<td>0 Ton 0 Ft.Hook Height</td>
</tr>
</tbody>
</table>

Standard Commercial Power: Y  Instrumentation Power [Uninterrupted]: Y
Cleanliness: 100K  E.C.S: Humidity: 50 +/- 5 %
Closed Circuit Television: Y  Temperature: 70 +/- 5 F
Fuel/Oxidizer Disposal: Y  Power Cutoff: Y
Fire Protection/Deluge: B  Facility GN2: NA
Helium Supply: NA  Shop Air: NA
Fire Protection/Deluge(*): B  Shower/Eye Wash: Y
Lightning Protection: Y  Vacuum: NA
Commercial Telephone: Y  Paging: Y
Personnel Airlock: Y  RF System(*): A
OIS: NA  OIS: NA

Detailed Equipment Resources

<table>
<thead>
<tr>
<th>Special Tool Kit: NA</th>
<th>Slings: NA</th>
<th>OTV Adapter: NA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Breakout Boxes: NA</td>
<td>Adapter Cables: NA</td>
<td>Ground Power Unit: Y</td>
</tr>
<tr>
<td>Air Pallet: NA</td>
<td>Work Stands: Y</td>
<td>Special Hoisting Equip: NA</td>
</tr>
<tr>
<td>NASA Canister: NA</td>
<td>OTV Canister: NA</td>
<td></td>
</tr>
</tbody>
</table>

(*): Legend For Data Input

Fire Protection/Deluge= A: fire protection  or B: deluge  or C: both  or N: none
RF System= A: S Band & C Band  or B: Ku Band  or C: both  or N: none
Hazard Level= 1: None  or 2: Local Clear  or 3: Area Clear  or 4: Facility Clear
Others=  Y: Yes  or N: No  or NA: Not Applicable  or TD: To Be Determined

55
Detailed Resources Identification

Task No: 10  MOVE OTV TO INT FACILITY

Subtask No: <10.01000>  Description: <REMOVE OTV FROM THE CRYO STAND>

Hazard Level(*): 2  Local Clear

Activity: ATTACH SLING TO OTV STRUCTURE—ATTACH TO O/H CRANE—REMOVE HOLDDOWN HARDWARE—LIFT OTV FROM CRYO STAND

Personnel:

Vehicle  Control Station
Payload Specialist(s)  0  0
Engineering  1  0
Shop  5  0
Inspector  2  0
Other  0  0

Sub Total  8  0

Total Manhours: 18.0

Serial Time To Complete: 120 min

Automation Need: (Primary Key)

Automation Secondary Key(s)

Detailed Facility Resources

Physical Size:

Air Lock: 0 0 0 [W/D/H][ft] 0 Ton 0 Ft.Hook Height
Doors: 35 45 [W/H][ft]
High Bay: 76 85 85 [W/D/H][ft] 20 Ton 70 Ft.Hook Height

Standard Commercial Power: Y  Instrumentation Power [Uninterrupted]: Y

Cleanliness: 100K  E.C.S: Humidity: 50 +/- 5%
Closed Circuit Television: NA  Power Cutoff: NA
Fuel/Oxidizer Disposal: Y  Facility GN2: NA
Fire Protection/Deluge(*): A  Helium Supply: NA
Lightning Protection: Y  Shop Air: NA
Commercial Telephone: Y  Potable Water: Y
Personnel Airlock: Y  Outdoor Air: NA

Detailed Equipment Resources

Special Tool Kit: Y  Slings: Y  OTV Adapter: Y
Breakout Boxes: NA  Adapter Cables: NA  Ground Power Unit: NA
Air Pallet: NA  Work Stands: Y  Special Hoisting Equip: Y
NASA Canister: NA  OTV Canister: NA

(+) Legend For Data Input

Fire Protection/Deluge(*): A: fire protection  RF System(*): A: S Band & C Band
or B: deluge  or B: Ku Band
or C: both  or C: both
or N: none  or N: none

Hazard Level(*): 1: None  Others(*): Y: Yes
or 2: Local Clear  N: No
or 3: Area Clear  NA: Not Applicable
or 4: Facility Clear  TD: To Be Determined
Detailed Resources Identification

Task No: 10  MOVE OTV TO INT FACILITY
Subtask No: < 10.0200> Description: <INSTALL OTV INTO TRANSPORTER >
Hazard Level(s): 2 Local Clear
Activity: INSTALL OTV INTO TRANSPORTER-SECURE

Personnel:
Vehicle
Payload Specialist(s) (0)  Control Station (0)
Engineering (1)  Shop (0)
Inspector (2)  Other (0)
Sub Total (8)  Total (8)

Serial Time To Complete: 180 min  Total Manhours (24.0)

Automation Need: (Primary Key)
Automation Secondary Key(s): 

Detailed Facility Resources

Physical Size:
Air Lock: 40 40 50 [W/D/H][ft]  10 Ton 45 Ft.Hook Height
Doors: 0 0 [W/H][ft]
High Bay: 0 0 0 [W/D/H][ft]  0 Ton 0 Ft.Hook Height

Standard Commercial Power: Y Instrumentation Power [Uninterrupted]: NA
Cleanliness: 100K E.C.S: Humidity: 50 +/- 5% Temperature: 70 +/- 5 F
Closed Circuit Television: NA Power Cutoff: NA Facility GN2: NA
Fuel/Oxidizer Disposal: N Helium Supply: NA Shop Air: NA
Fire Protection/Deluge(*): A Shower/Eye Wash: NA Vacuum: NA
Lightning Protection: Y Potable Water: NA Paging: Y
Commercial Telephone: Y RF System(*): N OIS: NA
Personnel Airlock: Y Grounding: Y Explosion Proof: NA

Detailed Equipment Resources

Special Tool Kit: Y Slings: Y OTV Adapter: Y
Breakout Boxes: NA Adapter Cables: NA Ground Power Unit: NA
Air Pallet: NA Work Stands: NA Special Hoisting Equip: Y
NASA Canister: NA OTV Canister: Y

(*) Legend For Data Input
Fire Protection/Deluge= A: fire protection  RF System= A: S Band & C Band
or B: deluge  or B: Ku Band
or C: both  or C: both
or N: none  or N: none

Hazard Level= 1: None  Others= Y: Yes
or 2: Local Clear  N: No
or 3: Area Clear  NA: Not Applicable
or 4: Facility Clear  TD: To Be Determined

57
Detailed Resources Identification

Task No: 10 MOVE OTV TO INT FACILITY

Subtask No: <10.0300> Description: <MOVE TRANSPORT TO INT FACILITY>

Hazard Level(*) : 1 None

Activity: TRANSPORT OTV TO SPACE CRAFT INTEGRATION FACILITY

Personnel:

Vehicle
Payload Specialist(s) (0)  Control Station
Engineering (1)  
Shop (3)  
Inspector (1)  
Other (0)

Sub Total (5)  Total (0)

Serial Time To Complete: 120 min  Total Manhours (10.0)

Automation Need: (Primary Key)

Automation Secondary Key(s)

Detailed Facility Resources

Physical Size:
Air Lock: 0 0 0 [W/D/H][ft]
Doors: 0 0 [W/H][ft]
High Bay: 0 0 0 [W/D/H][ft]

Crane Capacity:
0 Ton 0 Ft.Hook Height

Standard Commerical Power: NA

Cleanliness: 100K
Closed Circuit Television: NA
Fuel/Oxidizer Disposal: N
Fire Protection/Deluge(*) : A
Lightning Protection: Y
Commercial Telephone: Y
Personnel Airlock: NA

Instrumentation Power [Uninterrupted]: NA
E.C.S: Humidity: 50 +/- 5 %
Power Cutoff: NA
Facility GN2: NA

Shower/Eye Wash: NA
Potable Water: NA
RF System(*) : N
Paging: Y

Grounding: Y

Explosion Proof: NA

Detailed Equipment Resources

Special Tool Kit: NA
Breakout Boxes: NA
Air Pallet: NA
NASA Canister: NA

Slings: NA
Adapter Cables: NA
Work Stands: NA
OTV Canister: Y

S: Band  C: Band
C: Band
N: None

Legend For Data Input

Fire Protection/Deluge A: fire protection
or B: deluge
or C: both
or N: none

Hazard Level: 1: None
or 2: Local Clear
or 3: Area Clear
or 4: Facility Clear

(*) Others: Y: Yes
or N: No
NA: Not Applicable
TD: To Be Determined
Detailed Resources Identification

Task No: 10 MOVE OTV TO INT FACILITY

Subtask No: < 10.0400> Description: MOVE TRANSPORTER INTO AIRLOCK

Activity: ATTACH SLING TO OTV STRUCTURE-ATTACH TO O/H CRANE-REMOVE HOLDDOWN HARDWARE-LIFT OTV INTO AIRLOCK

Personnel:

<table>
<thead>
<tr>
<th>Vehicle</th>
<th>Payload Specialist(s)</th>
<th>(0)</th>
<th>Control Station</th>
<th>(0)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Engineering</td>
<td>(1)</td>
<td></td>
<td>(0)</td>
</tr>
<tr>
<td></td>
<td>Shop</td>
<td>(5)</td>
<td></td>
<td>(0)</td>
</tr>
<tr>
<td></td>
<td>Inspector</td>
<td>(2)</td>
<td></td>
<td>(0)</td>
</tr>
<tr>
<td></td>
<td>Other</td>
<td>(6)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sub Total</td>
<td></td>
<td>(8)</td>
<td>Total</td>
<td>(8)</td>
</tr>
</tbody>
</table>

Serial Time To Complete: 120 min Total Manhours (16.0)

Automation Need: (Primary Key)

Automation Secondary Key(s)

Detailed Facility Resources

Physical Size:
- Air Lock: 40 40 50 [W/D/H][ft]
- Doors: 0 0 [W/H][ft]
- High Bay: 0 0 [W/D/H][ft]

Crane Capacity:
- 10 Ton 45 Ft.Hook Height
- 0 Ton 0 Ft.Hook Height

Standard Commercial Power: Y

Cleanliness: 100K

Closed Circuit Television: NA

Fuel/Oxidizer Disposal: N

Fire Protection/Deluge(*): A
- Shop Air: Y

Lightning Protection: Y

Commercial Telephone: Y

Personnel Airlock: Y

Detailed Equipment Resources

Special Tool Kit: NA

Breakout Boxes: NA

Air Pallet: NA

NASA Canister: NA

Slings: Y

Adapter Cables: NA

Work Stands: NA

OTV Canister: Y

OTV Adapter: Y

Ground Power Unit: NA

Special Hoisting Equip: NA

Instrumentation Power [Uninterrupted]: NA

E.C.S: Humidity: 50 +/- 5%

Temperature: 70 +/- 5 F

Power Cutoff: NA

Facility GN2: NA

Shop Air: Y

Vacuum: Y

Paging: Y

OIS: NA

Grounding: Y

Explosion Proof: NA

RF System(*): N

Grounding: Y

Explosion Proof: NA

(*) Legend For Data Input

Fire Protection/Deluge(*): A: fire protection
- or B: deluge
- or C: both
- or N: none

Hazard Level:* 1: None
- or 2: Local Clear
- or 3: Area Clear
- or 4: Facility Clear

Others:* Y: Yes
- N: No

TD: To Be Determined
## Detailed Resources Identification

**Task No:** 10  
**Move OTV to Int Facility**

**Subtask No:** <10.0500>  
**Description:** <Install OTV into Workstand>

**Hazard Level:** 2 Local Clear  
**Activity:** Attach slings to OTV structure—attach to O/H crane—install/secure OTV on workstand—install hold-down hardware

### Personnel:

<table>
<thead>
<tr>
<th>Vehicle Type</th>
<th>Control Station</th>
</tr>
</thead>
<tbody>
<tr>
<td>Payload Specialist(s)</td>
<td>(0)</td>
</tr>
<tr>
<td>Engineering</td>
<td>(1)</td>
</tr>
<tr>
<td>Shop</td>
<td>(5)</td>
</tr>
<tr>
<td>Inspector</td>
<td>(2)</td>
</tr>
<tr>
<td>Other</td>
<td>(0)</td>
</tr>
<tr>
<td><strong>Sub Total</strong></td>
<td><strong>(0)</strong></td>
</tr>
</tbody>
</table>

**Serial Time to Complete:** 240 min  
**Total Manhours:** 32.0

### Automation Need:

- **Primary Key:**
- **Secondary Key(s):**

### Detailed Facility Resources

<table>
<thead>
<tr>
<th>Physical Size</th>
<th>Crane Capacity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air Lock: 0 0 0 [W/D/H][ft]</td>
<td>0 Ton 0 Ft.Hook Height</td>
</tr>
<tr>
<td>Doors: 35 45 [W/H][ft]</td>
<td></td>
</tr>
<tr>
<td>High Bay: 70 100 85 [W/D/H][ft]</td>
<td>20 Ton 70 Ft.Hook Height</td>
</tr>
</tbody>
</table>

- **Standard Commercial Power:** Y
- **Cleanliness:** 100K
- **Closed Circuit Television:** NA
- **Fuel/Oxidizer Disposal:** N
- **Fire Protection/Deluge:** A
- **Lightning Protection:** Y
- **Commerical Telephone:** NA
- **Personnel Airlock:** Y

### Detailed Equipment Resources

- **Special Tool Kit:** Y
- **Breakout Boxes:** NA
- **Air Pallet:** NA
- **NASA Canister:** NA

### (*) Legend For Data Input

- **Fire Protection/Deluge:** A: fire protection  
  - or B: deluge  
  - or C: both  
  - or N: none

- **Hazard Level:** 1: None  
  - or 2: Local Clear  
  - or 3: Area Clear  
  - or 4: Facility Clear

- **Others:** Y: Yes  
  - or N: No  
  - or NA: Not Applicable  
  - or TD: To Be Determined
**Detailed Resources Identification**

**Task No:** 11  
**OTV SPACECRAFT MATE**

**Subtask No:** < 11.0100  
**Description:** MECHANICALLY MATE OTV TO S/C

**Hazard Level:** 2  Local Clear  
**Activity:** USING S/C ADAPTER HARDWARE, MECHANICALLY MATE OTV AND SPACECRAFT

**Personnel:**

<table>
<thead>
<tr>
<th>Vehicle</th>
<th>Control Station</th>
</tr>
</thead>
<tbody>
<tr>
<td>Payload Specialist(s)</td>
<td>0 (0)</td>
</tr>
<tr>
<td>Engineering</td>
<td>1 (0)</td>
</tr>
<tr>
<td>Shop</td>
<td>6 (0)</td>
</tr>
<tr>
<td>Inspector</td>
<td>2 (0)</td>
</tr>
<tr>
<td>Other</td>
<td>0 (0)</td>
</tr>
<tr>
<td><strong>Sub Total</strong></td>
<td>9 (0)</td>
</tr>
</tbody>
</table>

**Serial Time To Complete:** 480 min  
**Total Manhours:** 72.0

**Automation Need:** (Primary Key)
- 

**Automation Secondary Key(s):** 
- 

**Detailed Facility Resources**

### Physical Size:
- Air Lock: 0 0 0 [W/D/H][ft]  
- High Bay: 70 100 85 [W/D/H][ft]

### Crane Capacity:
- 0 Ton 0 Ft.Hook Height  
- 20 Ton 70 Ft.Hook Height

<table>
<thead>
<tr>
<th>Standard Commercial Power: Y</th>
<th>Instrumentation Power [Uninterrupted]: NA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cleanliness: 100K</td>
<td>E.C.S: Humidity: 50 +/- 5 %</td>
</tr>
<tr>
<td>Closed Circuit Television: NA</td>
<td>Power Cutoff: NA Facility GN2: NA</td>
</tr>
<tr>
<td>Fuel/Oxidizer Disposal: N</td>
<td>Helium Supply: NA Shop Air: NA</td>
</tr>
<tr>
<td>Fire Protection/Deluge(*): A</td>
<td>Shower/Eye Wash: NA Vacuum: NA</td>
</tr>
<tr>
<td>Lightning Protection: Y</td>
<td>Potable Water: NA Paging: Y</td>
</tr>
<tr>
<td>Commercial Telephone: Y</td>
<td>RF System(*): N OIS: NA</td>
</tr>
<tr>
<td>Personnel Airlock: Y</td>
<td>Grounding: Y Explosion Proof: NA</td>
</tr>
</tbody>
</table>

**Detailed Equipment Resources**

<table>
<thead>
<tr>
<th>Special Tool Kit: Y</th>
<th>Slings: Y</th>
<th>OTV Adapter: Y</th>
</tr>
</thead>
<tbody>
<tr>
<td>Breakout Boxes: NA</td>
<td>Adapter Cables: NA</td>
<td>Ground Power Unit: NA</td>
</tr>
<tr>
<td>Air Pallet: NA</td>
<td>Work Stands: Y</td>
<td>Special Hoisting Equip: NA</td>
</tr>
<tr>
<td>NASA Canister: NA</td>
<td>OTV Canister: NA</td>
<td></td>
</tr>
</tbody>
</table>

**(*): Legend For Data Input**
- Fire Protection/Deluge= A: fire protection  
  or B: deluge  
  or C: both  
  or N: none
- RF System= A: S Band & C Band  
  or B: Ku Band  
  or C: both  
  or N: none
- Hazard Level= 1: None  
  or 2: Local Clear  
  or 3: Area Clear  
  or 4: Facility Clear
- Others= Y: Yes  
  or N: No  
  NA: Not Applicable  
  TD: To Be Determined
Detailed Resources Identification

Task No: 11 OTV SPACECRAFT MATE

Subtask No: <11.0206> Description: <ELECTRICALLY MATE OTV TO S/C >

Hazard Level(*): 1 None

Activity: VERIFY/CONNECT ALL S/C ELECTRICAL CABLES

Personnel:

<table>
<thead>
<tr>
<th></th>
<th>Vehicle</th>
<th>Control Station</th>
</tr>
</thead>
<tbody>
<tr>
<td>Payload Specialist(s)</td>
<td>(0)</td>
<td>(0)</td>
</tr>
<tr>
<td>Engineering</td>
<td>(1)</td>
<td>(0)</td>
</tr>
<tr>
<td>Shop</td>
<td>(2)</td>
<td>(0)</td>
</tr>
<tr>
<td>Inspector</td>
<td>(1)</td>
<td>(0)</td>
</tr>
<tr>
<td>Other</td>
<td>(0)</td>
<td>(0)</td>
</tr>
</tbody>
</table>

Sub Total: (4) Total: (4)

Serial Time To Complete: 240 min Total Manhours: (16.0)

Automation Need: (Primary Key)

Automation Secondary Key(s):

Detailed Facility Resources

Physical Size:

<table>
<thead>
<tr>
<th></th>
<th>Crane Capacity:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air Lock:</td>
<td>0 Ton 0 Ft.Hook Height</td>
</tr>
<tr>
<td>Doors:</td>
<td>0 Ton 0 Ft.Hook Height</td>
</tr>
<tr>
<td>High Bay:</td>
<td>0 Ton 0 Ft.Hook Height</td>
</tr>
</tbody>
</table>

Standard Commercial Power: Y

Cleanliness: 100K

Closed Circuit Television: NA

Fuel/Oxidizer Disposal: N

Fire Protection/Deluge(*): A

Lightning Protection: Y

Commercial Telephone: Y

Personnel Airlock: Y

Detailed Equipment Resources

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Special Tool Kit</td>
<td>NA</td>
</tr>
<tr>
<td>Breakout Boxes</td>
<td>Y</td>
</tr>
<tr>
<td>Air Pallet</td>
<td>Y</td>
</tr>
<tr>
<td>NASA Canister</td>
<td>NA</td>
</tr>
</tbody>
</table>

Special Hoisting Equip: NA

Instrumentation Power [Uninterrupted]: NA

Temperature: 70 +/- 5 F

Facility GN2: NA

Shop Air: NA

Vacuum: NA

Paging: Y

OIS: NA

Grounding: Y

Explosion Proof: NA

.(* Legend For Data Input

Fire Protection/Deluge: A: fire protection
or B: deluge
or C: both
or N: none

RF System: A: S Band & C Band
or B: Ku Band
or C: both
or N: none

Hazard Level: 1: None
or 2: Local Clear
or 3: Area Clear
or 4: Facility Clear

Others: Y: Yes
or N: No
or NA: Not Applicable
or TD: To Be Determined

62
Detailed Resources Identification

Task No: 12 OTV SPACECRAFT INTEGRATION

Subtask No: <12.0100> Description: OTV S/C SINGLE POINT GROUND

Hazard Level(s): 1 None

Activity: PERFORM SINGLE POINT GROUND CHECKS BETWEEN OTV AND S/C.

Personnel:

<table>
<thead>
<tr>
<th>Vehicle</th>
<th>Control Station</th>
</tr>
</thead>
<tbody>
<tr>
<td>Payload Specialist(s)</td>
<td>0</td>
</tr>
<tr>
<td>Engineering</td>
<td>1</td>
</tr>
<tr>
<td>Shop</td>
<td>2</td>
</tr>
<tr>
<td>Inspector</td>
<td>1</td>
</tr>
<tr>
<td>Other</td>
<td>0</td>
</tr>
</tbody>
</table>

Sub Total: 4

Serial Time To Complete: 60 min

Automation Need: (Primary Key)

Automation Secondary Key(s): 

Total Manhours (4.0)

Detailed Facility Resources

Physical Size:

- Air Lock: 0 0 0 [W/D/H][ft]
- Doors: 0 0 [W/H][ft]
- High Bay: 70 100 85 [W/D/H][ft]

Crane Capacity:

- 0 Ton 0 Ft.Hook Height

Standard Commercial Power: Y

Cleanliness: 100K

Closed Circuit Television: NA

Fuel/Oxidizer Disposal: N

Fire Protection/Deluge(*): A

Lightning Protection: Y

Commercial Telephone: Y

Personnel Airlock: Y

Instrumentation Power [Uninterrupted]: NA

E.C.S: Humidity: 50 +/- 5 %

Power Cutoff: NA

Facility GN2: NA

Helium Supply: NA

Shop Air: NA

Shower/Eye Wash: NA

Vacuum: NA

Paging: Y

OIS: NA

Explosion Proof: NA

Grounding: Y

Temperature: 70 +/- 5 F

Facility GN2: NA

Shop Air: NA

Vacuum: NA

Paging: Y

OIS: NA

Explosion Proof: NA

Detailed Equipment Resources

- Special Tool Kit: NA
- Slings: NA
- OTV Adapter: NA
- Breakout Boxes: Y
- Adapter Cables: Y
- Ground Power Unit: NA
- Air Pallet: NA
- Work Stands: Y
- Special Hoisting Equip: NA
- NASA Canister: NA
- OTV Canister: NA

(*) Legend For Data Input

Fire Protection/Deluge: A: fire protection or B: deluge or C: both or N: none

RF System: A: S Band & C Band or B: Ku Band or C: both or N: none

Hazard Level: 1: None or 2: Local Clear or 3: Area Clear or 4: Facility Clear

Others: Y: Yes or N: No or NA: Not Applicable or TD: To Be Determined

63
Detailed Resources Identification

Task No: 12 OTV SPACECRAFT INTEGRATION

Subtask No: < 12.0200> Description: <CONNECT OTV TO GPU

Hazard Level(s): 1 None
Activity: CONNECT OTV TO GROUND POWER UNIT

Personnel:

<table>
<thead>
<tr>
<th>Vehicle</th>
<th>Control Station</th>
</tr>
</thead>
<tbody>
<tr>
<td>Payload Specialist(s) (0)</td>
<td>(0)</td>
</tr>
<tr>
<td>Engineering (1)</td>
<td>(0)</td>
</tr>
<tr>
<td>Shop (2)</td>
<td>(0)</td>
</tr>
<tr>
<td>Inspector (1)</td>
<td>(0)</td>
</tr>
<tr>
<td>Other (0)</td>
<td></td>
</tr>
</tbody>
</table>

Sub Total (4) Total (4)

Serial Time To Complete: 120 min
Total Manhours (8.0)

Automation Need: (Primary Key)

Automation Secondary Key(s):

Detailed Facility Resources

<table>
<thead>
<tr>
<th>Physical Size:</th>
<th>Crane Capacity:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air Lock: 6 0 0 [W/D/H][ft]</td>
<td>0 Ton 0 Ft.Hook Height</td>
</tr>
<tr>
<td>Doors: 0 0 [W/H][ft]</td>
<td></td>
</tr>
<tr>
<td>High Bay: 70 100 85 [W/D/H][ft]</td>
<td>0 Ton 0 Ft.Hook Height</td>
</tr>
</tbody>
</table>

Standard Commercial Power: Y Instrumentation Power [Uninterrupted]: NA

Cleanliness: 100K E.C.S.: Humidity: 50 +/- 5 %
Closed Circuit Television: NA Power Cutoff: NA Facility GN2: NA
Fuel/Oxidizer Disposal: N Helium Supply: NA Shop Air: NA
Fire Protection/Deluge(*): A Shower/Eye Wash: NA Vacuum: NA
Lightning Protection: Y Potable Water: NA Paging: Y
Commercial Telephone: Y RF System(*): N OIS: NA
Personnel Airlock: Y Grounding: Y Explosion Proof: NA

Detailed Equipment Resources

<table>
<thead>
<tr>
<th>Special Tool Kit: NA</th>
<th>Slings: NA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Breakout Boxes: Y</td>
<td>Adapter Cables: Y</td>
</tr>
<tr>
<td>Air Pallet: NA</td>
<td>Work Stands: Y</td>
</tr>
<tr>
<td>NASA Canister: NA</td>
<td>OTV Canister: NA</td>
</tr>
</tbody>
</table>

(*) Legend For Data Input

<table>
<thead>
<tr>
<th>Fire Protection/Deluge=</th>
<th>RF System=</th>
</tr>
</thead>
<tbody>
<tr>
<td>A: fire protection</td>
<td>A: S Band &amp; C Band</td>
</tr>
<tr>
<td>or B: deluge</td>
<td>or B: Ku Band</td>
</tr>
<tr>
<td>or C: both</td>
<td>or C: both</td>
</tr>
<tr>
<td>or N: none</td>
<td>or N: none</td>
</tr>
</tbody>
</table>

Hazard Level= 1: None Others= Y: Yes
| or 2: Local Clear | N: No |
| or 3: Area Clear | NA: Not Applicable |
| or 4: Facility Clear | TD: To Be Determined |

64
**Detailed Resources Identification**

**Task No:** 12  
**OTV SPACECRAFT INTEGRATION**

**Subtask No:** <12.0300>  
**Description:** <CONNECT S/C TO GPU>

**Hazard Level(s):** 1 None

**Activity:** CONNECT S/C TO S/C GROUND POWER UNIT

### Personnel:

<table>
<thead>
<tr>
<th>Role</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Payload Specialist(s)</td>
<td>(0)</td>
</tr>
<tr>
<td>Engineering</td>
<td>(1)</td>
</tr>
<tr>
<td>Shop</td>
<td>(2)</td>
</tr>
<tr>
<td>Inspector</td>
<td>(1)</td>
</tr>
<tr>
<td>Other</td>
<td>(0)</td>
</tr>
<tr>
<td><strong>Sub Total</strong></td>
<td>(4)</td>
</tr>
</tbody>
</table>

**Serial Time To Complete:** 120 min  
**Total Manhours:** (8.0)

**Automation Need:** (Primary Key)

**Automation Secondary Key(s):**

---

**Detailed Facility Resources**

**Physical Size:**
- Air Lock: 0 0 0 [W/D/H][ft]
- Doors: 0 0 [W/H][ft]
- High Bay: 70 100 85 [W/D/H][ft]

**Crane Capacity:**
- 0 Ton 0 Ft.Hook Height

**Standard Commercial Power:** Y
**Cleanliness:** 100K
**Closed Circuit Television:** NA
**Fuel/Oxidizer Disposal:** N
**Fire Protection/Deluge(♦):** A
**Lightning Protection:** Y
**Commercial Telephone:** Y
**Personnel Airlock:** Y

**Instrumentation Power [Uninterrupted]:** NA
**E.C.S:** Humidity: 50 +/- 5 %
**Power Cutoff:** NA
**Facility GN2:** NA
**Facility:** NA
**Temperature:** 70 +/- 5 F

**Helium Supply:** NA
**Shop Air:** NA
**Shower/Eye Wash:** NA
**Vacuum:** NA
**Potable Water:** NA
**RF System(♦):** N
**Grounding:** Y
**Paging:** Y
**OIS:** NA
**Explosion Proof:** NA

**Facility GN2:** NA
**Shop Air:** NA

**Special Tool Kit:** NA
**Slings:** NA
**Adapter Cables:** Y
**Air Pallet:** NA
**Work Stands:** Y
**NASA Canister:** NA
**OTV Canister:** NA

**Ground Power Unit:** Y
**Special Hoisting Equip:** NA

(*) **Legend For Data Input**

**Fire Protection/Deluge: A:** fire protection  
**or B:** deluge  
**or C:** both  
**or N:** none

**Hazard Level:** 1: None  
**or 2:** Local Clear  
**or 3:** Area Clear  
**or 4:** Facility Clear

**RF System: A:** S Band & C Band  
**or B:** Ku Band  
**or C:** both  
**or N:** none

**Others:** Y: Yes  
**or N:** No  
**NA:** Not Applicable  
**TD:** To Be Determined
Detailed Resources Identification

Task No: 12 OTV SPACECRAFT INTEGRATION
Subtask No: < 12.0400> Description: <CONNECT INSTRUMENTATION CABLES>
Hazard Level:*: 1 None
Activity: CONNECT OTV INSTRUMENTATION CABLES TO OTV GSE AND S/C INSTRUMENTATION CABLES TO S/C GSE. APPLY POWER TO THE OTV.

Personnel:

<table>
<thead>
<tr>
<th>Vehicle</th>
<th>Control Station</th>
</tr>
</thead>
<tbody>
<tr>
<td>Payload Specialist(s)</td>
<td>(6)</td>
</tr>
<tr>
<td>Engineering</td>
<td>(1)</td>
</tr>
<tr>
<td>Shop</td>
<td>(4)</td>
</tr>
<tr>
<td>Inspector</td>
<td>(2)</td>
</tr>
<tr>
<td>Other</td>
<td>(0)</td>
</tr>
<tr>
<td><strong>Sub Total</strong></td>
<td><strong>(7)</strong></td>
</tr>
</tbody>
</table>

*Total Manhours* = **26.6**

**Serial Time To Complete:** 120 min

Automation Need: (Primary Key)
Automation Secondary Key(s):

### Detailed Facility Resources

**Physical Size:**

- **Air Lock:** 0 0 0 [W/D/H][ft]
- **Doors:** 0 0 [W/H][ft]
- **High Bay:** 70 100 85 [W/D/H][ft]

**Crane Capacity:**

- 0 Ton 0 ft.Hook Height

**Standard Commercial Power:** Y
**Instrumentation Power** [Uninterrupted]: Y

- **Cleanliness:** 100K
- **E.C.S. Humidity:** 50 +/- 5%
- **Power Cutoff:** Y
- **Facility GN2:** NA
- **Temperature:** 70 +/- 5°F

**Closed Circuit Television:** NA
**Helium Supply:** NA
**Fire Protection/Deluge:** A
**Shower/Eye Wash:** NA
**Lightning Protection:** Y
**Potable Water:** NA
**Commerical Telephone:** Y
**Paging:** Y
**Personnel Airlock:** Y
**Grounding:** Y

**Detailed Equipment Resources**

- **Special Tool Kit:** NA
- **Slings:** NA
- **OTV Adapter:** NA
- **Breakout Boxes:** Y
- **Adapter Cables:** Y
- **Ground Power Unit:** Y
- **Air Pallet:** NA
- **Work Stands:** Y
- **Special Hoisting Equip:** NA
- **NASA Canister:** NA
- **OTV Canister:** NA

**(*): Legend For Data Input**

- **Fire Protection/Deluge:**
  - A: fire protection
  - B: deluge
  - C: both
  - N: none

- **Hazard Level:**
  - 1: None
  - 2: Local Clear
  - 3: Area Clear
  - 4: Facility Clear

- **Others:**
  - Y: Yes
  - N: No
  - NA: Not Applicable
  - TD: To Be Determined

---

66
Detailed Resources Identification

Task No: 12

OTV SPACECRAFT INTEGRATION

Subtask No: < 12.0500>

Hazard Level: 1 None

Activity: VERIFY TELEMETRY AND COMMAND RF LINKS TO OTV AND S/C

Personnel:

<table>
<thead>
<tr>
<th>Vehicle</th>
<th>Control Station</th>
</tr>
</thead>
<tbody>
<tr>
<td>Payload Specialist(s)</td>
<td>(0)</td>
</tr>
<tr>
<td>Engineering</td>
<td>(1)</td>
</tr>
<tr>
<td>Shop</td>
<td>(2)</td>
</tr>
<tr>
<td>Inspector</td>
<td>(1)</td>
</tr>
<tr>
<td>Other</td>
<td>(0)</td>
</tr>
</tbody>
</table>

Sub Total: (6) Total: (18)

Serial Time To Complete: 300 min Total Manhours: 50.0

Automation Need: (Primary Key)

Automation Secondary Key(s):

Detailed Facility Resources

Physical Size:

<table>
<thead>
<tr>
<th>Air Lock:</th>
<th>0</th>
<th>0</th>
<th>0 [W/D/H][ft]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Doors:</td>
<td>0</td>
<td>0</td>
<td>[W/H][ft]</td>
</tr>
<tr>
<td>High Bay:</td>
<td>70</td>
<td>100</td>
<td>85 [W/D/H][ft]</td>
</tr>
</tbody>
</table>

Crane Capacity:

| 0 Ton | 0 Ft.Hook Height |

Standard Equipment:

<table>
<thead>
<tr>
<th>Commerical Power:</th>
<th>Y</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cleaning:</td>
<td>100K</td>
</tr>
<tr>
<td>Closed Circuit Television:</td>
<td>NA</td>
</tr>
<tr>
<td>Fuel:</td>
<td>NA</td>
</tr>
<tr>
<td>Fire Protection/Disposal:</td>
<td>N</td>
</tr>
<tr>
<td>Light:</td>
<td>Y</td>
</tr>
<tr>
<td>Connect:</td>
<td>Y</td>
</tr>
<tr>
<td>Personal:</td>
<td>Y</td>
</tr>
</tbody>
</table>

Instrumentation Power [Uninterrupted]: Y

E.C.S: Humidity: 50 +/- 5%

Power Cutoff: Y

Facility GN2: NA

Shop Air: NA

Vacuum: NA

Paging: Y

CIS: Y

Explosion Proof: NA

Detailed Equipment Resources

| Special Kit: | NA |
| Break Boxes: | Y |
| Air: | NA |
| NASA: | NA |

Slings: NA

Adapter Cables: Y

Work Stands: Y

OTV Canister: NA

Ground Power Unit: Y

Special Hoisting Equip: NA

(*) Legend For Data Input

Fire Protection/Dispelge: A: fire protection

RF System: A: S Band & C Band

or B: deluge

or C: Ku Band

or N: none

or 2: both

or 3: both

or N: none

or 4: Facility Clear

Hazard Level: 1: None

Others: Y: Yes

N: No

TD: To Be Determined

NA: Not Applicable

67
Detailed Resources Identification

Task No: 12 OTV SPACECRAFT INTEGRATION

Subtask No: <12.0600> Description: <OTV S/C INTERFACE TEST>
Hazard Level(*): 1 None
Activity: VERIFY MECHANICAL/ELECTRICAL INTERFACES BETWEEN OTV AND S/C

Personnel:

<table>
<thead>
<tr>
<th>Personnel Type</th>
<th>Sub Task</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vehicle Payload Specialist(s)</td>
<td>0</td>
</tr>
<tr>
<td>Engineering</td>
<td>1</td>
</tr>
<tr>
<td>Shop</td>
<td>2</td>
</tr>
<tr>
<td>Inspector</td>
<td>1</td>
</tr>
<tr>
<td>Other</td>
<td>0</td>
</tr>
<tr>
<td>Sub Total</td>
<td>4</td>
</tr>
</tbody>
</table>

Automation Need: (Primary Key)

Automation Secondary Key(s):

Serial Time To Complete: 120 min
Total Manhours: 20.0

Detailed Facility Resources

Physical Size:
- Air Lock: 0 0 0 [W/D/H][ft]
- Doors: 0 0 [W/H][ft]
- High Bay: 70 100 85 [W/D/H][ft]

Crane Capacity:
- 0 Ton 0 Ft.Hook Height

Standard Commercial Power: Y
Instrumentation Power [Uninterrupted]: Y

Cleanliness: 100K
E.C.S. Humidity: 50 +/- 5%
Temperature: 70 +/- 5 F

Closed Circuit Television: NA
Power Cutoff: Y
Facility GN2: NA

Fuel/Oxidizer Disposal: N
Helium Supply: NA
Shop Air: NA

Fire Protection/Deluge(*): A
Shower/Eye Wash: NA
Vacuum: NA

Lightning Protection: Y
Potable Water: NA
Paging: Y

Commercial Telephone: Y
RF System(*): C
OIS: Y

Personnel Airlock: Y
Grounding: Y
Explosion Proof: NA

Detailed Equipment Resources

Special Tool Kit: NA
Slings: NA
OTV Adapter: NA

Breakout Boxes: Y
Adapter Cables: Y
Ground Power Unit: Y

Air Pallet: NA
Work Stands: Y
Special Hoisting Equip: NA

NASA Canister: NA
OTV Canister: NA

(*) Legend For Data Input

Fire Protection/Deluge= A: fire protection or B: deluge or C: both or N: none
RF System= A: S Band & C Band or B: Ku Band or C: both or N: none
Hazard Level= 1: None or 2: Local Clear or 3: Area Clear or 4: Facility Clear
Others= Y: Yes or N: No or NA: Not Applicable or TD: To Be Determined
### Detailed Resources Identification

**Task No:** 13  |  OTV/SC/CITE INTERFACE TEST
---|---
**Subtask No:** < 13.0100 | **Description:** DATA PATH VERIFICATION
**Hazard Level(•):** 1 None
**Activity:** REMOVE PROTECTIVE COVERS, CONFIGURE OTV/SC CONNECTORS AND TEST SET, VERIFY CONTINUITY/ISOLATION ACROSS ALL CONNECTORS, DEMATE, INSPECT CONNECTORS

#### Personnel:

<table>
<thead>
<tr>
<th>Vehicle</th>
<th>Control Station</th>
</tr>
</thead>
<tbody>
<tr>
<td>Payload Specialist(s)</td>
<td>0</td>
</tr>
<tr>
<td>Engineering</td>
<td>1</td>
</tr>
<tr>
<td>Shop</td>
<td>2</td>
</tr>
<tr>
<td>Inspector</td>
<td>1</td>
</tr>
<tr>
<td>Other</td>
<td>0</td>
</tr>
<tr>
<td><strong>Sub Total</strong></td>
<td><strong>Total</strong></td>
</tr>
<tr>
<td>4</td>
<td>6</td>
</tr>
</tbody>
</table>

**Serial Time To Complete:** 480 min  |  **Total Manhours (80.0)**

#### Automation Need: (Primary Key)

**Automation Secondary Key(s):**

- Control Station: 0 2 2 2
- Total: 6

#### Detailed Facility Resources

**Physical Size:**

<table>
<thead>
<tr>
<th>Air Lock:</th>
<th>0 0 0</th>
<th>W/D/H</th>
<th>Crane Capacity:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Doors:</td>
<td>0 0</td>
<td>W/H</td>
<td>0 Ton 0 Ft. Hook Height</td>
</tr>
<tr>
<td>High Bay:</td>
<td>70 85</td>
<td>W/H</td>
<td>0 Ton 0 Ft. Hook Height</td>
</tr>
</tbody>
</table>

**Standard Commercial Power:** Y  | **Instrumentation Power [Uninterrupted]:** Y

**Cleanliness:** 100K  | **E.C.S:** Humidity: 50 +/- 5 %  | **Temperature:** 70 +/- 5 F

**Closed Circuit Television:** NA  | **Power Cutoff:** Y  | **Facility GN2:** NA

**Fuel/Oxidizer Disposal:** N  | **Helium Supply:** NA  | **Shop Air:** NA

**Fire Protection/Deluge(•):** A  | **Shower/Eye Wash:** NA  | **Vacuum:** NA

**Lightning Protection:** Y  | **Potable Water:** NA  | **Paging:** Y

**Commercial Telephone:** Y  | **RF System(•):** A  | **OIS:** Y

**Personnel Airlock:** Y  | **Grounding:** Y  | **Explosion Proof:** NA

#### Detailed Equipment Resources

- Special Tool Kit: NA  | Slings: NA  | OTV Adapter: NA
- Breakout Boxes: Y  | Adapter Cables: Y  | Ground Power Unit: Y
- Air Pallet: NA  | Work Stands: Y  | Special Hoisting Equip: NA
- NASA Canister: NA  | OTV Canister: NA

#### (*) Legend For Data Input

- **Fire Protection/Deluge:** A: fire protection  | B: deluge  | C: both  | N: none
- **Hazard Level:** 1: None  | 2: Local Clear  | 3: Area Clear  | 4: Facility Clear
- **Others:** Y: Yes  | N: No  | NA: Not Applicable  | TD: To Be Determined
### Detailed Resources Identification

**Task No.:** 13  
**OTV/SC/CITE INTERFACE TEST**

**Subtask No.:** 13.0200  
**Description:** FUNCTIONAL VERIFICATION OF RF

**Hazard Level(s):** 1 None

**Activity:** CONFIGURE OTV/SC TO ASE/ORBITER CONNECTION(S), APPLY OTV GPS POWER INITIATE OTV/ORBITER DATA EXCHANGE, VERIFY RF LINK, ANALYZE DATA

#### Personnel:

<table>
<thead>
<tr>
<th></th>
<th>Vehicle</th>
<th>Control Station</th>
</tr>
</thead>
<tbody>
<tr>
<td>Payload Specialist(s)</td>
<td>(0)</td>
<td>(0)</td>
</tr>
<tr>
<td>Engineering</td>
<td>(1)</td>
<td>(2)</td>
</tr>
<tr>
<td>Shop</td>
<td>(2)</td>
<td>(2)</td>
</tr>
<tr>
<td>Inspector</td>
<td>(1)</td>
<td>(2)</td>
</tr>
<tr>
<td>Other</td>
<td>(0)</td>
<td></td>
</tr>
<tr>
<td><strong>Sub Total</strong></td>
<td></td>
<td><strong>(4)</strong></td>
</tr>
</tbody>
</table>

#### Serial Time to Complete:
- **1200 min**

#### Automation Need:
- **(Primary Key)**
- **Automation Secondary Key(s)**
  - Control Station: 0
  - 2
  - 2
  - 2

#### Total Manhours:
- **260.0**

### Detailed Facility Resources

#### Physical Size:
- Air Lock: 0 0 0 [W/D/H][ft]
- Doors: 0 0 [W/H][ft]
- High Bay: 70 100 85 [W/D/H][ft]

#### Crane Capacity:
- 0 Ton 0 Ft. Hook Height

#### Standard Commercial Power:
- **Y**

#### Cleanliness:
- **160K**

#### Closed Circuit Television:
- **NA**

#### Fuel/Oxidizer Disposal:
- **N**

#### Fire Protection/Deluge(*):
- **A**

#### Lightning Protection:
- **Y**

#### Commercial Telephone:
- **Y**

#### Personnel Airlock:
- **Y**

### Detailed Equipment Resources

#### Special Tool Kit:
- **NA**

#### Breakout Boxes:
- **Y**

#### Air Pallet:
- **NA**

#### NASA Canister:
- **NA**

#### OTV Canister:
- **NA**

#### OTV Adapter:
- **NA**

#### Adapter Cables:
- **Y**

#### Ground Power Unit:
- **Y**

#### Special Hoisting Equip:
- **NA**

#### Instrumentation Power [Uninterrupted]:
- **Y**

#### E.C.S.:
- **Humidity:** 50 +/- 5%
- **Temperature:** 70 +/- 5 F

#### Power Cutoff:
- **Y**

#### Facility GN2:
- **NA**

#### Shop Air:
- **NA**

#### Helium Supply:
- **NA**

#### Vacuum:
- **NA**

#### Potable Water:
- **NA**

#### OIS:
- **Y**

#### Paging:
- **Y**

#### CIS:
- **Y**

#### Grounding:
- **Y**

#### Explosion Proof:
- **NA**

#### Temperature:
- **70 +/- 5 F**

#### Facility GN2:
- **NA**

#### Shop Air:
- **NA**

#### Vacuum:
- **NA**

#### Paging:
- **Y**

#### CIS:
- **Y**

#### Thermal Protection:
- **Y**

#### Special Hoisting Equip:
- **NA**

#### Fire Protection/Deluge:
- **A:** fire protection
- **B:** deluge
- **C:** both
- **N:** none

#### Hazard Level:
- **1:** None
- **2:** Local Clear
- **3:** Area Clear
- **4:** Facility Clear

#### Others:
- **Y:** Yes
- **N:** No
- **NA:** Not Applicable
- **TD:** To Be Determined

---

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Detailed Resources Identification

Task No: 14  CLOSET & PREP TO MOVE

Subtask No: < 14.0100>  Description: <PREP TO MOVE >

Hazard Level(*): 1 None

Activity: DEMATE ELECTRICAL, INSPECT CONNECTORS, INSTALL PROTECTIVE COVERS/DEVICE
S-INSTALL OTV LIFTING SLING/FIXTURE-REMOVE ATTACH HARDWARE-POSITION TRANSPORTER

Personnel:

<table>
<thead>
<tr>
<th>Vehicle</th>
<th>Control Station</th>
</tr>
</thead>
<tbody>
<tr>
<td>Payload Specialist(s)</td>
<td>(0)</td>
</tr>
<tr>
<td>Engineering</td>
<td>(0)</td>
</tr>
<tr>
<td>Shop</td>
<td>(5)</td>
</tr>
<tr>
<td>Inspector</td>
<td>(2)</td>
</tr>
<tr>
<td>Other</td>
<td>(0)</td>
</tr>
<tr>
<td>Sub Total</td>
<td>(8)</td>
</tr>
<tr>
<td>Total</td>
<td>(8)</td>
</tr>
</tbody>
</table>

Serial Time To Complete: 720 min  Total Manhours ( 96.0)

Automation Need: (Primary Key)

Automation Secondary Key(s):  

Detailed Facility Resources

Physical Size:

<table>
<thead>
<tr>
<th>Air Lock</th>
<th>Doors</th>
<th>High Bay</th>
</tr>
</thead>
<tbody>
<tr>
<td>[W/D/H][ft]</td>
<td>[W/H][ft]</td>
<td>[W/D/H][ft]</td>
</tr>
<tr>
<td>0 0 6</td>
<td>0 0</td>
<td>70 100 85</td>
</tr>
</tbody>
</table>

Crane Capacity:

| 0 Ton 0 Ft.Hook Height |
| 20 Ton 70 Ft.Hook Height |

Standard Commercial Power: Y

Cleanliness: 100K

Closed Circuit Television: NA

Fuel/Oxidizer Disposal: N

Fire Protection/Deluge(*): A

Lightning Protection: Y

Commercial Telephone: Y

Personnel Airlock: Y

Instrumentation Power [Uninterrupted]: NA

Temperature: 70 +/- 5 F

E.C.S: Humidity: 50 +/- 5 %

Heilum Supply: NA

Potable Water: NA

OIS: NA

Paging: Y

Shower/Eye Wash: NA

Shop Air: NA

Vacuum: NA

Paging: Y

Facility GN2: NA

Personnel Airlock: Y

Grounding: Y

OIT Adapter: Y

Special Hoisting Equipment: Y

Special Tool Kit: Y

Breakout Boxes: NA

Air Pallet: NA

NASA Canister: NA

Slings: Y

Adapter Cables: NA

Special Hoisting Equipment: Y

Detailed Equipment Resources

(*) Legend For Data Input

Fire Protection/Deluge(*): A: fire protection
or B: deluge
or C: both
or N: none

Hazard Level:*: 1: None
or 2: Local Clear
or 3: Area Clear
or 4: Facility Clear

RF System: A: S Band & C Band
or B: Ku Band
or C: both
or N: none

Others: Y: Yes
or N: No

Legend For Data Input

Fire Protection/Deluge(*)

A: fire protection
B: deluge
C: both
N: none

Hazard Level: 1: None
2: Local Clear
3: Area Clear
4: Facility Clear

Others: Y: Yes
N: No
NA: Not Applicable
TD: To Be Determined
Detailed Resources Identification

Task No: 15
Subtask No: <15.0100>
Description: INSTTOL OTV S/C IN CANISTER
Activity: USING THE VPHD, LOAD THE ASSEMBLED OTV AND S/C INTO THE CANISTER FOR TRANSPORT

Hazard Level(s): 2 Local Clear

Personnel:

<table>
<thead>
<tr>
<th>Vehicle</th>
<th>Control Station</th>
</tr>
</thead>
<tbody>
<tr>
<td>Payload Specialist(s)</td>
<td>(0)</td>
</tr>
<tr>
<td>Engineering</td>
<td>(0)</td>
</tr>
<tr>
<td>Shop</td>
<td>(0)</td>
</tr>
<tr>
<td>Inspector</td>
<td>(2)</td>
</tr>
<tr>
<td>Other</td>
<td>(0)</td>
</tr>
<tr>
<td>Sub Total</td>
<td>(8)</td>
</tr>
</tbody>
</table>

Serial Time To Complete: 240 min
Total Manhours: 32.0

Automation Need: (Primary Key)
Automation Secondary Key(s):

Detailed Facility Resources

Physical Size:
- Air Lock: 40 x 40 x 74 ft
- Doors: 35 x 71 ft
- High Bay: 70 x 85 ft

Crane Capacity:
- 10 Ton 64 Ft Hook Height
- 20 Ton 76 Ft Hook Height

Standard Commercial Power: Y

Cleanliness: 100K
Closed Circuit Television: NA
Fuel/Oxidizer Disposal: N
Fire Protection/Deluge(*): A
Lightning Protection: Y
Commercial Telephone: Y
Personnel Airlock: Y

Instrumentation Power [Uninterrupted]: NA
E.C.S: Humidity: 50 +/- 5%
Power Cutoff: NA
Facility GN2: NA
Shop Air: NA
Shower/Eye Wash: NA
Vacuum: NA
Paging: Y
OIS: NA

Commercial Airlock: Y

Detailed Equipment Resources:

Special Tool Kit: Y
Breakout Boxes: NA
Air Pallet: NA
NASA Canister: Y

Slings: Y
Adapter Cables: NA
Work Stands: NA
OTV Adapter: Y
Ground Power Unit: NA
Special Hoisting Equip: Y

RF System(*):
- A: S Band & C Band
- B: Ku Band
- C: both
- N: none

OTV Canister: NA

Fire Protection/Deluge(*):
- A: fire protection
- B: deluge
- C: both
- N: none

RF System(*):
- A: S Band & C Band
- B: Ku Band
- C: both
- N: none

Others(*):
- Y: Yes
- N: No
- NA: Not Applicable
- TD: To Be Determined

Hazard Level(*):
- 1: None
- 2: Local Clear
- 3: Area Clear
- 4: Facility Clear
- 5: Not Applicable

Legend For Data Input:
- Fire Protection/Deluge(*)
- RF Systems(*)
- Others(*)

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**Task No:** 15  **INSTALL IN CANISTER**

**Subtask No:** <15.0200>  **Description:** <TRANSPORT CANISTER TO PAD>

<table>
<thead>
<tr>
<th>Hazard Level(*)</th>
<th>1: None</th>
</tr>
</thead>
<tbody>
<tr>
<td>Activity:</td>
<td>TRANSPORT OTV AND S/C TO PAD</td>
</tr>
</tbody>
</table>

**Personnel:**

- **Vehicle**
  - Payload Specialist(s): 0
  - Engineering: 1
  - Shop: 3
  - Inspector: 1
  - Other: 0
  - Sub Total: 5

<table>
<thead>
<tr>
<th>Control Station</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sub Total: 0</td>
</tr>
</tbody>
</table>

**Serial Time To Complete:** 240 min  **Total Manhours:** (20.0)

**Automation Need:** (Primary Key)

**Automation Secondary Key(s):**

---

**Detailed Facility Resources**

- **Physical Size:**
  - Air Lock: 0 0 0
  - Doors: 0 0
  - High Bay: 0 0 0

- **Crane Capacity:**
  - 0 Ton 0 Ft.Height

- **Standard Commercial Power:** NA
- **Cleanliness:** 100K
- **Closed Circuit Television:** NA
- **Fuel/Oxidizer Disposal:** N
- **Fire Protection/Deluge:** A
- **Lightning Protection:** Y
- **Commerical Telephone:** Y
- **Personnel Airlock:** NA

**Detailed Equipment Resources**

- **Special Tool Kit:** NA
- **Breakout Boxes:** NA
- **Air Pallet:** NA
- **NASA Canister:** Y

<table>
<thead>
<tr>
<th>Special Power Cutoff: NA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power Cutoff: NA</td>
</tr>
<tr>
<td>Facility GN2: NA</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Instrumentation Power [Uninterrupted]: NA</th>
</tr>
</thead>
<tbody>
<tr>
<td>E.C.S. Humidity: 50 +/- 5%</td>
</tr>
<tr>
<td>Temperature: 70 +/- 5F</td>
</tr>
<tr>
<td>Shop Air: NA</td>
</tr>
<tr>
<td>Orlando: NA</td>
</tr>
<tr>
<td>Electrical Power: NA</td>
</tr>
<tr>
<td>E.C.S.: Humidity: 50 +/- 5%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Temperature: 70 +/- 5F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Facility GN2: NA</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>RF System(*)</th>
<th>A: S Band &amp; C Band</th>
</tr>
</thead>
<tbody>
<tr>
<td>or B: Ku Band</td>
<td></td>
</tr>
<tr>
<td>or C: both</td>
<td></td>
</tr>
<tr>
<td>or N: none</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Fire Protection/Deluge(*)</th>
<th>A: fire protection</th>
</tr>
</thead>
<tbody>
<tr>
<td>or B: deluge</td>
<td></td>
</tr>
<tr>
<td>or C: both</td>
<td></td>
</tr>
<tr>
<td>or N: none</td>
<td></td>
</tr>
</tbody>
</table>

**Hazard Level:**

- 1: None
- 2: Local Clear
- 3: Area Clear
- 4: Facility Clear

**Others:**

- Y: Yes
- N: No
- NA: Not Applicable
- TD: To Be Determined

---

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Detailed Resources Identification

Task No: 16  INSTALL IN RSS PGHM

Subtask No: < 16.0100>  Description: <MATE CANISTER TO PCR >
Hazard Level(s): 2  Local Clear
Activity: USING IMSE AND O/H CRANE LIFT THE CANISTER FROM TRANSPORTER TO THE PCR.

Personnel:

<table>
<thead>
<tr>
<th>Vehicle</th>
<th>Control Station</th>
</tr>
</thead>
<tbody>
<tr>
<td>Payload Specialist(s)</td>
<td>(0)</td>
</tr>
<tr>
<td>Engineering</td>
<td>(0)</td>
</tr>
<tr>
<td>Shop</td>
<td>(0)</td>
</tr>
<tr>
<td>Inspector</td>
<td>(0)</td>
</tr>
<tr>
<td>Other</td>
<td>(0)</td>
</tr>
<tr>
<td>Sub Total</td>
<td>(8)</td>
</tr>
</tbody>
</table>

Total Manhours ( 48.0)

Automation Need: (Primary Key)

Automation Secondary Key(s)

Detailed Facility Resources

Physical Size:
- Air Lock: [W/D/H][ft]
- Doors: [W/H][ft]
- High Bay: [W/D/H][ft]

Crane Capacity:
- 0 Ton 0 Ft.Hook Height

Standard Commerical Power: NA
- Instrumentation Power [Uninterrupted]: NA

Cleanliness: 100K
- E.C.S: Humidity: 50 +/- 5 %
- Temperature: 70 +/- 5 F

Closed Circuit Television: NA
- Power Cutoff: NA
- Facility GN2: NA

Fuel/Oxidizer Disposal: N
- Helium Supply: NA
- Shop Air: NA

Fire Protection/Deluge(*): A
- Shower/Eye Wash: NA
- Vacuum: NA

Lightning Protection: Y
- Potable Water: NA
- Paging: Y

Commerical Telephone: Y
- RF System(*): N
- OIS: NA

Personnel Airlock: NA
- Grounding: Y
- Explosion Proof: NA

Detailed Equipment Resources

Special Tool Kit: NA
- Slings: NA
- OTV Adapter: NA

Breakout Boxes: NA
- Adapter Cables: NA
- Ground Power Unit: NA

Air Pallet: NA
- Work Stands: NA
- Special Hoisting Equip: NA

NASA Canister: Y
- OTV Canister: NA

(*): Legend For Data Input

- Fire Protection/Deluge(*)
  - A: fire protection
  - B: deluge
  - C: both
  - N: none

- Hazard Level:
  - 1: None
  - 2: Local Clear
  - 3: Area Clear
  - 4: Facility Clear

- Others:
  - Y: Yes
  - N: No
  - NA: Not Applicable
  - TD: To Be Determined
## Detailed Resources Identification

**Task No:** 16  
**INSTALL IN RSS PGHM**

### Subtask No: <16.0200>
**Description:** <REMOVE OTV S/C FROM CANISTER >

**Hazard Level:*:** 2  
**Local Clear**

**Activity:** OPEN CANISTER-TRANSFER OTV AND S/C FROM CANISTER TO PGHM FOR PAD OPERATIONS

### Personnel:

<table>
<thead>
<tr>
<th>Vehicle</th>
<th>Control Station</th>
</tr>
</thead>
<tbody>
<tr>
<td>Payload Specialist(s)</td>
<td>0</td>
</tr>
<tr>
<td>Engineering</td>
<td>1</td>
</tr>
<tr>
<td>Shop</td>
<td>5</td>
</tr>
<tr>
<td>Inspector</td>
<td>2</td>
</tr>
<tr>
<td>Other</td>
<td>0</td>
</tr>
<tr>
<td><strong>Sub Total</strong></td>
<td><strong>8</strong></td>
</tr>
</tbody>
</table>

**Serial Time To Complete:** 240 min  
**Total Manhours:** 32.0

### Automation Need:

<table>
<thead>
<tr>
<th>Primary Key</th>
<th>Secondary Key(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Detailed Facility Resources

<table>
<thead>
<tr>
<th>Physical Size:</th>
<th>Crane Capacity:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air Lock: 0 0 0 [W/D/H][ft]</td>
<td>0 Ton 0 Ft.Hook Height</td>
</tr>
<tr>
<td>Doors: 0 0 [W/H][ft]</td>
<td></td>
</tr>
<tr>
<td>High Bay: 0 0 0 [W/D/H][ft]</td>
<td>0 Ton 0 Ft.Hook Height</td>
</tr>
</tbody>
</table>

**Cleanliness:** 100K  
**E.C.S.:** Humidity: 50 +/- 5%  
**Temperature:** 70 +/- 5 F  
**Power Cutoff:** NA  
**Facility GN2:** NA  
**Healium Supply:** NA  
**Shop Air:** NA  
**Shower/Eye Wash:** NA  
**Vacuum:** NA  
**Potable Water:** NA  
**RF System:*:** N  
**OIS:** NA  
**Grounding:** Y  
**Explosion Proof:** NA

### Detailed Equipment Resources

<table>
<thead>
<tr>
<th>Special Tool Kit</th>
<th>Slings</th>
<th>OTV Adapter</th>
</tr>
</thead>
<tbody>
<tr>
<td>NA</td>
<td>NA</td>
<td>NA</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Breakout Boxes</th>
<th>Adapter Cables</th>
<th>Ground Power Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>NA</td>
<td>NA</td>
<td>NA</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Air Pallet</th>
<th>Work Stands</th>
<th>Special Hoisting Equip</th>
</tr>
</thead>
<tbody>
<tr>
<td>NA</td>
<td>NA</td>
<td>NA</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>NASA Canister</th>
<th>OTV Canister</th>
</tr>
</thead>
<tbody>
<tr>
<td>NA</td>
<td>NA</td>
</tr>
</tbody>
</table>

### Legend For Data Input

- **Fire Protection/Deluge:**
  - A: fire protection
  - B: deluge
  - C: both
  - N: none

- **Hazard Level:**
  - 1: None
  - 2: Local Clear
  - 3: Area Clear
  - 4: Facility Clear

- **Others:**
  - Y: Yes
  - N: No
  - TD: To Be Determined

---

75
Detailed Resources Identification

Task No: 17  INSTALL BATTERIES AND ORDNANCE

Subtask No: < 17.0100> Description: <CONNECT BATT/ORD TEST SET >
Hazard Level(*): 1 None
Activity: CONNECT TEST SET TO VERIFY BATTERY AND ORDNANCE INSTALLATION

Personnel:

<table>
<thead>
<tr>
<th>Vehicle</th>
<th>Control Station</th>
</tr>
</thead>
<tbody>
<tr>
<td>Payload Specialist(s)</td>
<td>(0)</td>
</tr>
<tr>
<td>Engineering</td>
<td>(0)</td>
</tr>
<tr>
<td>Shop</td>
<td>(0)</td>
</tr>
<tr>
<td>Inspector</td>
<td>(0)</td>
</tr>
<tr>
<td>Other</td>
<td>(0)</td>
</tr>
<tr>
<td>Sub Total</td>
<td>(7)</td>
</tr>
</tbody>
</table>

Serial Time To Complete: 60 min  Total Manhours ( 7.0)

Automation Need: (Primary Key)

Automation Secondary Key(s)

Detailed Facility Resources

Physical Size:

<table>
<thead>
<tr>
<th>Air Lock:</th>
<th>Doors:</th>
<th>High Bay:</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 0 0 [W/D/H][ft]</td>
<td>0 0 [W/H][ft]</td>
<td>0 0 0 [W/D/H][ft]</td>
</tr>
</tbody>
</table>

Crane Capacity:

<table>
<thead>
<tr>
<th>Air Lock:</th>
<th>Doors:</th>
<th>High Bay:</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 Ton</td>
<td>0 Ft.Hook Height</td>
<td>0 Ton</td>
</tr>
</tbody>
</table>

Standard Commercial Power: Y
Instrumentation Power [Uninterrupted]: Y

Cleanliness: 100K
E.C.S: Humidity: 50 +/- 5 %
Power Cutoff: Y
Temperature: 70 +/- 5 F
Facility GN2: NA
Shop Air: NA

Fire Protection/Deluge(*): A
Shower/Eye Wash: NA
Vacuum: NA

Lightning Protection: Y
Potable Water: NA
Paging: Y

Commercial Telephone: Y
RF System(*): N
OIS: NA

Personnel Airlock: Y
Grounding: Y
Explosion Proof: Y

Detailed Equipment Resources

Special Tool Kit: NA
Slings: NA
OTV Adapter: NA

Breakout Boxes: NA
Adapter Cables: NA
Ground Power Unit: NA

Air Pallet: NA
Work Stands: NA
Special Hoisting Equip: NA

NASA Canister: NA
OTV Canister: NA

(*) Legend For Data Input

Fire Protection/Deluge(*): A: fire protection
or B: deluge
or C: both
or N: none

Hazard Level(*): 1: None
or 2: Local Clear
or 3: Area Clear
or 4: Facility Clear
Others(*): Y: Yes
or N: No
or NA: Not Applicable

OIS: To Be Determined

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**Detailed Resources Identification**

**Task No:** 17  **INSTALL BATTERIES AND ORDNANCE**

**Subtask No:** <17.0200>  **Description:** <INSTALL BATTERIES >

**Hazard Level(*):** 1 None

**Activity:** REMOVE THE ACCESS PANELS—INSTALL BATTERIES—PERFORM THE BATTERY TEST PROCEDURE—CLOSE THE ACCESS PANELS.

**Personnel:**

<table>
<thead>
<tr>
<th>Role</th>
<th>Vehicle</th>
<th>Payload Specialist(s) (0)</th>
<th>Engineering (1)</th>
<th>Shop (4)</th>
<th>Inspector (2)</th>
<th>Other (0)</th>
<th>Sub Total (7)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control Station</td>
<td>(0)</td>
<td></td>
<td>(0)</td>
<td>(0)</td>
<td>(0)</td>
<td>(0)</td>
<td>(0)</td>
</tr>
</tbody>
</table>

**Serial Time To Complete:** 180 min  
**Total Manhours:** 21.8

**Automation Need:** (Primary Key)

**Automation Secondary Key(s):**

**Detailed Facility Resources**

<table>
<thead>
<tr>
<th>Physical Size:</th>
<th>Air Lock: 0 0 0 [W/D/H][ft]</th>
<th>Doors: 0 0 [W/H][ft]</th>
<th>High Bay: 0 0 0 [W/D/H][ft]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Crane Capacity:</td>
<td>0 Ton 0 Ft.Hook Height</td>
<td>0 Ton 0 Ft.Hook Height</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Standard Commerical Power: Y</th>
<th>Instrumentation Power [Uninterrupted]: Y</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cleanliness: 100K</td>
<td>E.C.S: Humidity: 50 +/- 5 %</td>
</tr>
<tr>
<td>Closed Circuit Television: NA</td>
<td>Power Cutoff: Y</td>
</tr>
<tr>
<td>Fuel/Oxidizer Disposal: N</td>
<td>Facility GN2: NA</td>
</tr>
<tr>
<td>Fire Protection/Deluge(*): A</td>
<td>Shop Air: NA</td>
</tr>
<tr>
<td>Lightning Protection: Y</td>
<td>Shower/Eye Wash: NA</td>
</tr>
<tr>
<td>Commercial Telephone: Y</td>
<td>Potable Water: NA</td>
</tr>
<tr>
<td>Personnel Airlock: Y</td>
<td>RF System(*): N</td>
</tr>
<tr>
<td></td>
<td>Ground: Y</td>
</tr>
<tr>
<td></td>
<td>Grounding: Y</td>
</tr>
<tr>
<td></td>
<td>Explosion Proof: Y</td>
</tr>
</tbody>
</table>

**Detailed Equipment Resources**

<table>
<thead>
<tr>
<th>Special Tool Kit: Y</th>
<th>Slings: NA</th>
<th>OTV Adapter: NA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Breakout Boxes: NA</td>
<td>Adapter Cables: NA</td>
<td>Ground Power Unit: NA</td>
</tr>
<tr>
<td>Air Pallet: NA</td>
<td>Work Stands: NA</td>
<td>Special Hoisting Equip: NA</td>
</tr>
<tr>
<td>NASA Canister: NA</td>
<td>OTV Canister: NA</td>
<td></td>
</tr>
</tbody>
</table>

**Legend For Data Input**

- Fire Protection/Deluge—A: fire protection  
  or B: deluge  
  or C: both  
  or N: none

- RF System—A: S Band & C Band  
  or B: Ku Band  
  or C: both  
  or N: none

- Hazard Level—1: None  
  or 2: Local Clear  
  or 3: Area Clear  
  or 4: Facility Clear

- Others—Y: Yes  
  or N: No  
  or NA: Not Applicable  
  or TD: To Be Determined
## Detailed Resources Identification

**Task No:** 17  
**INSTALL BATTERIES AND ORDNANCE**

**Subtask No:** <17.0300>  
**Description:** <INSTALL ORDNANCE>

**Hazard Level:** 3 Area Clear  
**Activity:** REMOVE ACCESS PANELS—PERFORM STATIC VOLTAGE CHECKS—INSTALL ORDNANCE—PERFORM STATIC VOLTAGE CHECKS—ELECTRICAL CONNECT SQUIBS—REPLACE ACCESS PANELS.

### Personnel:

<table>
<thead>
<tr>
<th>Vehicle</th>
<th>Control Station</th>
</tr>
</thead>
<tbody>
<tr>
<td>Payload Specialist(s)</td>
<td>(0)</td>
</tr>
<tr>
<td>Engineering</td>
<td>(1)</td>
</tr>
<tr>
<td>Shop</td>
<td>(4)</td>
</tr>
<tr>
<td>Inspector</td>
<td>(2)</td>
</tr>
<tr>
<td>Other</td>
<td>(0)</td>
</tr>
</tbody>
</table>

Sub Total: (7)  
Total: (7)

**Serial Time To Complete:** 360 min  
**Total Manhours:** (42.0)

### Automation Need:

- Primary Key:
- Secondary Key(s):

### Detailed Facility Resources

<table>
<thead>
<tr>
<th>Physical Size:</th>
<th>Crane Capacity:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air Lock: [W/D/H][ft]</td>
<td>0 Ton 0 Ft.Hook Height</td>
</tr>
<tr>
<td>Doors: [W/H][ft]</td>
<td>0 Ton 0 Ft.Hook Height</td>
</tr>
<tr>
<td>High Bay: [W/D/H][ft]</td>
<td>0 Ton 0 Ft.Hook Height</td>
</tr>
</tbody>
</table>

**Standard Commercial Power:** Y  
**Instrumentation Power [Uninterrupted]:** Y

**Cleanliness:** 100K  
**E.C.S.: Humidity:** 50 +/- 5%  
**Temperature:** 70 +/- 5 F

**Closed Circuit Television:** NA  
**Power Cutoff:** Y  
**Facility GN2:** NA

**Fuel/Oxidizer Disposal:** N  
**Shop Air:** NA

**Fire Protection/Deluge(*):** A  
**Helium Supply:** NA  
**Vacuum:** NA

**Lightning Protection:** Y  
**Potable Water:** NA  
**Paging:** Y

**Commercial Telephone:** Y  
**RF System(*):** N  
**OIS:** NA

**Personnel Airlock:** Y  
**Grounding:** Y  
**Explosion Proof:** Y

### Detailed Equipment Resources

<table>
<thead>
<tr>
<th>Special Tool Kit:</th>
<th>Slings:</th>
<th>OTV Adapter:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Y</td>
<td>NA</td>
<td>NA</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Breakout Boxes:</th>
<th>Adapter Cables:</th>
<th>Ground Power Unit:</th>
</tr>
</thead>
<tbody>
<tr>
<td>NA</td>
<td>NA</td>
<td>NA</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Air Pallet:</th>
<th>Work Stands:</th>
<th>Special Hoisting Equip:</th>
</tr>
</thead>
<tbody>
<tr>
<td>NA</td>
<td>NA</td>
<td>NA</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>NASA Canister:</th>
<th>OTV Canister:</th>
</tr>
</thead>
<tbody>
<tr>
<td>NA</td>
<td>NA</td>
</tr>
</tbody>
</table>

### (*) Legend For Data Input

- **Fire Protection/Deluge:** A: fire protection  
  - B: deluge  
  - C: both  
  - N: none  

- **Hazard Level:**  
  - 1: None  
  - 2: Local Clear  
  - 3: Area Clear  
  - 4: Facility Clear

- **Others:**  
  - Y: Yes  
  - N: No  
  - NA: Not Applicable  
  - TD: To Be Determined

---

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Detailed Resources Identification

Task No: 17  INSTALL BATTERIES AND ORDNANCE

Subtask No: <17.0400> Description: <DISCONNECT BATT/ORD TEST SET>

Hazard Level:*: 2 Local Clear
Activity: DISCONNECT TEST SET-INSPECT AND VERIFY ALL CONNECTORS

Personnel:

Vehicle
Payload Specialist(s) (0) Control Station (0)
Engineering (1) Shop (0)
Inspector (2) Other (0)
Sub Total (7) Total (7)

Serial Time To Complete: 120 min Total Manhours (14.0)

Automation Need: (Primary Key)
Automation Secondary Key(s):

Detailed Facility Resources

Physical Size:
Air Lock: 0 0 0 [W/D/H][ft] 0 Ton 0 Ft. Hook Height
Doors: 0 0 [W/H][ft]
High Bay: 0 0 0 [W/D/H][ft]

Standard Commercial Power: Y Instrumentation Power [Uninterrupted]: Y
Cleanliness: 100K E.C.S: Humidity: 50 +/- 5 %
Closed Circuit Television: NA Power Cutoff: Y Facility GN2: NA
Fuel/Oxidizer Disposal: N Helium Supply: NA Shop Air: NA
Fire Protection/Deluge(*): A Shower/Eye Wash: NA Vacuum: NA
Lightning Protection: Y Potable Water: NA Paging: Y
Commercial Telephone: Y RF System(*): N OIS: NA
Personnel Airlock: Y Grounding: Y Explosion Proof: Y

Detailed Equipment Resources

Special Tool Kit: NA Slings: NA OTV Adapter: NA
Breakout Boxes: NA Adapter Cables: NA Ground Power Unit: NA
Air Pallet: NA Work Stands: NA Special Hoisting Equip: NA
NASA Canister: NA OTV Canister: NA

(*): Legend For Data Input

Fire Protection/Deluge= A: fire protection or B: deluge or C: both or N: none
RF System: A: S Band & C Band or B: Ku Band or C: both or N: none
Hazard Level: 1: None or 2: Local Clear or 3: Area Clear or 4: Facility Clear
Others: Y: Yes or N: No or NA: Not Applicable or TD: To Be Determined

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Detailed Resources Identification

Task No: 17  INSTALL BATTERIES AND ORDNANCE

Subtask No: <17.0500> Description: <PERFORM POWER TRANSFER CHECKS>
Hazard Level(s): 2 Local Clear
Activity: PERFORM OTV POWER ON TEST—TRANSFER POWER TO BATTERY POWER—PERFORM BATTERY POWER CHECKS—TRANSFER POWER TO GPU POWER.

Personnel:

<table>
<thead>
<tr>
<th>Vehicle</th>
<th>Control Station</th>
</tr>
</thead>
<tbody>
<tr>
<td>Payload Specialist(s)</td>
<td>(0)</td>
</tr>
<tr>
<td>Engineering</td>
<td>(2)</td>
</tr>
<tr>
<td>Shop</td>
<td>(2)</td>
</tr>
<tr>
<td>Instructor</td>
<td>(1)</td>
</tr>
<tr>
<td>Other</td>
<td>(0)</td>
</tr>
</tbody>
</table>

Sub Total ———— (4) ———— Total ———— (6) ————

Serial Time To Complete: 120 min  Total Manhours: (20.0)

Automation Need: (Primary Key)
Automation Secondary Key(s): 

Detailed Facility Resources

Physical Size:
- Air Lock: 0 0 0 [W/D/H][ft]
- Doors: 0 0 [W/H][ft]
- High Bay: 0 0 0 [W/D/H][ft]

Crane Capacity:
- 0 Ton 0 Ft.Hook Height

Standard Commercial Power: Y
Cleanliness: 100K
Closed Circuit Television: NA
Fuel/Oxidizer Disposal: N
Fire Protection/Deluge(*): A
Lightning Protection: Y
Commercial Telephone: Y
Personnel Airlock: Y

Instrumentation Power [Uninterrupted]: Y
E.C.S.: Humidity: 50 +/- 5 %
Power Cutoff: Y
Facility GN2: NA
Helium Supply: NA
Shop Air: NA
Shower/Eye Wash: NA
Potable Water: NA
Paging: Y
OIS: Y
Grounding: Y
Explosion Proof: Y

Detailed Equipment Resources

Special Tool Kit: NA
Breakout Boxes: NA
Air Pallet: NA
NASA Canister: NA
Slings: NA
Adapter Cables: NA
Work Stands: NA
OTV Canister: NA

(*): Legend For Data Input
- Fire Protection/Deluge= A: fire protection
  or B: deluge
  or C: both
  or N: none
- RF System= A: S Band & C Band
  or B: Ku Band
  or C: both
  or N: none
- Hazard Level= 1: None
  or 2: Local Clear
  or 3: Area Clear
  or 4: Facility Clear
- Others= Y: Yes
  or N: No
  NA: Not Applicable
  TD: To Be Determined
Detailed Resources Identification

Task No: 18 LOAD OTV RCS

Subtask No: < 18.0100> Description: <CONNECT RCS CART TO TANK FILL >
Hazard Level(*): 1 None
Activity: CONNECT RCS CART TO TANK FILL FITTINGS-VERIFY TORQUE PER INSPECTION

KIT SPECIFICATIONS
Personnel:

<table>
<thead>
<tr>
<th>Vehicle</th>
<th>Control Station</th>
</tr>
</thead>
<tbody>
<tr>
<td>Payload Specialist(s)</td>
<td>0</td>
</tr>
<tr>
<td>Engineering</td>
<td>0</td>
</tr>
<tr>
<td>Shop</td>
<td>0</td>
</tr>
<tr>
<td>Inspector</td>
<td>0</td>
</tr>
<tr>
<td>Other</td>
<td>0</td>
</tr>
<tr>
<td>Sub Total</td>
<td>4</td>
</tr>
<tr>
<td>Total</td>
<td>4</td>
</tr>
</tbody>
</table>

Serial Time To Complete: 120 min Total Manhours (8.0)

Automation Need: (Primary Key)
Automation Secondary Key(s): 

Detailed Facility Resources

Physical Size:

- Air Lock: 0 0 0 [W/D/H][ft]
- Doors: 0 0 0 [W/H][ft]
- High Bay: 0 0 0 [W/D/H][ft]

Crane Capacity:

- 0 Ton 0 Ft.Hook Height

Standard Commercial Power: Y

Cleanliness: 100K

Closed Circuit Television: NA

Fuel/Oxidizer Disposal: Y

Fire Protection/Deluge(s): A

Lightning Protection: Y

Commerical Telephone: Y

Personnel Airlock: Y

Instrumentation Power [Uninterrupted]: Y

- E.C.S: Humidity: 50 +/- 5%
- Temperature: 70 +/- 5 F
- Power Cutoff: Y
- Facility GN2: NA
- Helium Supply: NA
- Shop Air: NA
- Shower/Eye Wash: Y
- Vacuum: NA
- Potable Water: Y
- Paging: Y
- RF System(s): A
- OIS: Y
- Grounding: Y
- Explosion Proof: Y

Detailed Equipment Resources

- Special Tool Kit: Y
- Sling: NA
- OTV Adapter: NA
- Breakout Boxes: NA
- Adapter Cables: NA
- Ground Power Unit: NA
- Air Pallet: NA
- Work Stands: NA
- Special Hoisting Equip: NA
- NASA Canister: NA
- OTV Canister: NA

(*) Legend For Data Input

- Fire Protection/Deluge= A: fire protection
  or B: deluge
  or C: both
  or N: none

- Hazard Level: 1: None
  or 2: Local Clear
  or 3: Area Clear
  or 4: Facility Clear

- Others:= Y: Yes
  N: No
  NA: Not Applicable
  TD: To Be Determined

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Detailed Resources Identification

Task No: 18  LOAD OTV RCS

Subtask No: 18.0206  Description: FILL RCS TANKS

Hazard Level: 4  Facility Clear

Activity: COMMAND START OF FILL OPERATIONS—VERIFY PRESSURE/TEMP DATA

Personnel:

<table>
<thead>
<tr>
<th>Vehicle</th>
<th>Control Station</th>
</tr>
</thead>
<tbody>
<tr>
<td>Payload Specialist(s)</td>
<td>0</td>
</tr>
<tr>
<td>Engineering</td>
<td>2</td>
</tr>
<tr>
<td>Shop</td>
<td>1</td>
</tr>
<tr>
<td>Inspector</td>
<td>1</td>
</tr>
<tr>
<td>Other</td>
<td>0</td>
</tr>
</tbody>
</table>

Sub Total | 4 |

Total Manhours | 8.0

Serial Time To Complete: 120 min

Automation Need: (Primary Key)

Automation Secondary Key(s): 

Detailed Facility Resources

Physical Size:

| Air Lock: | 0 | 0 | 0 | [W/D/H][ft] | 0 Ton | 0 Ft.Hook Height |
| Door: | 0 | 0 | [W/H][ft] |
| High Bay: | 0 | 0 | 0 | [W/D/H][ft] | 0 Ton | 0 Ft.Hook Height |

Crane Capacity: 8 Ton 8 Ft.Hook Height

Standard Commercial Power: Y

Cleanliness: 100K

Closed Circuit Television: NA

Fuel/Oxidizer Disposal: Y

Fire Protection/Deluge(*): A

Lightning Protection: Y

Commercial Telephone: Y

Personnel Airlock: Y

Crane Capacity: 8 Ton 8 Ft.Hook Height

Detailed Equipment Resources

Special Tool Kit: Y

Breakout Boxes: NA

Air Pallet: NA

NASA Canister: NA

OTV Canister: NA

OTV Adapter: NA

Adapter Cables: NA

Ground Power Unit: NA

Work Stands: NA

Special Hoisting Equip: NA

Slings: NA

NAS Canister: NA

OTV Canister: NA

(*) Legend For Data Input

Fire Protection/Deluge—A: fire protection or B: deluge or C: both or N: none

Hazard Level: 1: None or 2: Local Clear or 3: Area Clear or 4: Facility Clear

Others: Y: Yes or N: No or NA: Not Applicable or TD: To Be Determined

RF System—A: S Band & C Band or B: Ku Band or C: both or N: none

Temperature: 78 +/- 5 F

Humidity: 58 +/- 5 %

E.C.S.

Power Cutoff: Y

Facility GN2: NA

Helium Supply: NA

Shop Air: NA

Shower/Eye Wash: Y

Vacuum: NA

Potable Water: Y

Paging: Y

OIS: Y

Explosion Proof: Y

Instrumentation Power [Uninterrupted]: Y

Grounding: Y

(*) Legend For Data Input

Fire Protection/Deluge—A: fire protection or B: deluge or C: both or N: none

Hazard Level: 1: None or 2: Local Clear or 3: Area Clear or 4: Facility Clear

Others: Y: Yes or N: No or NA: Not Applicable or TD: To Be Determined

82
Task No: 18  LOAD OTV RCS

Description: DISCONNECT RCS CART
Activity: DISCONNECT RCS FLEX LINES-DISCONNECT RCS CART

Hazard Level(S): 4  Facility Clear

Personnel:

<table>
<thead>
<tr>
<th>Role</th>
<th>Load</th>
</tr>
</thead>
<tbody>
<tr>
<td>Payload Specialist(s)</td>
<td>0</td>
</tr>
<tr>
<td>Engineering</td>
<td>1</td>
</tr>
<tr>
<td>Shop</td>
<td>2</td>
</tr>
<tr>
<td>Inspector</td>
<td>1</td>
</tr>
<tr>
<td>Other</td>
<td>0</td>
</tr>
<tr>
<td>Sub Total</td>
<td>4</td>
</tr>
</tbody>
</table>

Serial Time To Complete: 120 min  Total Manhours: 8.0

Automation Need: (Primary Key)

Automation Secondary Key(s):

Detailed Facility Resources

<table>
<thead>
<tr>
<th>Physical Size</th>
<th>Crane Capacity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air Lock: 0 0 0 [W/D/H][ft]</td>
<td>0 Ton 0 Ft.Hook Height</td>
</tr>
<tr>
<td>Doors: 0 0 [W/H][ft]</td>
<td></td>
</tr>
<tr>
<td>High Bay: 0 0 0 [W/D/H][ft]</td>
<td>0 Ton 0 Ft.Hook Height</td>
</tr>
</tbody>
</table>

Standard Commercial Power: Y  Instrumentation Power [Uninterrupted]: Y

Cleanliness: 100K  E.C.S.: Humidity: 50 +/- 5%

Closed Circuit Television: NA  Power Cutoff: Y  Temperature: 70 +/- 5 F


Fire Protection/Deluge(*): A  Shop Air: NA

Lightning Protection: Y  Shower/Eye Wash: Y  Vacuum: NA

Commercial Telephone: Y  Potable Water: Y  Paging: Y

Personnel Airlock: Y  RF System(*): A  OIS: Y

Grounding: Y  Explosion Proof: Y

Detailed Equipment Resources

<table>
<thead>
<tr>
<th>Special Tool Kit</th>
<th>Slings</th>
<th>OTV Adapter</th>
</tr>
</thead>
<tbody>
<tr>
<td>Y</td>
<td>NA</td>
<td>NA</td>
</tr>
</tbody>
</table>

Breakout Boxes: NA  Adapter Cables: NA

Air Pallet: NA  Work Stands: NA

NASA Canister: NA  OTV Canister: NA

(•) Legend For Data Input

Fire Protection/Deluge:* A: fire protection
or B: deluge
or C: both
or N: none

Hazard Level:* 1: None
or 2: Local Clear
or 3: Area Clear
or 4: Facility Clear

RF System:* A: S Band & C Band
or B: Ku Band
or C: both
or N: none

Others:* Y: Yes
N: No
NA: Not Applicable
TD: To Be Determined

83
### Detailed Resources Identification

**Task No:** 18  
**LOAD OTV RCS**

**Subtask No:** 18.0400  
**Description:** PREP FOR ORBITER INSTALLATION

**Activity:** PREP OTV FOR INSTALLATION INTO ORBITER-DISCONNECT OTV ELECTRICALLY AND MECHANICALLY. WALK DOWN INSPECTION AND PHOTOGRAPH.

**Personnel:**

<table>
<thead>
<tr>
<th>Vehicle</th>
<th>Control Station</th>
</tr>
</thead>
<tbody>
<tr>
<td>Payload Specialist(s)</td>
<td>0</td>
</tr>
<tr>
<td>Engineering</td>
<td>4</td>
</tr>
<tr>
<td>Shop</td>
<td>2</td>
</tr>
<tr>
<td>Inspector</td>
<td>0</td>
</tr>
<tr>
<td>Other</td>
<td>0</td>
</tr>
<tr>
<td><strong>Sub Total</strong></td>
<td>7</td>
</tr>
</tbody>
</table>

**Serial Time To Complete:** 480 min  
**Total Manhours:** 56.0

**Automation Need:** (Primary Key)

**Automation Secondary Key(s):**

<table>
<thead>
<tr>
<th>Serial Time To Complete</th>
<th>Total Manhours</th>
</tr>
</thead>
<tbody>
<tr>
<td>480 min</td>
<td>56.0</td>
</tr>
</tbody>
</table>

### Detailed Facility Resources

**Physical Size:**

| Air Lock: | 0 | 0 | 0 | [W/D/H][ft] | 0 Ton | 0 Ft. Hook Height |
| Doors: | 0 | 0 | 0 | [W/H][ft] |
| High Boy: | 0 | 0 | 0 | [W/D/H][ft] | 0 Ton | 0 Ft. Hook Height |

**Standard Commercial Power:** Y  
**Crane Capacity:**

**Cleanliness:** 100K  
**E.C.S.:** Humidity: 50 +/- 5 %  
**Facility GN2:** NA

**Closed Circuit Television:** NA  
**Power Cutoff:** Y  
**Shop Air:** NA

**Fuel/Oxidizer Disposal:** N  
**Helium Supply:** NA  
**Vacuum:** NA

**Fire Protection/Deluge:** A  
**Shower/Eye Wash:** NA  
**Paging:** Y

**Lightning Protection:** Y  
**Potable Water:** NA  
**RF System:** A

**Commercial Telephone:** Y  
**OIS:** Y  
**Personnel Airlock:** Y  
**Grounding:** Y  
**Explosion Proof:** Y

### Detailed Equipment Resources

| Special Tool Kit: | NA |
| Slings: | NA |
| OTV Adapter: | NA |
| Breakout Boxes: | NA |
| Adapter Cables: | NA |
| Ground Power Unit: | NA |
| Air Pallet: | NA |
| Work Stands: | NA |
| Special Hoisting Equip: | NA |
| NASA Canister: | NA |
| OTV Canister: | NA |

**(*) Legend For Data Input**

- **Fire Protection/Deluge:**
  - A: fire protection
  - B: deluge
  - C: both
  - N: none

- **Hazard Level:**
  - 1: None
  - 2: Local Clear
  - 3: Area Clear
  - 4: Facility Clear

- **Others:**
  - Y: Yes
  - N: No
  - TP: To Be Determined

---

84
**Detailed Resources Identification**

**Task No:** 19  
**INSTALL PAYLOAD IN ORBITER**

**Subtask No:** 19.0100  
**Description:** INSTALL PAYLOAD IN ORBITER PAYLOAD BAY USING PGM.

**Hazard Level:** 2  
**Local Clear**

**Activity:** INSTALL PAYLOAD IN ORBITER PAYLOAD BAY USING PGM.

**Personnel:**

<table>
<thead>
<tr>
<th>Vehicle</th>
<th>Control Station</th>
</tr>
</thead>
<tbody>
<tr>
<td>Payload Specialist(s)</td>
<td>0</td>
</tr>
<tr>
<td>Engineering</td>
<td>0</td>
</tr>
<tr>
<td>Shop</td>
<td>5</td>
</tr>
<tr>
<td>Inspector</td>
<td>2</td>
</tr>
<tr>
<td>Other</td>
<td>8</td>
</tr>
</tbody>
</table>

**Sub Total:** (8)  
**Total:** (8)

**Serial Time To Complete:** 240 min  
**Total Manhours:** 32.0

**Automation Need:** (Primary Key)

**Automation Secondary Key(s):**

<table>
<thead>
<tr>
<th>Control Station</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
</tr>
<tr>
<td>0</td>
</tr>
</tbody>
</table>

**Detailed Facility Resources**

<table>
<thead>
<tr>
<th>Physical Size:</th>
<th>Crane Capacity:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air Lock: 0 0 0 [W/D/H][ft]</td>
<td>0 Ton 0 Ft. Hook Height</td>
</tr>
<tr>
<td>Doors: 0 0 [W/H][ft]</td>
<td></td>
</tr>
<tr>
<td>High Bay: 0 0 0 [W/H][ft]</td>
<td></td>
</tr>
</tbody>
</table>

**Standard Commercial Power:** Y  
**Instrumentation Power [Uninterrupted]:** NA

**Cleanliness:** 100K  
**E.C.S.:** Humidity: 50 +/- 5 %  
**Power Cutoff:** NA  
**Facility GN2:** NA

**Closed Circuit Television:** NA  
**Helium Supply:** NA  
**Shop Air:** NA

**Fuel/Oxidizer Disposal:** N  
**Power Cutoff:** NA  
**Facility GN2:** NA

**Fire Protection/Deluge(•):** A  
**Potable Water:** NA  
**Paging:** Y

**Lightning Protection:** Y  
**RF System(•):** N  
**OIS:** Y

**Commerical Telephone:** Y  
**Grounding:** Y  
**Explosion Proof:** Y

**Personnel Airlock:** Y

**Detailed Equipment Resources**

<table>
<thead>
<tr>
<th>Special Tool Kit:</th>
<th>Slings: NA</th>
<th>OTV Adapter: NA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Breakout Boxes: NA</td>
<td>Adapter Cables: NA</td>
<td>Ground Power Unit: NA</td>
</tr>
<tr>
<td>Air Pallet: NA</td>
<td>Work Stands: NA</td>
<td>Special Hoisting Equip: NA</td>
</tr>
<tr>
<td>NASA Canister: NA</td>
<td>OTV Canister: NA</td>
<td></td>
</tr>
</tbody>
</table>

**(*) Legend For Data Input**

<table>
<thead>
<tr>
<th>Fire Protection/Deluge(•): A: fire protection or B: deluge or C: both or N: none</th>
<th>RF System(•): A: S Band &amp; C Band or B: Ku Band or C: both or N: none</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hazard Level: 1: None or 2: Local Clear or 3: Area Clear or 4: Facility Clear</td>
<td>Others: Y: Yes N: No NA: Not Applicable TD: To Be Determined</td>
</tr>
</tbody>
</table>

85
Detailed Resources Identification

Task No: 19  INSTALL PAYLOAD IN ORBITER

Subtask No: < 19.0200>  Description: <MATE ELEC,MECH SERVICE LINES >

Hazard Level(*): 2  Local Clear
Activity: CONNECT ALL ELECTRICAL AND MECHANICAL FLUID CONNECTIONS REQUIRED
FOR LAUNCH.

Personnel:

<table>
<thead>
<tr>
<th>Vehicle</th>
<th>Control Station</th>
</tr>
</thead>
<tbody>
<tr>
<td>Payload Specialist(s)</td>
<td>(0)</td>
</tr>
<tr>
<td>Engineering</td>
<td>(1)</td>
</tr>
<tr>
<td>Shop</td>
<td>(4)</td>
</tr>
<tr>
<td>Inspector</td>
<td>(2)</td>
</tr>
<tr>
<td>Other</td>
<td>(0)</td>
</tr>
</tbody>
</table>

Sub Total: (7)  Total: (7)

Serial Time To Complete: 180 min  Total Manhours (21.0)

Automation Need: (Primary Key)
Automation Secondary Key(s): 

Detailed Facility Resources

Physical Size:  
- Air Lock: 0 x 0 x [W/D/H][ft]  0 Ton 0 Ft.Hook Height
- Doors: 0 x 0 [W/H][ft]
- High Bay: 0 x 0 x [W/D/H][ft]  0 Ton 0 Ft.Hook Height

Standard Commercial Power: Y  Instrumentation Power [Uninterrupted]: NA

Cleanliness: 100K  E.C.S: Humidity: 50 +/- 5%

Closed Circuit Television: NA  Power Cutoff: NA  Facility GN2: NA

Fuel/Oxidizer Disposal: N  Helium Supply: NA  Shop Air: NA

Fire Protection/Deluge(*): A  Shower/Eye Wash: NA  Vacuum: NA

Lightning Protection: Y  Potable Water: NA  Paging: Y

Commercial Telephone: Y  RF System(*): N  OIS: Y

Personnel Airlock: Y  Grounding: Y  Explosion Proof: Y

Detailed Equipment Resources

Special Tool Kit: Y  Slings: NA  OTV Adapter: NA

Breakout Boxes: NA  Adapter Cables: NA  Ground Power Unit: NA

Air Pallet: NA  Work Stands: NA  Special Hoisting Equip: NA

NASA Canister: NA  OTV Canister: NA

(*) Legend For Data Input

Fire Protection/Deluge=A: fire protection  RF System=A: S Band & C Band
or B: deluge  or B: Ku Band
or C: both  or C: both
or N: none  or N: none

Hazard Level=A: None  Others=Y: Yes
or 2: Local Clear  or N: No
or 3: Area Clear  NA: Not Applicable
or 4: Facility Clear  TD: To Be Determined

86
Detailed Resources Identification

Task No: 20      P/L ORBITER I/F VERIFICATION

Subtask No: < 20.0100> Description: <POWER UP ORBITER
Activity: APPLY ORBITER POWER PER EPDC PROCEDURES

Hazard Level(*) 1 None

Personnel:

<table>
<thead>
<tr>
<th>Vehicle</th>
<th>Control Station</th>
</tr>
</thead>
<tbody>
<tr>
<td>Payload Specialist(s) (1)</td>
<td>(0)</td>
</tr>
<tr>
<td>Engineering</td>
<td>(0)</td>
</tr>
<tr>
<td>Shop</td>
<td>(0)</td>
</tr>
<tr>
<td>Inspector</td>
<td>(0)</td>
</tr>
<tr>
<td>Other</td>
<td>(0)</td>
</tr>
<tr>
<td>Sub Total</td>
<td>(1)</td>
</tr>
<tr>
<td>Total</td>
<td>(1)</td>
</tr>
</tbody>
</table>

Serial Time To Complete: 60 min  Total Manhours: (1.0)

Automation Need: (Primary Key)

Automation Secondary Key(s)

Detailed Facility Resources

Physical Size:

<table>
<thead>
<tr>
<th>Air Lock</th>
<th>Doors</th>
<th>High Bay</th>
</tr>
</thead>
<tbody>
<tr>
<td>W/D/H</td>
<td>W/H</td>
<td>W/D/H</td>
</tr>
</tbody>
</table>

Crane Capacity:

| 0 Ton | 0 Ft. Hook Height |

Standard Commercial Power: Y

Cleanliness: 100K

Closed Circuit Television: NA

Fuel/Oxidizer Disposal: N

Fire Protection/Deluge(*): A

Lightning Protection: Y

Commercial Telephone: Y

Personnel Airlock: Y

Detailed Equipment Resources

<table>
<thead>
<tr>
<th>Special Tool Kit</th>
<th>Slings</th>
<th>OTV Adapter</th>
</tr>
</thead>
<tbody>
<tr>
<td>NA</td>
<td>NA</td>
<td>NA</td>
</tr>
</tbody>
</table>

Breakout Boxes: NA

Adapter Cables: NA

Ground Power Unit: NA

Air Pallet: NA

Work Stands: NA

Special Hoisting Equipment: NA

NASA Canister: NA

OTV Canister: NA

(*) Legend For Data Input

Fire Protection/Deluge= A: fire protection
or B: deluge
or C: both
or N: none

RF System= A: S Band & C Band
or B: Ku Band
or C: both
or N: none

Hazard Level: 1: None

Others:= Y: Yes
or 2: Local Clear
or 3: Area Clear
or 4: Facility Clear

N: No
NA: Not Applicable
TD: To Be Determined

87
Detailed Resources Identification

Task No: 20  P/L ORBITER I/F VERIFICATION

Subtask No: <20.0200> Description: <POWER UP PAYLOAD>

Hazard Level(*): 1 None
Activity: APPLY OTV AND SPACECRAFT POWER—PERFORM TELEMETRY CHECKS.

Personnel:

<table>
<thead>
<tr>
<th>Vehicle</th>
<th>Control Station</th>
</tr>
</thead>
<tbody>
<tr>
<td>Payload Specialist(s)</td>
<td>(0)</td>
</tr>
<tr>
<td>Engineering</td>
<td>(0)</td>
</tr>
<tr>
<td>Shop</td>
<td>(2)</td>
</tr>
<tr>
<td>Inspector</td>
<td>(1)</td>
</tr>
<tr>
<td>Other</td>
<td>(0)</td>
</tr>
<tr>
<td>Sub Total</td>
<td>(4)</td>
</tr>
<tr>
<td>Total</td>
<td>(6)</td>
</tr>
</tbody>
</table>

Serial Time To Complete: 180 min  Total Manhours (30.0)

Automation Need: (Primary Key)
Automation Secondary Key(s)

Detailed Facility Resources

<table>
<thead>
<tr>
<th>Physical Size:</th>
<th>Crane Capacity:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air Lock: 0 0 0 [W/D/H][ft]</td>
<td>0 Ton 0 Ft.Hook Height</td>
</tr>
<tr>
<td>Doors: 0 0 [W/H][ft]</td>
<td></td>
</tr>
<tr>
<td>High Bay: 0 0 0 [W/D/H][ft]</td>
<td>0 Ton 0 Ft.Hook Height</td>
</tr>
</tbody>
</table>

Standard Commercial Power: Y  Instrumentation Power [Uninterrupted]: Y

Cleanliness: 100K  E.C.S: Humidity: 50 +/- 5 %
Closed Circuit Television: NA  Power Cutoff: Y
Fuel/Oxidizer Disposal: N  Facility GN2: NA
Fire Protection/Deluge(*): A  Helium Supply: NA
Lightning Protection: Y  Shop Air: NA
Commerical Telephone: Y  Vacuum: NA
Personnel Airlock: Y  Paging: Y

Detailed Equipment Resources

| Special Tool Kit: NA | Slings: NA | OTV Adapter: NA |
| Breakout Boxes: NA  | Adapter Cables: NA | Ground Power Unit: NA |
| Air Pallet: NA      | Work Stands: NA   | Special Hoisting Equip: NA |
| NASA Canister: NA   | OTV Canister: NA  |               |

(*) Legend For Data Input

Fire Protection/Deluge= A: fire protection  RF System= A: S Band & C Band
or B: deluge or B: Ku Band
or C: both or C: both
or N: none or N: none

Hazard Level= 1: None  Others= Y: Yes
or 2: Local Clear or N: No
or 3: Area Clear or NA: Not Applicable
or 4: Facility Clear or TD: To Be Determined
### Detailed Resources Identification

**Task No:** 20  
P/L ORBITER I/F VERIFICATION

**Subtask No:** < 20.8300>  
Description: PERFORM CMD TEST VIA MCDS, ORBITER MCDS-VERIFY RESPONSE VIA ORBITER TELEMETRY

**Hazard Level:** 1 None

**Activity:** ISSUE COMMANDS FROM ORBITER MCDS-VERIFY RESPONSE VIA ORBITER TELEMETRY

#### Personnel:

<table>
<thead>
<tr>
<th>Vehicle</th>
<th>Control Station</th>
</tr>
</thead>
<tbody>
<tr>
<td>Payloa Specialist(s)</td>
<td>(0)</td>
</tr>
<tr>
<td>Engineering</td>
<td>(0)</td>
</tr>
<tr>
<td>Shop</td>
<td>(0)</td>
</tr>
<tr>
<td>Inspector</td>
<td>(0)</td>
</tr>
<tr>
<td>Other</td>
<td>(0)</td>
</tr>
</tbody>
</table>

**Sub Total**  
(4)  
**Total**  
(6)

**Serial Time To Complete:** 240 min  
**Total Manhours:** (40.0)

**Automation Need:** (Primary Key)

**Automation Secondary Key(s):**

---

#### Detailed Facility Resources

**Physical Size:**
- Air Lock: 0 0 0 [W/D/H][ft]
- Doors: 0 0 [W/H][ft]
- High Bay: 0 0 0 [W/D/H][ft]

**Crane Capacity:**
- 0 Ton 0 Ft.Hook Height

**Standard Commercial Power:** Y
**Instrumentation Power [Uninterrupted]:** Y

**Cleanliness:** 100K
**E.C.S.:** Humidity: 50 +/- 5%  
**Temperature:** 70 +/- 5 F

**Closed Circuit Television:** NA  
**Power Cutoff:** Y  
**Facility GN2:** NA

**Fire Protection/Deluge:** A
**Helium Supply:** NA  
**Shop Air:** NA

**Lightning Protection:** Y  
**Shower/Eye Wash:** NA  
**Vacuum:** NA

**Commercial Telephone:** Y  
**Paging:** Y  
**OIS:** Y

**Personnel Airlock:** Y  
**Grounding:** Y  
**Explosion Proof:** Y

#### Detailed Equipment Resources

**Special Tool Kit:** NA  
**Slings:** NA  
**OTV Adapter:** NA

**Breakout Boxes:** NA  
**Adapter Cables:** NA  
**Ground Power Unit:** NA

**Air Pallet:** NA  
**Work Stands:** NA  
**Special Hoisting Equip:** NA

**NASA Canister:** NA  
**OTV Canister:** NA

---

**(*) Legend For Data Input**

- Fire Protection/Deluge= A: fire protection  
  or B: deluge  
  or C: both  
  or N: none

- Hazard Level= 1: None  
  or 2: Local Clear  
  or 3: Area Clear  
  or 4: Facility Clear  
  or 5: Other Clear

- Others= Y: Yes  
  N: No  
  NA: Not Applicable  
  TD: To Be Determined

---

89
**Task No:** 26  
**P/L ORBITER I/F VERIFICATION**

**Subtask No:** 26.e466  
**Description:** OTV SPACECRAFT HEALTH CHECKS

**Hazard Level:** 1  
None

**Activity:** PERFORM PAYLOAD HEALTH CHECKS

**Personnel:**

<table>
<thead>
<tr>
<th>Vehicle</th>
<th>Control Station</th>
</tr>
</thead>
<tbody>
<tr>
<td>Payload Specialist(s)</td>
<td>8</td>
</tr>
<tr>
<td>Engineering</td>
<td>1</td>
</tr>
<tr>
<td>Shop</td>
<td>2</td>
</tr>
<tr>
<td>Inspector</td>
<td>2</td>
</tr>
<tr>
<td>Other</td>
<td>8</td>
</tr>
<tr>
<td><strong>Sub Total</strong></td>
<td><strong>4</strong></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>6</strong></td>
</tr>
</tbody>
</table>

**Serial Time To Complete:** 120 min  
**Total Manhours:** 20.0

**Automation Need:** (Primary Key)

**Automation Secondary Key(s):**

- Air Control Station
- Total
- Total Unanoseconds (20.6)

**Detailed Facility Resources**

- **Physical Size:**
  - Air Lock: 660 [W/D/H][ft]
  - Doors: 6 [W/H][ft]
  - High Bay: 666 [W/D/H][ft]

- **Crane Capacity:**
  - 6 Ton 6 Ft.Hook Height

- **Standard Commercial Power:** Y
- **Instrumentation Power [Uninterrupted]:** Y
- **E.C.S.:** Humidity: 50 +/- 5 %
- **Temperature:** 70 +/- 5 F
- **Power Cutoff:** Y
- **Facility GN2:** NA
- **Helium Supply:** NA
- **Shop Air:** NA
- **Shower/Eye Wash:** NA
- **Vacuum:** NA
- **Potable Water:** NA
- **RF System:** C
- **OIS:** Y
- **Personnel Airlock:** Y
- **Grounding:** Y
- **Explosion Proof:** Y

**Detailed Equipment Resources**

- **Special Tool Kit:** NA
- **Slings:** NA
- **OTV Adapter:** NA
- **Breakout Boxes:** NA
- **Adapter Cables:** NA
- **Ground Power Unit:** NA
- **Air Pallet:** NA
- **Work Stands:** NA
- **Special Hoisting Equip:** NA
- **NASA Canister:** NA
- **OTV Canister:** NA

**Legend For Data Input**

- **Fire Protection/Deluge:** A: fire protection  
  or B: deluge  
  or C: both  
  or N: none
- **Hazard Level:** 1: None
  or 2: Local Clear
  or 3: Area Clear
  or 4: Facility Clear

- **Others:** Y: Yes
  or N: No
  or NA: Not Applicable
  or TD: To Be Determined
### Detailed Resources Identification

**Task No:** 21  
**SPACECRAFT POCC TEST**

**Subtask No:** <21.8iie>  
**Description:** <ISSUE S/C COMMANDS FROM POCC >

**Hazard Level(s):** 1 None

**Activity:** ISSUE COMMANDS FROM POCC VIA TDRSS-KSC TELEMETRY-ORBITER COMMAND AND DATA SYSTEM.

#### Personnel:

<table>
<thead>
<tr>
<th>Vehicle</th>
<th>Control Station</th>
</tr>
</thead>
<tbody>
<tr>
<td>Payload Specialist(s)</td>
<td>0</td>
</tr>
<tr>
<td>Engineering</td>
<td>1</td>
</tr>
<tr>
<td>Shop</td>
<td>2</td>
</tr>
<tr>
<td>Inspector</td>
<td>1</td>
</tr>
<tr>
<td>Other</td>
<td>0</td>
</tr>
</tbody>
</table>

**Sub Total:** 4  
**Total:** 6

**Serial Time To Complete:** 249 min

**Automation Need:** (Primary Key)

**Automation Secondary Key:**

---

### Detailed Facility Resources

#### Physical Size:

| Air Lock: | 0 0 0 (W/D/H) (ft) |
| Doors: | 0 0 (W/H) (ft) |
| High Bay: | 0 0 0 (W/D/H) (ft) |

#### Crane Capacity:

| Crane Capacity: | 0 Ton 0 Ft.Hook Height |

#### Standard Commercial Power:

| Cleanliness: | 100K |
| Closed Circuit Television: | NA |
| Fuel/Oxidizer Disposal: | N |
| Fire Protection/Delage: | A |
| Lightning Protection: | Y |
| Commercial Telephone: | Y |
| Personnel Airlock: | Y |

#### Instrumentation Power [Uninterrupted]:

| E.C.S: | Humidity: 58 +/- 5% |
| Power Cutoff: | Y |
| Facility GN2: | NA |
| Shop Air: | NA |
| Shower/Eye Wash: | NA |
| Potable Water: | NA |
| RF System: | C |
| OIS: | Y |
| Grounding: | Y |
| Explosion Proof: | Y |

#### Detailed Equipment Resources

| Special Tool Kit: | NA |
| Breakout Boxes: | NA |
| Air Pallet: | NA |
| NASA Canister: | NA |
| Slings: | NA |
| Adapter Cables: | NA |
| Work Stands: | NA |
| OTV Adapter: | NA |
| Ground Power Unit: | NA |
| Special Hoisting Equip: | NA |

---

**Legend For Data Input**

- **Fire Protection/Delage:** A: fire protection  
  - B: deluge  
  - C: both  
  - N: none

- **Hazard Level:** 1: None  
  - 2: Local Clear  
  - 3: Area Clear  
  - 4: Facility Clear

- **Others:** Y: Yes  
  - N: No  
  - NA: Not Applicable  
  - TD: To Be Determined

---

91
Detailed Resources Identification

Task No: 21  SPACECRAFT POCC TEST

Subtask No: 21.0200  Description: VERIFY SPACECRAFT RESPONSE

Hazard Level(s): 1 None

Activity: VERIFY POCC IS ABLE TO ISSUE COMMANDS TO THE SPACECRAFT AND RECEIVE PROPER RESPONSE.

Personnel:

<table>
<thead>
<tr>
<th>Personnel Type</th>
<th>Vehicle</th>
<th>Control Station</th>
</tr>
</thead>
<tbody>
<tr>
<td>Payload Specialist(s)</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Engineering</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Shop</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Inspector</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Sub Total</td>
<td>(4)</td>
<td>Total (10)</td>
</tr>
</tbody>
</table>

Serial Time To Complete: 120 min  Total Manhours (20.0)

Automation Need: (Primary Key)

Automation Secondary Key(s)

Detailed Facility Resources

Physical Size:

<table>
<thead>
<tr>
<th>Facility Type</th>
<th>W/D/H[ft]</th>
<th>W/H[ft]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air Lock</td>
<td>0 0 0</td>
<td></td>
</tr>
<tr>
<td>Doors</td>
<td>0 0 0</td>
<td></td>
</tr>
<tr>
<td>High Bay</td>
<td>0 0 0</td>
<td></td>
</tr>
</tbody>
</table>

Crane Capacity:

<table>
<thead>
<tr>
<th>Crane Capacity</th>
<th>0 Ton 0 Ft. Hook Height</th>
</tr>
</thead>
</table>

Standard Commercial Power: Y

E.C.S: Humidity: 50 +/- 5%  Temperature: 70 +/- 5 F

Cleanliness: 100K

Closed Circuit Television: NA

Fuel/Oxidizer Disposal: N

Fire Protection/Deluge(*): A

Lightning Protection: Y

Commercial Telephone: Y

Personnel Airlock: Y

Instrumentation Power [Uninterrupted]: Y

Paging: Y

OIS: Y

Explosion Proof: Y

Detailed Equipment Resources

Special Tool Kit: NA

Slings: NA

OTV Adapter: NA

Breakout Boxes: NA

Adapter Cables: NA

Ground Power Unit: NA

Air Pallet: NA

Work Stands: NA

Special Hoisting Equip: NA

NASA Canister: NA

OTV Canister: NA

(*) Legend For Data Input

Fire Protection/Deluge(*): A: fire protection  RF System*: A: S Band & C Band
or B: deluge  or B: Ku Band
or C: both  or C: both
or N: none  or N: none

Hazard Level: 1: None  Others: Y: Yes
or 2: Local Clear  N: No
or 3: Area Clear  NA: Not Applicable
or 4: Facility Clear  TD: To Be Determined

92
Detailed Resources Identification

Task No: 21  SPACECRAFT POCC TEST

Subtask No: <21.0300> Description: <POWER DOWN SPACECRAFT>
Activity: REMOVE POWER FROM SPACECRAFT.

Personnel:

<table>
<thead>
<tr>
<th>Vehicle</th>
<th>Control Station</th>
</tr>
</thead>
<tbody>
<tr>
<td>Payload Specialist(s)</td>
<td>0</td>
</tr>
<tr>
<td>Engineering</td>
<td>1</td>
</tr>
<tr>
<td>Shop</td>
<td>2</td>
</tr>
<tr>
<td>Inspector</td>
<td>1</td>
</tr>
<tr>
<td>Other</td>
<td>0</td>
</tr>
</tbody>
</table>

Sub Total: (4) Total: (6)

Serial Time To Complete: 60 min Total Manhours: (10)

Automation Need: (Primary Key)
Automation Secondary Key(s): 

Detailed Facility Resources

<table>
<thead>
<tr>
<th>Physical Size: Air Lock: 0 0 0 [W/D/H][ft]</th>
<th>Crane Capacity: 0 Ton 0 Ft.Hook Height</th>
</tr>
</thead>
<tbody>
<tr>
<td>Doors: 0 0 0 [W/H][ft]</td>
<td></td>
</tr>
<tr>
<td>High Bay: 0 0 0 [W/D/H][ft]</td>
<td></td>
</tr>
</tbody>
</table>

Standard Commerical Power: Y E.C.S: Humidity: 50 +/- 5 %
Closed Circuit Television: NA Power Cutoff: Y
Fuel/Oxidizer Disposal: N Helium Supply: NA
Fire Protection/Deluge(*): A Shop Air: NA
Lightning Protection: Y Vacuum: NA
Commercial Telephone: Y Person Airlock: Y
Personnel Airlock: Y Grounding: Y

Explosion Proof: Y

(*) Legend For Data Input

Fire Protection/Deluge: A: fire protection or B: deluge or C: both or N: none
RF System: A: S Band & C Band or B: Ku Band or C: both or N: none

Hazard Level: 1: None or 2: Local Clear or 3: Area Clear or 4: Facility Clear

Others: Y: Yes or N: No

93
Detailed Resources Identification

Task No: 22  
FINAL PAYLOAD CLOSEOUT

Subtask No: <22.0100>  
Description: <REMOVE BEFORE FLIGHT ITEMS>

Hazard Level(s): 1 None

Activity: REMOVE ALL REMOVE BEFORE FLIGHT ITEMS

Personnel:

<table>
<thead>
<tr>
<th>Vehicle</th>
<th>Payload Specialist(s)</th>
<th>0</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Engineering</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Shop</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Inspector</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Other</td>
<td>0</td>
</tr>
</tbody>
</table>

Sub Total: (4)

Serial Time To Complete: 240 min

Automation Need: (Primary Key)

Automation Secondary Key(s):  

Total Manhours: (16.6)

Detailed Facility Resources

<table>
<thead>
<tr>
<th>Physical Size:</th>
<th>Crane Capacity:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air Lock:</td>
<td>0 Ton 0 Ft.Hook Height</td>
</tr>
<tr>
<td>Doors:</td>
<td>0 W/D/H[ft]</td>
</tr>
<tr>
<td>High Bay:</td>
<td>0 W/D/H[ft]</td>
</tr>
</tbody>
</table>

Standard Commercial Power: Y

Cleanliness: 100K

Closed Circuit Television: NA

Fuel/Oxidizer Disposal: N

Fire Protection/Deluge(*): A

Lightning Protection: Y

Commercial Telephone: Y

Personnel Airlock: Y

Detailed Equipment Resources

<table>
<thead>
<tr>
<th>Special Tool Kit:</th>
<th>Slings: NA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Breakout Boxes:</td>
<td>Adapter Cables: NA</td>
</tr>
<tr>
<td>Air Pallet:</td>
<td>Work Stands: NA</td>
</tr>
<tr>
<td>NASA Canister:</td>
<td>OTV Canister: NA</td>
</tr>
</tbody>
</table>

(*: Legend For Data Input

Fire Protection/Deluge: A: fire protection

or B: deluge

or C: both

or N: none

RF System(*): A: S Band & C Band

or B: Ku Band

or C: both

or N: none

Hazard Level(s): 1: None

or 2: Local Clear

or 3: Area Clear

or 4: Facility Clear

Others: Y: Yes

or N: No

or NA: Not Applicable

or TD: To Be Determined
**Task No:** 22  |  **FINAL PAYLOAD CLOSEOUT**

**Subtask No:** < 22.0200>  |  **Description:** <APPLY POWER TO SPACECRAFT>

**Hazard Level:** 1: None

**Activity:** APPLY POWER TO THE SPACECRAFT

### Personnel:

<table>
<thead>
<tr>
<th>Vehicle</th>
<th>Control Station</th>
</tr>
</thead>
<tbody>
<tr>
<td>Payload Specialist(s)</td>
<td>(0)</td>
</tr>
<tr>
<td>Engineering</td>
<td>(0)</td>
</tr>
<tr>
<td>Shop</td>
<td>(0)</td>
</tr>
<tr>
<td>Inspector</td>
<td>(0)</td>
</tr>
<tr>
<td>Other</td>
<td>(0)</td>
</tr>
</tbody>
</table>

**Sub Total:** (0)  |  **Total:** (0)

**Serial Time To Complete:** 248 min  |  **Total Manhours:** (0.0)

### Automation Need:

- **Primary Key**
- **Secondary Key(s)**

---

### Detailed Facility Resources

**Physical Size:**
- Air Lock: 0 0 0 \([W/D/H][ft]\)
- Doors: 0 0 \([W/H][ft]\)
- High Bay: 0 0 0 \([W/D/H][ft]\)

**Crane Capacity:**
- 0 Ton 0 Ft. Hook Height

**Standard Commercial Power:** Y
**Cleanliness:** 100K
**Closed Circuit Television:** NA
**Fuel/Oxidizer Disposal:** N
**Fire Protection/Deluge:** A
**Lightning Protection:** Y
**Commercial Telephone:** Y
**Personnel Airlock:** Y

**Instrumentation Power [Uninterrupted]:** Y
**E.C.S:** Humidity: 50 +/- 5%
**Power Cutoff:** Y
**Shower/Eye Wash:** NA
**Potable Water:** NA
**RF System:** N
**Paging:** Y
**Grounding:** Y
**Explosion Proof:** Y

**Special Tool Kit:** NA
**Slings:** NA
**Breakout Boxes:** NA
**Adapter Cables:** NA
**Air Pallet:** NA
**Work Stands:** NA
**NASA Canister:** NA
**OTV Canister:** NA

**Ground Power Unit:** NA
**Special Hoisting Equip:** NA

---

**Legend For Data Input**

- Fire Protection/Deluge— A: fire protection
  - B: deluge
  - C: both
  - N: none
- RF System— A: S Band & C Band
  - B: Ku Band
  - C: both
  - N: none
- Hazard Level: 1: None
  - 2: Local Clear
  - 3: Area Clear
  - 4: Facility Clear
- Others: Y: Yes
  - N: No
  - NA: Not Applicable
  - TD: To Be Determined
Detailed Resources Identification

Task No: 22
Final Payload Closeout

Subtask No: <22.0300>
Description: <COMMAND S/C TO PRE-LAUNCH MODE>
Hazard Level(*): 1 None
Activity: Secure Spacecraft Systems In Pre-Launch Mode

Personnel:

<table>
<thead>
<tr>
<th>Vehicle</th>
<th>Control Station</th>
</tr>
</thead>
<tbody>
<tr>
<td>Payload Specialist(s)</td>
<td>0</td>
</tr>
<tr>
<td>Engineering</td>
<td>0</td>
</tr>
<tr>
<td>Shop</td>
<td>0</td>
</tr>
<tr>
<td>Inspector</td>
<td>0</td>
</tr>
<tr>
<td>Other</td>
<td>0</td>
</tr>
<tr>
<td>Sub Total</td>
<td>0</td>
</tr>
<tr>
<td>Total</td>
<td>0</td>
</tr>
</tbody>
</table>

Serial Time To Complete: 30 min
Total Manhours: 0.0

Automation Need: (Primary Key)

Automation Secondary Key(s): 

Detailed Facility Resources

<table>
<thead>
<tr>
<th>Physical Size:</th>
<th>Crane Capacity:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air Lock: 0 0 0 [W/D/H][ft]</td>
<td>0 Ton 0 Ft.Hook Height</td>
</tr>
<tr>
<td>Doors: 0 0 [W/H][ft]</td>
<td>0 Ton 0 Ft.Hook Height</td>
</tr>
<tr>
<td>High Boy: 0 0 0 [W/D/H][ft]</td>
<td>0 Ton 0 Ft.Hook Height</td>
</tr>
</tbody>
</table>

Standard Commercial Power: Y
Instrumentation Power [Uninterrupted]: Y

Cleanliness: 100K
E.C.S.: Humidity: 50 +/- 5 %
Power Cutoff: Y
Facility GN2: NA

Closed Circuit Television: NA
Power Cutoff: Y
Facility GN2: NA

Fuel/Oxidizer Disposal: N
Helium Supply: NA
Shop Air: NA

Fire Protection/Deluge(*): A
Shower/Eye Wash: NA
Vacuum: NA

Lightning Protection: Y
Potable Water: NA
Paging: Y

Commercial Telephone: Y
RF System(*): N
OIS: Y

Personnel Airlock: Y
Grounding: Y
Explosion Proof: Y

Detailed Equipment Resources

Special Tool Kit: NA
Sling: NA
OTV Adapter: NA

Breakout Boxes: NA
Adapter Cables: NA
Ground Power Unit: NA

Air Pallet: NA
Work Stands: NA
Special Hoisting Equip: NA

NASA Canister: NA
OTV Canister: NA

Legend For Data Input

Fire Protection/Deluge(*) A: fire protection
or B: deluge
or C: both
or N: none

RF System(*) A: S Band & C Band
or B: Ku Band
or C: both
or N: none

Hazard Level(*) 1: None
or 2: Local Clear
or 3: Area Clear
or 4: Facility Clear

Others(*) Y: Yes
or N: No
or NA: Not Applicable
or TD: To Be Determined

96
Detailed Resources Identification

Task No: 22       FINAL PAYLOAD CLOSEOUT

Subtask No: < 22.8400> Description: <REMOVE POWER FROM SPACECRAFT >
Hazard Level(*): 1 None
Activity: REMOVE SPACECRAFT POWER

Personnel:

<table>
<thead>
<tr>
<th>Vehicle</th>
<th>Control Station</th>
</tr>
</thead>
<tbody>
<tr>
<td>Payload Specialist(s)</td>
<td>(0)</td>
</tr>
<tr>
<td>Engineering</td>
<td>(0)</td>
</tr>
<tr>
<td>Shop</td>
<td>(0)</td>
</tr>
<tr>
<td>Inspector</td>
<td>(0)</td>
</tr>
<tr>
<td>Other</td>
<td>(0)</td>
</tr>
<tr>
<td>Sub Total</td>
<td>(0)</td>
</tr>
</tbody>
</table>

Serial Time To Complete: 60 min
Automation Need: (Primary Key)
Automation Secondary Key(s): 

Detailed Facility Resources

<table>
<thead>
<tr>
<th>Physical Size:</th>
<th>Crane Capacity:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air Lock: 0 0 0 [W/D/H][ft]</td>
<td>0 Ton 0 Ft.Hook Height</td>
</tr>
<tr>
<td>Doors: 0 0 [W/H][ft]</td>
<td></td>
</tr>
<tr>
<td>High Bay: 0 0 0 [W/D/H][ft]</td>
<td>0 Ton 0 Ft.Hook Height</td>
</tr>
</tbody>
</table>

Standard Commercial Power: Y
Instrumentation Power [Uninterrupted]: Y

Cleanliness: 100K
E.C.S: Humidity: 50 +/- 5 %
Temperature: 70 +/- 5 F
Closed Circuit Television: Y
Fuel/Oxidizer Diap CALC: NA
Fire Protection/Deluge(*): A
Shower/Eye Wash: NA
Lightning Protection: Y
Potable Water: NA
Commercial Telephone: Y
RF System(*): N
Personnel Airlock: Y
Grounding: Y

Detailed Equipment Resources

Special Tool Kit: NA
Slings: NA
OTV Adapter: NA
Breakout Boxes: NA
Adapter Cables: NA
Ground Power Unit: NA
Air Pallet: NA
Work Stands: NA
Special Hoisting Equip: NA
NASA Canister: NA
OTV Canister: NA

(*) Legend For Data Input

Fire Protection/Deluge= A: fire protection
or B: deluge
or C: both
or N: none

Hazard Level:= 1: None
or 2: Local Clear
or 3: Area Clear
or 4: Facility Clear

Others:= Y: Yes
or N: No

TD: To Be Determined.
Detailed Resources Identification

Task No: 22  FINAL PAYLOAD CLOSEOUT

Subtask No: < 22.0506> 

Description: <ENGR INSPECT/FINAL CLOSEOUT >

Activity: PERFORM WALKDOWN INSPECTION OF OTV FOR FINAL PAYLOAD BAY CLOSEOUT.

Personnel:

<table>
<thead>
<tr>
<th>Vehicle</th>
<th>Control Station</th>
</tr>
</thead>
<tbody>
<tr>
<td>Payload Specialist(s)</td>
<td>(6)</td>
</tr>
<tr>
<td>Engineering</td>
<td>(2)</td>
</tr>
<tr>
<td>Shop</td>
<td>(2)</td>
</tr>
<tr>
<td>Inspector</td>
<td>(1)</td>
</tr>
<tr>
<td>Other</td>
<td>(6)</td>
</tr>
</tbody>
</table>

Sub Total: (5) Total: (5)

Serial Time To Complete: 60 min Total Manhours: (5.8)

Automation Need: (Primary Key)

Automation Secondary Key(s):  

Detailed Facility Resources

<table>
<thead>
<tr>
<th>Physical Size:</th>
<th>Crane Capacity:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air Lock: 0 0 0 [W/D/H][ft]</td>
<td>0 Ton 0 Ft.Hook Height</td>
</tr>
<tr>
<td>Doors: 0 0 [W/H][ft]</td>
<td></td>
</tr>
<tr>
<td>High Bay: 0 0 0 [W/D/H][ft]</td>
<td>0 Ton 0 Ft.Hook Height</td>
</tr>
</tbody>
</table>

Standard Commercial Power: Y Instrumentation Power [Uninterrupted]: Y

Cleanliness: 100K E.C.S.: Humidity: 50 +/- 5 %

Closed Circuit Television: NA Power Cutoff: Y Facility GN2: NA

Fuel/Oxidizer Disposal: N Helium Supply: NA Shop Air: NA

Fire Protection/Deluge(*): A Shower/Eye Wash: NA Vacuum: NA

Lightning Protection: Y Potable Water: NA Paging: Y

Commercial Telephone: Y RF System(*): C OIS: NA

Personnel Airlock: Y Grounding: Y Explosion Proof: Y

Detailed Equipment Resources

<table>
<thead>
<tr>
<th>Special Tool Kit: NA</th>
<th>Slings: NA</th>
<th>OTV Adapter: NA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Breakout Boxes: NA</td>
<td>Adapter Cables: NA</td>
<td>Ground Power Unit: NA</td>
</tr>
<tr>
<td>Air Pallet: NA</td>
<td>Work Stands: NA</td>
<td>Special Hoisting Equip: NA</td>
</tr>
<tr>
<td>NASA Canister: NA</td>
<td>OTV Canister: NA</td>
<td></td>
</tr>
</tbody>
</table>

(*) Legend For Data Input

- Fire Protection/Deluge: A: fire protection or B: deluge or C: both or N: none
- RF System: A: S Band & C Band or B: Ku Band or C: both or N: none
- Hazard Level: 1: None or 2: Local Clear or 3: Area Clear or 4: Facility Clear
- Others: Y: Yes or N: No or NA: Not Applicable or TD: To Be Determined
### Detailed Resources Identification

**Task No:** 23  
**LAUNCH PREPARATIONS**

**Subtask No:** <23.0100>  
**Description:** APPLY POWER TO OTV

**Personnel:**
- Vehicle  
- Payload Specialist(s): 2  
- Engineering: 2  
- Shop: 2  
- Inspector: 2

**Control Station:**
- Sub Total: 4  
- Total: 6

**Serial Time To Complete:** 120 min  
**Total Manhours:** 20.0

**Automation Need:**
- (Primary Key)

**Automation Secondary Key(s):**
- Control Station
- 4

**Detailed Facility Resources**

<table>
<thead>
<tr>
<th>Physical Size</th>
<th>Crane Capacity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air Lock: 0 0 0</td>
<td>0 Ton 0 Ft.Hook Height</td>
</tr>
<tr>
<td>Doors: 0 0</td>
<td>0 Ton 0 Ft.Hook Height</td>
</tr>
<tr>
<td>High Bay: 0 0 0</td>
<td>0 Ton 0 Ft.Hook Height</td>
</tr>
</tbody>
</table>

**Standard Commercial Power:** Y  
**Instrumentation Power [Uninterrupted]:** Y

**Cleanliness:** 100K  
**E.C.S:** Humidity: 50 +/- 5%  
**Temperature:** 70 +/- 5 F  
**Power Cutoff:** Y  
**Facility GN2:** NA

**Closed Circuit Television:** NA  
**Helium Supply:** NA  
**Shop Air:** NA

**Fuel/Oxidizer Disposal:** N  
**Shower/Eye Wash:** NA  
**Vacuum:** NA

**Fire Protection/Deluge:** A  
**RF System:** A  
**OIS:** Y  
**Paging:** Y

**Lightning Protection:** Y  
**RF System:** A  
**OIS:** Y

**Commerical Telephone:** Y  
**Grounding:** Y  
**Explosion Proof:** Y

**Personnel Airlock:** Y

### Detailed Equipment Resources

- Special Tool Kit: NA  
- Slings: NA  
- OTV Adapter: NA

- Breakout Boxes: NA  
- Adapter Cables: NA  
- Ground Power Unit: NA

- Air Pallet: NA  
- Work Stands: NA  
- Special Hoisting Equip: NA

- NASA Canister: NA  
- OTV Canister: NA

**(*) Legend For Data Input**

- Fire Protection/Deluge: A: fire protection  
  B: deluge  
  C: both  
  N: none

- RF System: A: S Band & C Band  
  B: Ku Band  
  C: both  
  N: none

- Hazard Level: 1: None  
  2: Local Clear  
  3: Area Clear  
  4: Facility Clear

- Others: Y: Yes  
  N: No  
  NA: Not Applicable  
  TD: To Be Determined

---

**C-2**  
99
Detailed Resources Identification

Task No: 23  
LAUNCH PREPARATIONS

Subtask No: <23.020>  
Description: <LOAD/MONITOR CRYO>

Hazard Level*: 4  Facility Clear
Activity: LOAD CRYO AND MONITOR FOR PRESSURE AND VOLUME (INCLUDE FUEL CELLS)

Personnel:

<table>
<thead>
<tr>
<th>Vehicle</th>
<th>Control Station</th>
</tr>
</thead>
<tbody>
<tr>
<td>Payload Specialist(s)</td>
<td>(6)</td>
</tr>
<tr>
<td>Engineering</td>
<td>(0)</td>
</tr>
<tr>
<td>Shop</td>
<td>(0)</td>
</tr>
<tr>
<td>Inspector</td>
<td>(0)</td>
</tr>
<tr>
<td>Other</td>
<td>(0)</td>
</tr>
</tbody>
</table>

Sub Total (0) 6 Total (0) 6

Serial Time To Complete: 120 min  
Total Manhours (12.0)

Automation Need: (Primary Key)
Automation Secondary Key(s):  

Detailed Facility Resources

Physical Size:

<table>
<thead>
<tr>
<th>Air Lock</th>
<th>Doors</th>
<th>High Bay</th>
</tr>
</thead>
</table>

Crane Capacity: 0 Ton 0 Ft.Hook Height

Standard Commercial Power: Y

Cleanliness: 100K
E.C.S: Humidity: 50 +/- 5%
Temperature: 70 +/- 5 F

Closed Circuit Television: NA
Power Cutoff: Y
Facility GN2: NA

Fuel/Oxidizer Disposal: Y
Helium Supply: NA
Shop Air: NA

Fire Protection/Deluge(*): A
Shower/Eye Wash: NA
Vacuum: NA

Lightning Protection: Y
Potable Water: NA
Paging: Y

Commercial Telephone: Y
RF System(*): C
OIS: Y

Personnel Airlock: Y
Grounding: Y
Explosion Proof: Y

Detailed Equipment Resources

Special Tool Kit: NA
Slings: NA
OTV Adapter: NA

Breakout Boxes: NA
Adapter Cables: NA
Ground Power Unit: NA

Air Pallet: NA
Work Stands: NA
Special Hoisting Equip: NA

NASA Canister: NA
OTV Canister: NA

(* Legend For Data Input

Fire Protection/Deluge: A: fire protection  
or B: deluge  
or C: both  
or N: none

RF System(*): A: S Band & C Band  
or B: Ku Band  
or C: both  
or N: none

Hazard Level: 1: None  
or 2: Local Clear  
or 3: Area Clear  
or 4: Facility Clear

Others: Y: Yes  
or N: No  
or NA: Not Applicable  
or TD: To Be Determined

100
## Detailed Resources Identification

### Task No: 23 LAUNCH PREPARATIONS

**Subtask No:** < 23.0300>  
**Description:** <ACTIVATE/LOAD TEST FUEL CELLS >  
**Hazard Level(s):** 2 Local Clear  
**Activity:** TRANSFER LOAD FROM ORBITER POWER TO OTV FUEL CELL-VERIFY ALL LOAD PARAMETERS

### Personnel

<table>
<thead>
<tr>
<th>Vehicle</th>
<th>Control Station</th>
</tr>
</thead>
<tbody>
<tr>
<td>Payload Specialist(s)</td>
<td>(0)</td>
</tr>
<tr>
<td>Engineering</td>
<td>(0)</td>
</tr>
<tr>
<td>Shop</td>
<td>(0)</td>
</tr>
<tr>
<td>Inspector</td>
<td>(0)</td>
</tr>
<tr>
<td>Other</td>
<td>(0)</td>
</tr>
<tr>
<td><strong>Sub Total</strong></td>
<td>(0)</td>
</tr>
</tbody>
</table>

**Serial Time To Complete:** 120 min  
**Automation Need:** (Primary Key)  
**Automation Secondary Key(s):**

### Detailed Facility Resources

<table>
<thead>
<tr>
<th>Physical Size:</th>
<th>Crane Capacity:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air Lock: 0 0 0 [W/D/H][ft]</td>
<td>0 Ton 0 Ft.Hook Height</td>
</tr>
<tr>
<td>Doors: 0 0 [W/H][ft]</td>
<td></td>
</tr>
<tr>
<td>High Bay: 0 0 0 [W/D/H][ft]</td>
<td>0 Ton 0 Ft.Hook Height</td>
</tr>
</tbody>
</table>

**Standard Commercial Power:** Y  
**Crane Capacity:**  
**Instrumentation Power [Uninterrupted]:** Y

**Cleanliness:** 100K  
**E.C.S.: Humidity:** 50 ±5%  
**Temperature:** 70 ±5 F  
**Power Cutoff:** Y  
**Facility GN2:** NA  
**Helium Supply:** NA  
**Shop Air:** NA  
**Shower/Eye Wash:** NA  
**Vacuum:** NA  
**Potable Water:** NA  
**Paging:** Y  
**OIS:** Y  
**Explosion Proof:** Y

### Detailed Equipment Resources

**Special Tool Kit:** NA  
**Slings:** NA  
**OTV Adapter:** NA  
**Breakout Boxes:** NA  
**Adapter Cables:** NA  
**Ground Power Unit:** NA  
**Air Pallet:** NA  
**Work Stands:** NA  
**Special Hoisting Equip:** NA  
**NASA Canister:** NA  
**OTV Canister:** NA

### Legend For Data Input

- **Fire Protection/Deluge:** A: fire protection  
  - B: deluge  
  - C: both  
  - N: none  
- **Hazard Level:** 1: None  
  - 2: Local Clear  
  - 3: Area Clear  
  - 4: Facility Clear  
- **Others:**  
  - Y: Yes  
  - N: No  
  - NA: Not Applicable  
  - TD: To Be Determined

---

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Detailed Resources Identification

Task No: 23 LAUNCH PREPARATIONS

Subtask No: <23.0400> Description: <LAUNCH
Hazard Level(*): 4 Facility Clear
Activity: LAUNCH

Personnel:

<table>
<thead>
<tr>
<th>Vehicle</th>
<th>Control Station</th>
</tr>
</thead>
<tbody>
<tr>
<td>Payload Specialist(s) (0)</td>
<td>(0)</td>
</tr>
<tr>
<td>Engineering (0)</td>
<td>(2)</td>
</tr>
<tr>
<td>Shop (0)</td>
<td>(2)</td>
</tr>
<tr>
<td>Inspector (0)</td>
<td>(2)</td>
</tr>
<tr>
<td>Other (0)</td>
<td></td>
</tr>
</tbody>
</table>

Sub Total (0) Total (6)

Serial Time To Complete: 180 min Total Manhours (18.0)

Automation Need: (Primary Key)

Automation Secondary Key(s):

Detailed Facility Resources

Physical Size:

Air Lock: 0 0 0 [W/D/H][ft] 0 Ton 0 Ft.Hook Height
Doors: 0 0 [W/H][ft]
High Bay: 0 0 0 [W/D/H][ft] 0 Ton 0 Ft.Hook Height

Standard Commercial Power: NA Instrumentation Power [Uninterrupted]: NA
Cleanliness: OK E.C.S.: Humidity: 0 +/- 0 % Temperature: 0 +/- 0 F
Closed Circuit Television: NA Power Cutoff: NA Facility GN2: NA
Fuel/Oxidizer Disposal: NA Helium Supply: NA Shop Air: NA
Fire Protection/Deluge(*): N Shower/Eye Wash: NA Vacuum: NA
Lightning Protection: NA Potable Water: NA Paging: NA
Commercial Telephone: NA RF System(*): N OIS: NA
Personnel Airlock: NA Grounding: NA Explosion Proof: Y

Detailed Equipment Resources

Special Tool Kit: NA Slings: NA OTV Adapter: NA
Breakout Boxes: NA Adapter Cables: NA Ground Power Unit: NA
Air Pallet: NA Work Stands: NA Special Hoisting Equip: NA
NASA Canister: NA OTV Canister: NA

(*): Legend For Data Input

Fire Protection/Deluge—A: fire protection or B: deluge or C: both or N: none
RF System—A: S Band & C Band or B: Ku Band or C: both or N: none

Hazard Level—1: None or 2: Local Clear or 3: Area Clear or 4: Facility Clear
Others—Y: Yes or N: No
NA: Not Applicable
TD: To Be Determined
Detailed Resources Identification

Task No: 24 DEPLOY OTV/SPACECRAFT

Description: OPEN CARGO BAY DOORS

Activity: OPEN CARGO BAY IN PREPARATION OF PLACING OTC/SC IN LEO

Personnel:

<table>
<thead>
<tr>
<th>Vehicle</th>
<th>Control Station</th>
</tr>
</thead>
<tbody>
<tr>
<td>Payload Specialist(s)</td>
<td>(1)</td>
</tr>
<tr>
<td>Engineering</td>
<td>(0)</td>
</tr>
<tr>
<td>Shop</td>
<td>(0)</td>
</tr>
<tr>
<td>Inspector</td>
<td>(0)</td>
</tr>
<tr>
<td>Other</td>
<td>(0)</td>
</tr>
<tr>
<td>Sub Total</td>
<td>(1)</td>
</tr>
<tr>
<td>Total</td>
<td>(1)</td>
</tr>
</tbody>
</table>

Serial Time To Complete: 60 min

Automation Need: (Primary Key)

Automation Secondary Key(s)

Detailed Facility Resources

<table>
<thead>
<tr>
<th>Physical Size:</th>
<th>Crane Capacity:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air Lock</td>
<td>0 0 0 [W/D/H][ft]</td>
</tr>
<tr>
<td>Doors</td>
<td>0 0 [W/H][ft]</td>
</tr>
<tr>
<td>High Bay</td>
<td>0 0 0 [W/D/H][ft]</td>
</tr>
</tbody>
</table>

Standard Commerical Power: NA

Instrumentation Power [Uninterrupted]: NA

Cleanliness: OK

E.C.S.: Humidity: 0 +/- 0 %

Power Cutoff: NA

Facility GN2: NA

Fire Protection/Deluge(*): N

Helium Supply: NA

Shop Air: NA

Shower/Eye Wash: NA

Vacuum: NA

Lightning Protection: NA

Potable Water: NA

Paging: NA

Commerical Telephone: NA

RF System(*): C

OIS: NA

Personnel Airlock: NA

Grounding: NA

Explosion Proof: NA

Detailed Equipment Resources

<table>
<thead>
<tr>
<th>Special Tool Kit:</th>
<th>Slings:</th>
<th>OTV Adapter:</th>
</tr>
</thead>
<tbody>
<tr>
<td>NA</td>
<td>NA</td>
<td>NA</td>
</tr>
</tbody>
</table>

Breakout Boxes: NA

Adapter Cables: NA

Ground Power Unit: NA

Air Pallet: NA

Work Stands: NA

Special Hoisting Equip: NA

NASA Canister: NA

OTV Canister: NA

(*) Legend For Data Input

- Fire Protection/Deluge= A: fire protection or B: deluge or C: both or N: none
- RF System= A: S Band & C Band or B: Ku Band or C: both or N: none
- Hazard Level= 1: None or 2: Local Clear or 3: Area Clear or 4: Facility Clear
- Others= Y: Yes or N: No or NA: Not Applicable or TD: To Be Determined
Detailed Resource Identification

Task No: 24  DEPLOY OTV/SPACECRAFT

Subtask No: <24.0200> Description: <POWER UP SPACECRAFT>

Hazard Level(*): 1 None
Activity: COMMAND THE SPACECRAFT POWER ON.

Personnel:

<table>
<thead>
<tr>
<th>Vehicle</th>
<th>Control Station</th>
</tr>
</thead>
<tbody>
<tr>
<td>Payload Specialist(s)</td>
<td>(1)</td>
</tr>
<tr>
<td>Engineering</td>
<td>(0)</td>
</tr>
<tr>
<td>Shop</td>
<td>(0)</td>
</tr>
<tr>
<td>Inspector</td>
<td>(0)</td>
</tr>
<tr>
<td>Other</td>
<td>(0)</td>
</tr>
<tr>
<td>Sub Total</td>
<td>(1)</td>
</tr>
</tbody>
</table>

Serial Time To Complete: 60 min  Total Manhours (7.0)

Automation Need: (Primary Key)

Automation Secondary Key(s)

Serial Time To Complete: 60 min  Total Manhours (7.0)

Detailed Facility Resources

<table>
<thead>
<tr>
<th>Physical Size:</th>
<th>Crane Capacity:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air Lock: 0 0 0 [W/D/H][ft]</td>
<td>0 Ton 0 Ft. Hook Height</td>
</tr>
<tr>
<td>Doors: 0 0 [W/H][ft]</td>
<td></td>
</tr>
<tr>
<td>High Bay: 0 0 0 [W/D/H][ft]</td>
<td>0 Ton 0 Ft. Hook Height</td>
</tr>
</tbody>
</table>

Standard Commercial Power: NA  Instrumentation Power [Uninterrupted]: NA

Cleanliness: OK  E.C.S.: Humidity: 0%  Power Cutoff: NA

Closed Circuit Television: NA  Temperature: 0°F

Fuel/Oxidizer Disposal: NA  Facility GN2: NA

Fire Protection/Deluge(*): N  Shop Air: NA

Shower/Eye Wash: NA  Vacuum: NA

Lightning Protection: NA  Paging: NA

Commercial Telephone: NA  RF System(*): C

Personnel Airlock: NA  OIS: NA

Explosion Proof: NA  Special Hoisting Equip: NA

Detailed Equipment Resources

<table>
<thead>
<tr>
<th>Special Tool Kit: NA</th>
<th>Slings: NA</th>
<th>OTV Adapter: NA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Breakout Boxes: NA</td>
<td>Adapter Cables: NA</td>
<td>Ground Power Unit: NA</td>
</tr>
<tr>
<td>Air Pallet: NA</td>
<td>Work Stands: NA</td>
<td>Special Hoisting Equip: NA</td>
</tr>
<tr>
<td>NASA Canister: NA</td>
<td>OTV Canister: NA</td>
<td></td>
</tr>
</tbody>
</table>

(*) Legend For Data Input

Fire Protection/Deluge(*) A: fire protection  RF System(*) A: S Band & C Band

or B: deluge  or B: Ku Band

or C: both  or C: both

or N: none  or N: none

Hazard Level: 1: None  Others: Y: Yes

or 2: Local Clear  or 3: Area Clear

or 4: Facility Clear  or 4: Facility Clear

N: No

NA: Not Applicable

TD: To Be Determined
Detailed Resources Identification

Task No: 24 DEPLOY OTV/SPACECRAFT

Subtask No: <24.0300> Description: <PAYLOAD VERIFICATION TEST>

Hazard Level(s): 1 None

Activity: PERFORM SYSTEM VERIFICATION TESTING TO VERIFY OTV AND S/C ARE READY FOR LAUNCH INTO GEO

Personnel:

Vehicle
Payload Specialist(s) (1)
Engineering (0)
Shop (0)
Inspector (0)
Other (0)

Control Station

(0)
(2)
(2)
(2)

Sub Total: (1)

Total: (6)

Serial Time To Complete: 240 min

Total Manhours (28.6)

Automation Need: (Primary Key)

Automation Secondary Key(s)

Detailed Facility Resources

Physical Size:
Air Lock: 0 0 0 [W/D/H][ft]
Doors: 0 0 [W/H][ft]
High Bay: 0 0 0 [W/D/H][ft]

Crane Capacity:
0 Ton 0 Ft.Hook Height

Standard Commercial Power: NA
Cleanliness: OK
Closed Circuit Television: NA
Fuel/Oxidizer Disposal: NA
Fire Protection/Deluge(*): N
Lightning Protection: NA
Commerical Telephone: NA
Personnel Airlock: NA

Instrumentation Power [Uninterrupted]: NA
E.C.S: Humidity: 
0 +/- 0 %
Power Cutoff: NA
Facility GN2: NA
Helium Supply: NA
Shop Air: NA
Shower/Eye Wash: NA
Vacuum: NA
Shop Air: NA

Temperature: 0 +/- 0 F

Facility GN2: NA

OIS: NA
Explosion Proof: NA

Detailed Equipment Resources

Special Tool Kit: NA
Breakout Boxes: NA
Air Pallet: NA
NASA Canister: NA

Slings: NA
Adapter Cables: NA
Work Stands: NA

OTV Adapter: NA
Ground Power Unit: NA
Special Hoisting Equip: NA

(*) Legend For Data Input

Fire Protection/Deluge = A: fire protection or B: deluge or C: both or N: none

RF System = A: A Band & C Band or B: Ku Band or C: both or N: none

Hazard Level = 1: None or 2: Local Clear or 3: Area Clear or 4: Facility Clear

Others = Y: Yes or N: No

Na: Not Applicable

TD: To Be Determined
**Detailed Resources Identification**

**Task No:** 24  
**DEPLOY OTV/SPACECRAFT**

Subtask No: 24.0488  
Description: **<REMOVE PAYLOAD FROM CARGO BAY >**

Activity: PREPARE FOR OTV/SC AEROBRAKE INSTALLATION

**Personnel:**

<table>
<thead>
<tr>
<th>Vehicle</th>
<th>Control Station</th>
</tr>
</thead>
<tbody>
<tr>
<td>Payload Specialist(s)</td>
<td>(2)</td>
</tr>
<tr>
<td>Engineering</td>
<td>(2)</td>
</tr>
<tr>
<td>Shop</td>
<td>(2)</td>
</tr>
<tr>
<td>Inspector</td>
<td>(2)</td>
</tr>
<tr>
<td>Other</td>
<td>(2)</td>
</tr>
</tbody>
</table>

Sub Total: (2)  
Total: (6)

Serial Time To Complete: 120 min  
Total Manhours: (16.0)

Automation Need: (Primary Key)

Automation Secondary Key(s)

**Detailed Facility Resources**

**Physical Size:**

- Air Lock: [W/D/H][ft]
- Doors: [W/H][ft]
- High Bay: [W/D/H][ft]

**Crane Capacity:**

- 0 Ton 0 Ft.Hook Height

**Standard Commercial Power:** NA  
**Instrumentation Power [Uninterrupted]:** NA

**Cleanliness:** OK  
**E.C.S:** Humidity: 0 +/- 0 %  
**Temperature:** 0 +/- 0 F

**Closed Circuit Television:** NA  
**Power Cutoff:** NA  
**Facility GN2:** NA

**Fire Protection/Deluge:** N  
**Helium Supply:** NA  
**Shop Air:** NA

**Lightning Protection:** NA  
**Shower/Eye Wash:** NA  
**Vacuum:** NA

**Commercial Telephone:** NA  
**RF System:** C  
**OIS:** NA

**Personnel Airlock:** NA  
**Grounding:** NA  
**Explosion Proof:** NA

**Detailed Equipment Resources**

- Special Tool Kit: NA  
- Slings: NA  
- OTV Adapter: NA

- Breakout Boxes: NA  
- Adapter Cables: NA  
- Ground Power Unit: NA

- Air Pallet: NA  
- Work Stands: NA  
- Special Hoisting Equip: NA

- NASA Canister: NA  
- OTV Canister: NA

**Legend For Data Input**

- Fire Protection/Deluge: A: fire protection  
  or B: deluge  
  or C: both  
  or N: none

- RF System: A: S Band & C Bond  
  or B: Ku Band  
  or C: both

- Hazard Level: 1: None  
  or 2: Local Clear  
  or 3: Area Clear  
  or 4: Facility Clear

- Others: Y: Yes  
  N: No  
  NA: Not Applicable  
  TD: To Be Determined
Detailed Resources Identification

Task No: 24 DEPLOY OTV/SPACECRAFT

Subtask No: <24.0500> Description: <ELEC. MECH FLUID DISCONNECT>

Hazard Level(*) : 1 None
Activity: REMOVE ALL ELECTRICAL, MECHANICAL AND FLUID INTERFACES BETWEEN THE ORBITER AND THE OTV.

Vehicle:

Payload Specialist(s) (1)
Engineering (0)
Shop (0)
Inspector (0)
Other (0)

Sub Total (1)

Control Station:

(0)
(2)
(2)
(2)

Total (6)

Serial Time To Complete: 60 min Total Manhours (7.0)

Automation Need: (Primary Key)

Automation Secondary Key(s)

Personnel:

Vehicle Control Station
Payload Specialist(s) 1
Engineering 2
Shop 2
Inspector 2
Other 2

Sub Total 6

Detailed Facility Resources

Physical Size:

Air Lock: 0 0 0 [W/D/H][ft]
Doors: 0 0 [W/H][ft]
High Bay: 0 0 0 [W/D/H][ft]

Crane Capacity:

0 Ton 0 Ft.Hook Height

Standard Commercial Power: NA

Cleanliness: OK E.C.S: Humidity: Temperature: 0 +/- 0 % 0 +/- 0 F

Closed Circuit Television: NA Power Cutoff: NA Facility GN2: NA

Fuel/Oxidizer Disposal: NA Helium Supply: NA Shop Air: NA


Lightning Protection: NA Potable Water: NA Paging: NA

Commercial Telephone: NA RF System(*) : C OIS: NA

Personnel Airlock: NA Grounding: NA Explosion Proof: NA

Detailed Equipment Resources

Special Tool Kit: NA Slings: NA OTV Adapter: NA

Breakout Boxes: NA Adapter Cables: NA Ground Power Unit: NA

Air Pallet: NA Work Stands: NA Special Hoisting Equip: NA

NASA Canister: NA OTV Canister: NA

(*) Legend For Data Input

Fire Protection/Deluge A: fire protection or B: deluge or C: both or N: none

Hazard Level: 1: None or 2: Local Clear or 3: Area Clear or 4: Facility Clear

Others: Y: Yes or N: No

TD: To Be Determined
Detailed Resources Identification

Task No: 24  DEPLOY OTV/SPACECRAFT

Subtask No: < 24.0000>  Description: <INSTALL/DEPLOY AEROBRAKE>

Hazard Level(s): 1: None
Activity: INSTALL/DEPLOY AEROBRAKE SYSTEM IN LEO IF REQUIRED

Personnel:

<table>
<thead>
<tr>
<th>Vehicle</th>
<th>Control Station</th>
</tr>
</thead>
<tbody>
<tr>
<td>Payload Specialist(s)</td>
<td>0</td>
</tr>
<tr>
<td>Engineering</td>
<td>0</td>
</tr>
<tr>
<td>Shop</td>
<td>0</td>
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<tr>
<td>Inspector</td>
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<td>Other</td>
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<td>Sub Total</td>
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</tr>
<tr>
<td>Total</td>
<td>3</td>
</tr>
</tbody>
</table>

Serial Time To Complete: 120 min  Total Manhours: 6.0

Automation Need: (Primary Key)

Automation Secondary Key(s): 

Personnel

- Vehicle
- Payload Specialist(s): 3
- Engineering: 0
- Shop: 0
- Inspector: 0
- Other: 0

Sub Total: 3

Detailed Facility Resources

<table>
<thead>
<tr>
<th>Physical Size</th>
<th>Crane Capacity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air Lock:</td>
<td>0 Ton 0 ft. Hook Height</td>
</tr>
<tr>
<td>Doors:</td>
<td>0 Ton 0 ft. Hook Height</td>
</tr>
<tr>
<td>High Boy:</td>
<td>0 Ton 0 ft. Hook Height</td>
</tr>
</tbody>
</table>

Standard Commercial Power: NA  Instrumentation Power [Uninterrupted]: NA

Cleanliness: OK  E.C.S.: Humidity: 0 +/- 0%

Closed Circuit Television: NA  Power Cutoff: NA  Facility GN2: NA

Fuel/Oxidizer Disposal: NA  Helium Supply: NA  Shop Air: NA

Fire Protection/Deluge(*): N  Shower/Eye Wash: NA  Vacuum: NA

Lightning Protection: NA  Potable Water: NA  Paging: NA

Commercial Telephone: NA  RF System(*): C  OIS: NA

Personnel Airlock: NA  Grounding: NA  Explosion Proof: NA

Detailed Equipment Resources

- Special Tool Kit: NA  Slings: NA  OTV Adapter: NA
- Breakout Boxes: NA  Adapter Cables: NA  Ground Power Unit: NA
- Air Pallet: NA  Work Stands: NA  Special Hoisting Equip: NA
- NASA Canister: NA  OTV Canister: NA

(*) Legend For Data Input

Fire Protection/Deluge = A: fire protection  or B: deluge  or C: both  or N: none
RF System = A: S Band & C Band  or B: Ku Band  or C: both  or H: none

Hazard Level = 1: None  Others = Y: Yes
or 2: Local Clear  N: No
or 3: Area Clear  NA: Not Applicable
or 4: Facility Clear  TD: To Be Determined
Detailed Resources Identification

Task No: 24  
DEPLOY OTV/SPACECRAFT

Subtask No: < 24.0700>  
Description: <PERFORM POCC LAUNCH TESTS >

Activity: ISSUE COMMAND AND VERIFY OTV AND S/C READY FOR LAUNCH TO GEO

Personnel:

<table>
<thead>
<tr>
<th>Vehicle</th>
<th>Control Station</th>
</tr>
</thead>
<tbody>
<tr>
<td>Payload Specialist(s)</td>
<td>(1)</td>
</tr>
<tr>
<td>Engineering</td>
<td>(0)</td>
</tr>
<tr>
<td>Shop</td>
<td>(0)</td>
</tr>
<tr>
<td>Inspector</td>
<td>(0)</td>
</tr>
<tr>
<td>Other</td>
<td>(0)</td>
</tr>
<tr>
<td>Sub Total</td>
<td>(1)</td>
</tr>
</tbody>
</table>

Serial Time To Complete: 60 min  
Total Manhours (7.0)

Automation Need: (Primary Key)

Automation Secondary Key(s)

Detailed Facility Resources

Physical Size:

| Air Lock: | 0 | 0 | 0 [W/D/H][ft] | 0 Ton | 0 Ft.Hook Height |
| Doors:    | 0 | 6 | [W/H][ft]     |       |                |
| High Bay: | 0 | 0 | [W/D/H][ft]   | 0 Ton | 0 Ft.Hook Height |

Standard Commercial Power: NA  
Instrumentation Power [Uninterrupted]: NA

Cleanliness: OK  
E.C.S: Humidity: 0 +/- 0 %  
Temperature: 0 +/- 0 F

Closed Circuit Television: NA  
Power Cutoff: NA  
Facility GN2: NA

Fuel/Oxidizer Disposal: NA  
Helium Supply: NA  
Shop Air: NA

Fire Protection/Deluge(s): N  
Safety Shower/Eye Wash: NA  
Vacuum: NA

Lightning Protection: NA  
Potable Water: NA  
Paging: NA

Commercial Telephone: NA  
RF System(s): C  
OIS: NA

Personnel Airlock: NA  
Grounding: NA  
Explosion Proof: NA

Detailed Equipment Resources

<table>
<thead>
<tr>
<th>Special Tool Kit: NA</th>
<th>Slings: NA</th>
<th>OTV Adapter: NA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Breakout Boxes: NA</td>
<td>Adapter Cables: NA</td>
<td>Ground Power Unit: NA</td>
</tr>
<tr>
<td>Air Pallet: NA</td>
<td>Work Stands: NA</td>
<td>Special Hoisting Equip: NA</td>
</tr>
<tr>
<td>NASA Canister: NA</td>
<td>OTV Canister: NA</td>
<td></td>
</tr>
</tbody>
</table>

(*) Legend For Data Input

Fire Protection/Deluge= A: fire protection  
or B: deluge  
or C: both  
or N: none

Hazard Level: 1: None  
or 2: Local Clear  
or 3: Area Clear  
or 4: Facility Clear

RF System= A: S Band & C Band  
or B: Ku Band  
or C: both  
or N: none

Others:= Y: Yes  
N: No  
NA: Not Applicable  
TD: To Be Determined
Detailed Resources Identification

Task No: 24 DEPLOY OTV/SPACECRAFT

Subtask No: < 24.0000> Description: <DEPLOY OTV S/C FROM ORBITER >

Hazard Level(•): 1 None
Activity: DEPLOY COMBINATION OTV AND SPACECRAFT IN LEO—MOVE THE ORBITER TO A SAFE DISTANCE FROM THE OTV

Personnel:

<table>
<thead>
<tr>
<th>Vehicle</th>
<th>Control Station</th>
</tr>
</thead>
<tbody>
<tr>
<td>Payload Specialist(s)</td>
<td>(1)</td>
</tr>
<tr>
<td>Engineering</td>
<td>(0)</td>
</tr>
<tr>
<td>Shop</td>
<td>(0)</td>
</tr>
<tr>
<td>Inspector</td>
<td>(0)</td>
</tr>
<tr>
<td>Other</td>
<td>(0)</td>
</tr>
<tr>
<td>Sub Total</td>
<td>(1)</td>
</tr>
<tr>
<td>Total</td>
<td>(6)</td>
</tr>
</tbody>
</table>

Serial Time To Complete: 60 min
Total Manhours (7.0)

Automation Need: (Primary Key)
Automation Secondary Key(s):

Detailed Facility Resources

<table>
<thead>
<tr>
<th>Physical Size:</th>
<th>Crane Capacity:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air Lock: 0 0 0 [W/D/H][ft]</td>
<td>0 Ton 0 Ft.Hook Height</td>
</tr>
<tr>
<td>Doors: 0 0 [W/H][ft]</td>
<td></td>
</tr>
<tr>
<td>High Bay: 0 0 [W/D/H][ft]</td>
<td>0 Ton 0 Ft.Hook Height</td>
</tr>
</tbody>
</table>

Standard Commercial Power: NA
Instrumentation Power [Uninterrupted]: NA

Cleanliness: OK
E.C.S: Humidity: 0 +/- 0 %
Temperature: 0 +/- 0 F
Closed Circuit Television: NA
Power Cutoff: NA
Facility GN2: NA
Fuel/Oxidizer Disposal: NA
Helium Supply: NA
Shop Air: NA
Fire Protection/Deluge(*): N
Shower/Eye Wash: NA
Vacuum: NA
Lightning Protection: NA
Potable Water: NA
Paging: NA
Commercial Telephone: NA
RF System(*): C
OIS: NA
Personnel Airlock: NA
Grounding: NA
Explosion Proof: NA

Detailed Equipment Resources

<table>
<thead>
<tr>
<th>Special Tool Kit: NA</th>
<th>Slings: NA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Breakout Boxes: NA</td>
<td>Adapter Cables: NA</td>
</tr>
<tr>
<td>Air Pallet: NA</td>
<td>Work Stands: NA</td>
</tr>
<tr>
<td>NASA Canister: NA</td>
<td>OTV Canister: NA</td>
</tr>
</tbody>
</table>

(* ) Legend For Data Input

Fire Protection/Deluge— A: fire protection
or B: deluge
or C: both
or N: none

RF System— A: S Band & C Band
or B: Ku Band
or C: both
or N: none

Hazard Level— 1: None
or 2: Local Clear
or 3: Area Clear
or 4: Facility Clear

Others— Y: Yes
or N: No
or NA: Not Applicable
or TD: To Be Determined
**Detailed Resources Identification**

**Task No:** 25  LAUNCH FROM LEO

**Subtask No:** < 25.0100>  
**Description:** VERIFY NAV POSITION  
**Hazard Level:** 1: None  
**Activity:** VERIFY POCC NAV UPDATE IS RECEIVED AND NAV COMPUTER HAS UPDATED INFORMATION

<table>
<thead>
<tr>
<th>Personnel</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Vehicle Payload Specialist(s)</td>
<td>0</td>
</tr>
<tr>
<td>Engineering</td>
<td>0</td>
</tr>
<tr>
<td>Shop</td>
<td>0</td>
</tr>
<tr>
<td>Inspector</td>
<td>0</td>
</tr>
<tr>
<td>Other</td>
<td>0</td>
</tr>
</tbody>
</table>

**Serial Time To Complete:** 60 min  
**Total Manhours:** 6.0

**Automation Need:** (Primary Key)  
**Automation Secondary Key(s):**

**Serial Time To Complete:** 60 min  
**Total Manhours:** 6.0

**Detailed Facility Resources**

<table>
<thead>
<tr>
<th>Physical Size:</th>
<th>Crane Capacity:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air Lock: 0 0 0 [W/D/H][ft]</td>
<td>0 Ton 0 Ft. Hook Height</td>
</tr>
<tr>
<td>Doors: 0 0 [W/H][ft]</td>
<td>0 Ton 0 Ft. Hook Height</td>
</tr>
</tbody>
</table>

**Cleanliness:** OK  
**E.C.S:** Humidity: 0 +/- 0%  
**Power Cutoff:** NA  
**Facility GN2:** NA

**Closed Circuit Television:** NA  
**Helium Supply:** NA  
**Shop Air:** NA

**Fuel/Oxidizer Disposal:** NA  
**Shower/Eye Wash:** NA  
**Vacuum:** NA

**Fire Protection/Deluge:** NA  
**Potable Water:** NA  
**Paging:** NA

**Fire Protection/DeIuge:** NA  
**Potable Water:** NA  
**Paging:** NA

**Commerical Telephone:** NA  
**RF System:** C  
**OIS:** NA

**Personnel Airlock:** NA  
**Grounding:** NA  
**Explosion Proof:** NA

**Detailed Equipment Resources**

<table>
<thead>
<tr>
<th>Special Tool Kit: NA</th>
<th>Slings: NA</th>
<th>OTV Adapter: NA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Breakout Boxes: NA</td>
<td>Adapter Cables: NA</td>
<td>Ground Power Unit: NA</td>
</tr>
<tr>
<td>Air Pallet: NA</td>
<td>Work Stands: NA</td>
<td>Special Hoisting Equip: NA</td>
</tr>
<tr>
<td>NASA Canister: NA</td>
<td>OTV Canister: NA</td>
<td></td>
</tr>
</tbody>
</table>

**(*) Legend For Data Input**

- **Fire Protection/Deluge:** A: fire protection or B: deluge or C: both or N: none
- **Hazard Level:** 1: None or 2: Local Clear or 3: Area Clear or 4: Facility Clear
- **RF System:** A: S Band & C Band or B: Ku Band or C: both or N: none
- **Others:** Y: Yes N: No NA: Not Applicable TD: To Be Determined

111
## Detailed Resources Identification

**Task No:** 25  
**Description:** VERIFY PROPULSION SYSTEM

**Subtask No:** 25.02  
**Activity:** VERIFY TANK PRESSURES ARE NORMAL—VERIFY ENGINES CONTROL

### Personnel:

<table>
<thead>
<tr>
<th>Role</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vehicle</td>
<td>0</td>
</tr>
<tr>
<td>Payload Specialist(s)</td>
<td>0</td>
</tr>
<tr>
<td>Engineering</td>
<td>0</td>
</tr>
<tr>
<td>Shop</td>
<td>0</td>
</tr>
<tr>
<td>Inspector</td>
<td>0</td>
</tr>
<tr>
<td>Other</td>
<td>0</td>
</tr>
<tr>
<td><strong>Sub Total</strong></td>
<td>0</td>
</tr>
</tbody>
</table>

**Serial Time To Complete:** 60 min

**Total Manhours:** 6.6

**Automation Need:** (Primary Key)

**Automation Secondary Key(s):**

### Detailed Facility Resources

**Physical Size:**

- Air Lock: 666 [W/D/H][ft]
- Doors: 6 6 [W/H][ft]
- High Bay: 666 [W/D/H][ft]

**Crane Capacity:**

- 6 Ton 6 Ft.Hook Height

**Standard Commercial Power:** NA

**Cleanliness:** OK

**Closed Circuit Television:** NA

**Fuel/Oxidizer Disposal:** NA

**Fire Protection/Deluge:** NA

**Lightning Protection:** NA

**Commercial Telephone:** NA

**Personnel Airlock:** NA

**Instrumentation Power [Uninterrupted]:** NA

**E.C.S: Humidity:** 0 4/— 0 %

**Power Cutoff:** NA

**Facility GN2:** NA

**Shop Air:** NA

**Heater:** NA

**Vacuum:** NA

**RF System:** C

**OIS:** NA

**Grounding:** NA

**Explosion Proof:** NA

### Detailed Equipment Resources

- Special Tool Kit: NA
- Slings: NA
- OTV Adapter: NA
- Breakout Boxes: NA
- Adapter Cables: NA
- Ground Power Unit: NA
- Air Pallet: NA
- Work Stands: NA
- Special Hoisting Equip: NA
- NASA Canister: NA
- OTV Canister: NA

### (*) Legend For Data Input

- **Fire Protection/Deluge:**
  - A: fire protection
  - B: deluge
  - C: both
  - N: none

- **Hazard Level:**
  - 1: None
  - 2: Local Clear
  - 3: Area Clear
  - 4: Facility Clear

- **Others:**
  - Y: Yes
  - N: No
  - NA: Not Applicable
  - TD: To Be Determined

112
Detailed Resources Identification

Task No: 25 LAUNCH FROM LEO

Subtask No: <25.0300> Description: LAUNCH TO GEO

Hazard Level: 1 None
Activity: ISSUE COMMAND VIA POCC TO LAUNCH TO GEO

Personnel:

<table>
<thead>
<tr>
<th>Vehicle</th>
<th>Control Station</th>
</tr>
</thead>
<tbody>
<tr>
<td>Payload Specialist(s)</td>
<td>(0)</td>
</tr>
<tr>
<td>Engineering</td>
<td>(0)</td>
</tr>
<tr>
<td>Shop</td>
<td>(0)</td>
</tr>
<tr>
<td>Inspector</td>
<td>(0)</td>
</tr>
<tr>
<td>Other</td>
<td>(0)</td>
</tr>
<tr>
<td>Sub Total</td>
<td>(0)</td>
</tr>
</tbody>
</table>

Serial Time To Complete: 240 min
Total Manhours: 24.0

Automation Need: (Primary Key)
Automation Secondary Key(s):

Detailed Facility Resources

<table>
<thead>
<tr>
<th>Physical Size</th>
<th>Crane Capacity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air Lock: [W/D/H][ft]</td>
<td>0 Ton 0 Ft.Hook Height</td>
</tr>
<tr>
<td>Doors: [W/H][ft]</td>
<td></td>
</tr>
<tr>
<td>High Bay: [W/D/H][ft]</td>
<td>0 Ton 0 Ft.Hook Height</td>
</tr>
</tbody>
</table>

Standard Commercial Power: NA Instrumentation Power: NA

Cleanliness: OK E.C.S.: Humidity: 0 +/- 0%

Closed Circuit Television: NA Power Cutoff: NA Facility GN2: NA

Fuel/Oxidizer Disposal: NA Helium Supply: NA Shop Air: NA

Fire Protection/Deluge: N Shower/Eye Wash: NA Vacuum: NA

Lightning Protection: NA Potable Water: NA Paging: NA

Commercial Telephone: NA RF System: C OIS: NA

Personnel Airlock: NA Grounding: NA Explosion Proof: NA

Detailed Equipment Resources

| Special Tool Kit: NA | Slings: NA | OTV Adapter: NA |
| Breakout Boxes: NA   | Adapter Cables: NA | Ground Power Unit: NA |
| Air Pallet: NA       | Work Stands: NA | Special Hoisting Equip: NA |
| NASA Canister: NA    | OTV Canister: NA |

(*) Legend For Data Input

Fire Protection/Deluge: A: fire protection or B: deluge or C: both or N: none

RF System: A: S Band & C Band or B: Ku Band or C: both or N: none

Hazard Level: 1: None or 2: Local Clear or 3: Area Clear or 4: Facility Clear

Others: Y: Yes or N: No or NA: Not Applicable

TD: To Be Determined

113
Detailed Resources Identification

Task No: 26  PERFORM MISSION

Subtask No: < 26.0100> Description: <DEPLOY SPACECRAFT>

Hazard Level(-): 1 None

Activity: ISSUE COMMAND TO RELEASE THE SPACECRAFT IN GEO

Personnel:

<table>
<thead>
<tr>
<th>Vehicle</th>
<th>Control Station</th>
</tr>
</thead>
<tbody>
<tr>
<td>Payload Specialist(s)</td>
<td>(0)</td>
</tr>
<tr>
<td>Engineering</td>
<td>(2)</td>
</tr>
<tr>
<td>Shop</td>
<td>(2)</td>
</tr>
<tr>
<td>Inspector</td>
<td>(0)</td>
</tr>
<tr>
<td>Other</td>
<td>(0)</td>
</tr>
<tr>
<td><strong>Sub Total</strong></td>
<td><strong>(0)</strong></td>
</tr>
</tbody>
</table>

**Total** | **(6)**

Serial Time To Complete: 60 min

Automation Need: (Primary Key)

Automation Secondary Key(s)

**Detailed Facility Resources**

<table>
<thead>
<tr>
<th>Physical Size:</th>
<th>Crane Capacity:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air Lock: 0 0 0 [W/D/H][ft]</td>
<td>0 Ton 0 Ft.Hook Height</td>
</tr>
<tr>
<td>Doors: 0 0 [W/H][ft]</td>
<td></td>
</tr>
<tr>
<td>High Boy: 0 0 0 [W/D/H][ft]</td>
<td>0 Ton 0 Ft.Hook Height</td>
</tr>
</tbody>
</table>

Standard Commercial Power: NA

Cleanliness: OK

E.C.S.: Humidity: 0 +/- 0 %

Power Cutoff: NA

Facility GN2: NA

Fuel/Oxidizer Disposal: NA

Helium Supply: NA

Shop Air: NA

Fire Protection/Deluge(-): N

Shower/Eye Wash: NA

Vacuum: NA

Lightning Protection: NA

Potable Water: NA

Paging: NA

Commercial Telephone: NA

RF System(-): C

OIS: NA

Personnel Airlock: NA

Grounding: NA

Explosion Proof: NA

**Detailed Equipment Resources**

<table>
<thead>
<tr>
<th>Special Tool Kit: NA</th>
<th>Slings: NA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Breakout Boxes: NA</td>
<td>Adapter Cables: NA</td>
</tr>
<tr>
<td>Air Pallet: NA</td>
<td>Work Stands: NA</td>
</tr>
<tr>
<td>NASA Canister: NA</td>
<td>OTV Canister: NA</td>
</tr>
</tbody>
</table>

(*) Legend For Data Input

Fire Protection/Deluge(-): A: fire protection

or B: deluge

or C: both

or N: none

Hazard Level(-): 1: None

or 2: Local Clear

or 3: Area Clear

or 4: Facility Clear

Others(-): Y: Yes

or N: No

NA: Not Applicable

TD: To Be Determined

114
Detailed Resources Identification

Task No: 27 ORIENT AND RTN FROM GEO TO LEO
Subtask No: <27.0100> Description: ISSUE NAV UPDATE
Hazard Level: 1 None
Activity: POCC ISSUE NAV UPDATE—VERIFY COMPUTER RESPOND TO NEW NAV UPDATE

Personnel:

<table>
<thead>
<tr>
<th>Vehicle</th>
<th>Control Station</th>
</tr>
</thead>
<tbody>
<tr>
<td>Payload Specialist(s)</td>
<td>(0)</td>
</tr>
<tr>
<td>Engineering</td>
<td>(0)</td>
</tr>
<tr>
<td>Shop</td>
<td>(0)</td>
</tr>
<tr>
<td>Inspector</td>
<td>(0)</td>
</tr>
<tr>
<td>Other</td>
<td>(0)</td>
</tr>
<tr>
<td>Sub Total</td>
<td>(0)</td>
</tr>
</tbody>
</table>

Serial Time To Complete: 60 min
Total Manhours: 6.0

Automation Need: (Primary Key)
Automation Secondary Key(s):

Detailed Facility Resources

<table>
<thead>
<tr>
<th>Physical Size:</th>
<th>Crane Capacity:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air Lock: (W/D/H)[ft]</td>
<td>0 Ton 0 Ft.Hook Height</td>
</tr>
<tr>
<td>Doors: (W/H)[ft]</td>
<td></td>
</tr>
<tr>
<td>High Bay: (W/D/H)[ft]</td>
<td>0 Ton 0 Ft.Hook Height</td>
</tr>
</tbody>
</table>

Standard Commercial Power: NA
Instrumentation Power [Uninterrupted]: NA
Cleanliness: OK
E.C.S: Humidity: 0 +/- 0 %
Power Cutoff: NA
Facility GN2: NA
Fire Protection/Deluge*: NA
Helium Supply: NA
Shop Air: NA
Closed Circuit Television: NA
Shower/Eye Wash: NA
Vacuum: NA
Fuel/Oxidizer Disposal: NA
Lightning Protection: NA
Potable Water: NA
Paging: NA
Commercial Telephone: NA
RF System*: C
OIS: NA
Personnel Airlock: NA
Grounding: NA
Explosion Proof: NA

Detailed Equipment Resources

<table>
<thead>
<tr>
<th>Special Tool Kit: NA</th>
<th>Slings: NA</th>
<th>OTV Adapter: NA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Breakout Boxes: NA</td>
<td>Adapter Cables: NA</td>
<td>Ground Power Unit: NA</td>
</tr>
<tr>
<td>Air Pallet: NA</td>
<td>Work Stands: NA</td>
<td>Special Hoisting Equip: NA</td>
</tr>
<tr>
<td>NASA Canister: NA</td>
<td>OTV Canister: NA</td>
<td></td>
</tr>
</tbody>
</table>

(*) Legend For Data Input

Fire Protection/Deluge*: A: fire protection or B: deluge or C: both or N: none
RF System*: A: S Band & C Band or B: Ku Band or C: both or N: none
Hazard Level: 1: None or 2: Local Clear or 3: Area Clear or 4: Facility Clear
Others:* Y: Yes or N: No or NA: Not Applicable or TD: To Be Determined

115
Detailed Resources Identification

Task No: 27  ORIENT AND RTN FROM GEO TO LEO

Subtask No: < 27.0200>  Description: <POSITION OTV TO DE-ORBIT>

Hazard Level(s): 1  None

Activity: USING RCS, POSITION OTV FOR RETURN TO LEO

Personnel:

<table>
<thead>
<tr>
<th>Vehicle</th>
<th>Control Station</th>
</tr>
</thead>
<tbody>
<tr>
<td>Payload Specialist(s) (0)</td>
<td>(0)</td>
</tr>
<tr>
<td>Engineering (0)</td>
<td>(2)</td>
</tr>
<tr>
<td>Shop (0)</td>
<td>(2)</td>
</tr>
<tr>
<td>Inspector (0)</td>
<td></td>
</tr>
<tr>
<td>Other (0)</td>
<td></td>
</tr>
</tbody>
</table>

Sub Total (0)  Total (6)

Serial Time To Complete: 60 min  Total Manhours (6.6)

Automation Need: (Primary Key)

Automation Secondary Key(s):  |

Detailed Facility Resources

Physical Size:

| Air Lock | 0 0 0 [W/D/H][ft] | 0 Ton 0 Ft.Hook Height |
| Doors | 0 0 [W/H][ft] |
| High Bay | 0 0 0 [W/D/H][ft] | 0 Ton 0 Ft.Hook Height |

Crane Capacity:

| Standard Commercial Power: NA |
| E.C.S: Humidity: 0 +/- 0% |
| Power Cutoff: NA |
| Facility GN2: NA |
| Shop Air: NA |
| Helium Supply: NA |
| Lightning Protection: NA |
| Potable Water: NA |
| Commercial Telephone: NA |
| Personnel Airlock: NA |
| Instrumentation Power [Uninterrupted]: NA |
| Temperature: 0 +/- 0 F |
| RF System(•): C |
| OIS: NA |
| Grounding: NA |
| Explosion Proof: NA |

Detailed Equipment Resources

| Special Tool Kit: NA |
| Breakout Boxes: NA |
| Air Pallet: NA |
| NASA Canister: NA |
| Slings: NA |
| Adapter Cables: NA |
| Work Stands: NA |
| OTV Canister: NA |

OTV Adapter: NA |

Ground Power Unit: NA |

Special Hoisting Equip: NA

(•) Legend For Data Input

Fire Protection/Deluge(•): A: fire protection
or B: deluge
or C: both
or N: none

Hazard Level: 1: None
or 2: Local Clear
or 3: Area Clear
or 4: Facility Clear

Others: Y: Yes
or N: No
NA: Not Applicable
TD: To Be Determined

116
### Detailed Resources Identification

**Task No:** 27  
**ORIENT AND RTN FROM GEO TO LEO**

| Subtask No: 27.0300 | Description: FIRE ENGINES |

**Hazard Level(s):** 1 None  
**Activity:** VERIFY ENGINE FIRE UNDER COMPUTER CONTROL PER FLIGHT PROCEDURES

### Personnel:

<table>
<thead>
<tr>
<th>Vehicle</th>
<th>Control Station</th>
</tr>
</thead>
<tbody>
<tr>
<td>Payload Specialist(s)</td>
<td>(0)</td>
</tr>
<tr>
<td>Engineering</td>
<td>(0)</td>
</tr>
<tr>
<td>Shop</td>
<td>(2)</td>
</tr>
<tr>
<td>Inspector</td>
<td>(2)</td>
</tr>
<tr>
<td>Other</td>
<td>(6)</td>
</tr>
</tbody>
</table>

**Sub Total:** (6)  
**Total Manhours:** (6.0)

**Serial Time To Complete:** 60 min

**Automation Need:** (Primary Key)

**Automation Secondary Key(s):**

### Detailed Facility Resources

<table>
<thead>
<tr>
<th>Physical Size:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air Lock: 0 0 0 [W/D/H][ft]</td>
</tr>
<tr>
<td>Doors: 0 0 [W/H][ft]</td>
</tr>
<tr>
<td>High Bay: 0 0 0 [W/D/H][ft]</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Crane Capacity:</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 Ton 0 Ft.Hook Height</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Standard Commercial Power: NA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cleanliness: OK</td>
</tr>
<tr>
<td>Closed Circuit Television: NA</td>
</tr>
<tr>
<td>Fuel/Oxidizer Disposal: NA</td>
</tr>
<tr>
<td>Fire Protection/Deluge(*): N</td>
</tr>
<tr>
<td>Lightning Protection: NA</td>
</tr>
<tr>
<td>Commercial Telephone: NA</td>
</tr>
<tr>
<td>Personnel Airlock: NA</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Instrumentation Power [Uninterrupted]: NA</th>
</tr>
</thead>
<tbody>
<tr>
<td>E.C.S: Humidity: 0 +/- 0%</td>
</tr>
<tr>
<td>Power Cutoff: NA</td>
</tr>
<tr>
<td>Facility GN2: NA</td>
</tr>
<tr>
<td>Helium Supply: NA</td>
</tr>
<tr>
<td>Shower/Eye Wash: NA</td>
</tr>
<tr>
<td>Potable Water: NA</td>
</tr>
<tr>
<td>RF System(*): C</td>
</tr>
<tr>
<td>Grounding: NA</td>
</tr>
<tr>
<td>Explosion Proof: NA</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Special Tool Kit: NA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Slings: NA</td>
</tr>
<tr>
<td>OTV Adapter: NA</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Breakout Boxes: NA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adapter Cables: NA</td>
</tr>
<tr>
<td>Ground Power Unit: NA</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Air Pallet: NA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Work Stands: NA</td>
</tr>
<tr>
<td>Special Hoisting Equip: NA</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>NASA Canister: NA</th>
</tr>
</thead>
<tbody>
<tr>
<td>OTV Canister: NA</td>
</tr>
</tbody>
</table>

### Detailed Equipment Resources

<table>
<thead>
<tr>
<th>(*) Legend For Data Input</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fire Protection/Deluge: A: fire protection</td>
</tr>
<tr>
<td>or B: deluge</td>
</tr>
<tr>
<td>or C: both</td>
</tr>
<tr>
<td>or N: none</td>
</tr>
</tbody>
</table>

| RF System: A: S Band & C Band |
| or B: Ku Band |
| or C: both |
| or N: none |

<table>
<thead>
<tr>
<th>Hazard Level: 1: None</th>
</tr>
</thead>
<tbody>
<tr>
<td>or 2: Local Clear</td>
</tr>
<tr>
<td>or 3: Area Clear</td>
</tr>
<tr>
<td>or 4: Facility Clear</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Others: Y: Yes</th>
</tr>
</thead>
<tbody>
<tr>
<td>N: No</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>OIS: NA</th>
</tr>
</thead>
<tbody>
<tr>
<td>TD: To Be Determined</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>NA: Not Applicable</th>
</tr>
</thead>
</table>

117
### Detailed Resources Identification

**Task No:** 27  
**Description:** ORIENT AND RTN FROM GEO TO LEO

**Hazard Level(s):** 1 None

**Activity:** INSERT OTV INTO LEO UNDER COMPUTER CONTROL

#### Personnel:

<table>
<thead>
<tr>
<th>Vehicle</th>
<th>Control Station</th>
</tr>
</thead>
<tbody>
<tr>
<td>Payload Specialist(s)</td>
<td>0</td>
</tr>
<tr>
<td>Engineering</td>
<td>2</td>
</tr>
<tr>
<td>Shop</td>
<td>2</td>
</tr>
<tr>
<td>Inspector</td>
<td>2</td>
</tr>
<tr>
<td>Other</td>
<td>0</td>
</tr>
<tr>
<td><strong>Sub Total</strong></td>
<td>6</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>6</td>
</tr>
</tbody>
</table>

**Serial Time To Complete:** 240 min  
**Total Manhours:** 24.6

#### Automation Need:

- **Primary Key:**
- **Secondary Key(s):**

#### Detailed Facility Resources

<table>
<thead>
<tr>
<th>Physical Size:</th>
<th>Crane Capacity:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air Lock: [W/D/H][ft]</td>
<td>0 Ton 0 Ft.Hook Height</td>
</tr>
<tr>
<td>Doors: [W/H][ft]</td>
<td></td>
</tr>
<tr>
<td>High Bay: [W/D/H][ft]</td>
<td></td>
</tr>
</tbody>
</table>

#### Standard Commercial Power:
- NA

#### Cleanliness:
- OK

#### Closed Circuit Television:
- NA

#### Fuel/Oxidizer Disposal:
- NA

#### Fire Protection/Deluge(*):
- N

#### Lightning Protection:
- N

#### Commercial Telephone:
- NA

#### Personnel Airlock:
- NA

#### Detailed Equipment Resources

<table>
<thead>
<tr>
<th>Special Tool Kit: NA</th>
<th>Slings: NA</th>
<th>OTV Adapter: NA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Breakout Boxes: NA</td>
<td>Adapter Cables: NA</td>
<td>Ground Power Unit: NA</td>
</tr>
<tr>
<td>Air Pallet: NA</td>
<td>Work Stands: NA</td>
<td>Special Hoisting Equip: NA</td>
</tr>
<tr>
<td>NASA Canister: NA</td>
<td>OTV Canister: NA</td>
<td></td>
</tr>
</tbody>
</table>

#### (* Legend For Data Input

- **Fire Protection/Deluge:**
  - A: fire protection
  - B: deluge
  - C: both
  - N: none

- **RF System:**
  - A: S Band & C Band
  - B: Ku Band
  - C: both
  - N: none

- **Hazard Level:**
  - 1: None
  - 2: Local Clear
  - 3: Area Clear
  - 4: Facility Clear

- **Others:**
  - Y: Yes
  - N: No

- **TD:** To Be Determined

---

118
Detailed Resources Identification

Task No: 28 ORBITER AND OTV RENDEZVOUS

Subtask No: <28.0100> Description: POSITION OTV IN STANDOFF ORBIT

Hazard Level: 1 None

Activity: TRANSFER OTV TO RENDEZVOUS ZONE. POSITION ORBITER IN STANDOFF POSITION.

Personnel:

<table>
<thead>
<tr>
<th>Vehicle</th>
<th>Control Station</th>
</tr>
</thead>
<tbody>
<tr>
<td>Payload Specialist(s)</td>
<td>(0)</td>
</tr>
<tr>
<td>Engineering</td>
<td>(0)</td>
</tr>
<tr>
<td>Shop</td>
<td>(0)</td>
</tr>
<tr>
<td>Inspector</td>
<td>(0)</td>
</tr>
<tr>
<td>Other</td>
<td>(0)</td>
</tr>
<tr>
<td><strong>Sub Total</strong></td>
<td><strong>6</strong></td>
</tr>
</tbody>
</table>

Serial Time To Complete: 240 min

Automation Need: (Primary Key)

Automation Secondary Key(s)

Personnel:

<table>
<thead>
<tr>
<th>Vehicle</th>
<th>Control Station</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vehicle</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>6</strong></td>
</tr>
</tbody>
</table>

Total Manhours: 24.0

Detailed Facility Resources

Physical Size:

<table>
<thead>
<tr>
<th>Air Lock</th>
<th>Doors</th>
<th>High Boy</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 x 0 x 0 ft</td>
<td>0 x 0 ft</td>
<td>0 x 0 ft</td>
</tr>
</tbody>
</table>

Crane Capacity:

<table>
<thead>
<tr>
<th>Crane Capacity</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 Ton 0 Ft. Hook Height</td>
</tr>
</tbody>
</table>

Standard Commercial Power: NA

Cleanliness: OK

E.C.S: Humidity: 0 +/- 0 %

Closed Circuit Television: NA

Power Cutoff: NA

Facility GN2: NA

Fuel/Oxidizer Disposal: NA

Heinem Supply: NA

Shop Air: NA

Fire Protection/Deluge: N

Shower/Eye Wash: NA

Vacuum: NA

Lightning Protection: NA

Potable Water: NA

Paging: NA

Commercial Telephone: NA

RF System: C

OIS: NA

Personnel Airlock: NA

Grounding: NA

Explosion Proof: NA

Detailed Equipment Resources

Special Tool Kit: NA

Slings: NA

OTV Adapter: NA

Breakout Boxes: NA

Adapter Cables: NA

Ground Power Unit: NA

Air Pallet: NA

Work Stands: NA

Special Hoisting Equip: NA

NASA Canister: NA

OTV Canister: NA

(* Legend For Data Input

Fire Protection/Deluge: A: fire protection

B: deluge

C: both

N: none

RF System: A: S Band & C Band

B: Ku Band

C: both

N: none

Hazard Level: 1: None

2: Local Clear

3: Area Clear

4: Facility Clear

Others: Y: Yes

N: No

NA: Not Applicable

TD: To Be Determined
### Detailed Resources Identification

**Task No:** 29  
**OTV RECOVERY**

**Subtask No:** < 29.0100>  
**Description:** RETRACT EEC, VERIFY OTV SAFE

**Hazard Level:** 1 None

**Activity:** ISSUE COMMANDS FROM ORBITER OR OTVCC TO RETRACT THE EEC. SHUTDOWN /SAFE OTV FOR LOADING

**Personnel:**

<table>
<thead>
<tr>
<th>Vehicle</th>
<th>Control Station</th>
</tr>
</thead>
<tbody>
<tr>
<td>Payload Specialist(s)</td>
<td>0</td>
</tr>
<tr>
<td>Engineering</td>
<td>0</td>
</tr>
<tr>
<td>Shop</td>
<td>0</td>
</tr>
<tr>
<td>Inspector</td>
<td>0</td>
</tr>
<tr>
<td>Other</td>
<td>0</td>
</tr>
</tbody>
</table>

**Sub Total** 0  
**Total** 6

**Serial Time To Complete:** 120 min  
**Total Manhours:** 12.0

**Automation Need:** (Primary Key)

**Automation Secondary Key(s):**

- (*) Legend For Data Input

| Fire Protection/Deluge(s) | A: fire protection  
| or B: deluge  
| or C: both  
| or N: none  
| RF System(s) | A: S Band & C Band  
| or B: Ku Band  
| or C: both  
| or N: none  
| Hazard Level | 1: None  
| or 2: Local Clear  
| or 3: Area Clear  
| or 4: Facility Clear  
| Others | Y: Yes  
| or N: No  
| NA: Not Applicable  
| TD: To Be Determined  

---

**Detailed Facility Resources**

<table>
<thead>
<tr>
<th>Physical Size</th>
<th>Crane Capacity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air Lock: W/D/H [ft]</td>
<td>0 Ton 0 Ft.Hook Height</td>
</tr>
<tr>
<td>Doors: W/H [ft]</td>
<td>0 Ton 0 Ft.Hook Height</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Standard Commercial Power</th>
<th>Instrumentation Power [Uninterrupted]</th>
</tr>
</thead>
<tbody>
<tr>
<td>NA</td>
<td>NA</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Cleanliness</th>
<th>E.C.S: Humidity</th>
<th>Temperature</th>
</tr>
</thead>
<tbody>
<tr>
<td>0K</td>
<td>0 +/- 0%</td>
<td>0 +/- 0°F</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Closed Circuit Television</th>
<th>Power Cutoff</th>
<th>Facility GN2</th>
</tr>
</thead>
<tbody>
<tr>
<td>NA</td>
<td>NA</td>
<td>NA</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Fuel/Oxidizer Disposal</th>
<th>Helium Supply</th>
<th>Shop Air</th>
</tr>
</thead>
<tbody>
<tr>
<td>NA</td>
<td>NA</td>
<td>NA</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Fire Protection/Deluge(s)</th>
<th>Power Cutoff</th>
<th>Facility GN2</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>NA</td>
<td>NA</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Lighting Protection</th>
<th>Potable Water</th>
<th>Paging</th>
</tr>
</thead>
<tbody>
<tr>
<td>NA</td>
<td>NA</td>
<td>NA</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Commercial Telephone</th>
<th>RF System(s)</th>
<th>OIS</th>
</tr>
</thead>
<tbody>
<tr>
<td>NA</td>
<td>C</td>
<td>NA</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Personnel Airlock</th>
<th>Grounding</th>
<th>Explosion Proof</th>
</tr>
</thead>
<tbody>
<tr>
<td>NA</td>
<td>NA</td>
<td>NA</td>
</tr>
</tbody>
</table>

---

**Detailed Equipment Resources**

<table>
<thead>
<tr>
<th>Special Tool Kit</th>
<th>Slings</th>
<th>OTV Adapter</th>
</tr>
</thead>
<tbody>
<tr>
<td>NA</td>
<td>NA</td>
<td>NA</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Breakout Boxes</th>
<th>Adapter Cables</th>
<th>Ground Power Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>NA</td>
<td>NA</td>
<td>NA</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Air Pallet</th>
<th>Work Stands</th>
<th>Special Hoisting Equip</th>
</tr>
</thead>
<tbody>
<tr>
<td>NA</td>
<td>NA</td>
<td>NA</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>NASA Canister</th>
<th>OTV Canister</th>
<th>NA</th>
</tr>
</thead>
<tbody>
<tr>
<td>NA</td>
<td>NA</td>
<td>NA</td>
</tr>
</tbody>
</table>

---

120
Detailed Resources Identification

Task No: 29  OTV RECOVERY

Subtask No: < 29.0200> Description: <VENT OTV CRYO SYSTEM >

Hazard Level(*): 1  None

Activity: CONNECT ELECTRICAL, MECHANICAL, AND FLUID SYSTEMS TO VENT THE OTV CRYO SYSTEM

Personnel:

Vehicle

Payload Specialist(s) (2)
Engineering (0)
Shop (0)
Inspector (0)
Other (0)

Sub Total (2)

Control Station

Total (2)

Serial Time To Complete: 240 min

Automation Need: (Primary Key)

Automation Secondary Key(s)

Detailed Facility Resources

Physical Size:

Air Lock: 666 [W/D/H][ft]
Doors: 6 [[W/H][ft]]
High Bay: 666 [W/D/H][ft]

Crane Capacity:

0 Ton 6 Ft.Hook Height

Standard Commercial Power: NA

Cleanliness: 0K

Closed Circuit Television: NA

Fuel/Oxidizer Disposal: NA

Fire Protection/Deluge(*): N

Lightning Protection: NA

Commercial Telephone: NA

Personnel Airlock: NA

Instrumentation Power [Uninterrupted]: NA

E.C.S: Humidity: 0 +/- 0 %

Facility GN2: NA

Power Cutoff: NA

Shop Air: NA

Shower/Eye Wash: NA

Potable Water: NA

RF System(*): C

OIS: NA

Explosion Proof: NA

Detailed Equipment Resources

Special Tool Kit: NA

Breakout Boxes: NA

Air Pallet: NA

NASA Canister: NA

Slings: NA

Adapter Cables: NA

Work Stands: NA

OTV Canister: NA

Ground Power Unit: NA

Special Hoisting Equip: NA

OTV Adapter: NA

Grounding: NA

OIS: NA

(*) Legend For Data Input

Fire Protection/Deluge A: fire protection

or B: deluge

or C: both

or N: none

Hazard Level: 1: None

or 2: Local Clear

or 3: Area Clear

or 4: Facility Clear

Others: Y: Yes

N: No

NA: Not Applicable

TD: To Be Determined

121
Detailed Resources Identification

Task No: 29 OTV RECOVERY
Subtask No: < 29.0333>
Description: <OTV CAPTURE>
Activity: USING THE ORBITER GRAPPLE FIXTURE CAPTURE THE OTV AND COMPONENTS

Personnel:

Vehicle
Payload Specialist(s) (2)
Engineering (0)
Shop (0)
Inspector (0)
Other (0)
Sub Total (2)

Total (0)

Serial Time To Complete: 66 min
Total Manhours: (2.0)

Automation Need: (Primary Key)
Automation Secondary Key:

Detailed Facility Resources
Physical Size:
Air Lock: 6 x 6 x 6 [ft] 0 Ton 0 Ft.Hook Height
Doors: 6 6 [ft] 0 Ton 0 Ft.Hook Height
High Boy: 6 6 6 [W/D/H] [ft]

Crane Capacity:

Standard Commercial Power: NA
Instrumentation Power [Uninterrupted]: NA
E.C.S.: Humidity: 0 +/- 0 %
Power Cutoff: NA
Facility GN2: NA
Temperature: 0 +/- 0 F

Fire Protection/Deluge(*): N
Shower/Eye Wash: NA
Vacuum: NA

Lightning Protection: NA
Potable Water: NA
Paging: NA

Commercial Telephone: NA
RF System(*): C
OIS: NA

Personnel Airlock: NA
Grounding: NA
Explosion Proof: NA

Detailed Equipment Resources
Special Tool Kit: NA
Slings: NA
OTV Adapter: NA
Breakout Boxes: NA
Adapter Cables: NA
Ground Power Unit: NA
Air Pallet: NA
Work Stands: NA
Special Hoisting Equip: NA
NASA Canister: NA
OTV Canister: NA

(* Legend For Data Input

Fire Protection/Deluge A: fire protection
or B: deluge
or C: both
or N: none

Hazard Level: 1: None
or 2: Local Clear
or 3: Area Clear
or 4: Facility Clear

Others: Y: Yes
or N: No
NA: Not Applicable
TD: To Be Determined

122
Detailed Resources Identification

Task No: 29  OTV RECOVERY

Subtask No: <29.0400>  Description: <REMOVE AND STORE THE AERO BRAKE>

Hazard Level(s): 1 None

Activity: USING THE SPECIAL TOOL KIT, PERFORM THE EVA TO REMOVE AND STORE THE AERO BRAKE.

Personnel:

<table>
<thead>
<tr>
<th>Vehicle</th>
<th>Control Station</th>
</tr>
</thead>
<tbody>
<tr>
<td>Payload Specialist(s)</td>
<td>3</td>
</tr>
<tr>
<td>Engineering</td>
<td>0</td>
</tr>
<tr>
<td>Shop</td>
<td>0</td>
</tr>
<tr>
<td>Inspector</td>
<td>0</td>
</tr>
<tr>
<td>Other</td>
<td>0</td>
</tr>
<tr>
<td><strong>Sub Total</strong></td>
<td><strong>3</strong></td>
</tr>
</tbody>
</table>

Serial Time To Complete: 180 min  Total Manhours: 9.6

Automation Need: (Primary Key)

Automation Secondary Key(s):  

Detailed Facility Resources

<table>
<thead>
<tr>
<th>Physical Size:</th>
<th>Crane Capacity:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air Lock:</td>
<td>0 Ton 0 Ft.Hook Height</td>
</tr>
<tr>
<td>Doors:</td>
<td>0 Ton 0 Ft.Hook Height</td>
</tr>
<tr>
<td>High Bay:</td>
<td>0 Ton 0 Ft.Hook Height</td>
</tr>
</tbody>
</table>

Standard Commercial Power: NA  Instrumentation Power [Uninterrupted]: NA

Cleanliness: OK  E.C.S.: Humidity: 0 +/- 0 %  Temperature: 0 +/- 0 F

Closed Circuit Television: NA  Power Cutoff: NA  Facility GN2: NA

Fuel/Oxidizer Disposal: NA  Helium Supply: NA  Shop Air: NA


Lightning Protection: NA  Potable Water: NA  Paging: NA

Commercial Telephone: NA  RF System(♦): C  OIS: NA

Personnel Airlock: NA  Grounding: NA  Explosion Proof: NA

Detailed Equipment Resources

<table>
<thead>
<tr>
<th>Special Tool Kit: NA</th>
<th>Slings: NA</th>
<th>OTV Adapter: NA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Breakout Boxes: NA</td>
<td>Adapter Cables: NA</td>
<td>Ground Power Unit: NA</td>
</tr>
<tr>
<td>Air Pallet: NA</td>
<td>Work Stands: NA</td>
<td>Special Hoisting Equip: NA</td>
</tr>
<tr>
<td>NASA Canister: NA</td>
<td>OTV Canister: NA</td>
<td></td>
</tr>
</tbody>
</table>

(♦) Legend For Data Input

Fire Protection/Deluge= A: fire protection  RF System= A: S Band & C Band
  or B: deluge  or B: Ku Band
  or C: both  or C: both
  or N: none  or N: none

Hazard Level: 1: None  Others: Y: Yes
  or 2: Local Clear  N: No
  or 3: Area Clear  NA: Not Applicable
  or 4: Facility Clear  TD: To Be Determined

123
Detailed Resources Identification

Task No: 29 OTV RECOVERY

Subtask No: < 29.0500> Description: <LOAD OTV IN THE ORBITER BAY >

Hazard Level(s): 1 None

Activity: LOAD AND SECURE THE OTV INTO THE ORBITER PAYLOAD BAY. CLOSE ORBITER PAYLOAD BAY DOORS.

Personnel:

<table>
<thead>
<tr>
<th>Vehicle</th>
<th>Control Station</th>
</tr>
</thead>
<tbody>
<tr>
<td>Payload Specialist(s)</td>
<td>(3)</td>
</tr>
<tr>
<td>Engineering</td>
<td>(5)</td>
</tr>
<tr>
<td>Shop</td>
<td>(5)</td>
</tr>
<tr>
<td>Inspector</td>
<td>(5)</td>
</tr>
<tr>
<td>Other</td>
<td>(5)</td>
</tr>
</tbody>
</table>

Sub Total: (3) Total: (3)

Serial Time To Complete: 120 min

Automation Need: (Primary Key)

Automation Secondary Key(s): 

Detailed Facility Resources

Physical Size:
- Air Lock: 668 [W/D/H][ft]
- Doors: 6 [DOORS][ft]
- High Bay: 666 [W/D/H][ft]

Crane Capacity:
- 1 Ton 6 Ft.Hook Height

Standard Commercial Power: NA

Cleanliness: OK

E.C.S.: Humidity: 

- 0 +/- 0 %

Power Cutoff: NA

Facility GN2: NA

Shop Air: NA

Closed Circuit Television: NA

Lighting Protection: NA

Commerical Telephone: NA

Personnel Airlock: NA

Grounding: NA

Explosion Proof: NA

Detailed Equipment Resources

Special Tool Kit: NA

Slings: NA

OTV Adapter: NA

Breakout Boxes: NA

Adapter Cables: NA

Ground Power Unit: NA

Air Pallet: NA

Work Stands: NA

Special Hoisting Equip: NA

NASA Canister: NA

OTV Canister: NA

(*) Legend For Data Input

Fire Protection/Deluge:* A: fire protection
or B: deluge
or C: both
or N: none

RF System:* A: S Band & C Band
or B: Ku Band
or C: both
or N: none

Hazard Level:* 1: None
or 2: Local Clear
or 3: Area Clear
or 4: Facility Clear

Others:* Y: Yes
or N: No

124
Detailed Resources Identification

Task No: 29 OTV RECOVERY

Subtask No: <29.0000>

Description: <PREPARE OTV FOR DEORBIT>

Hazard Level(*): 1 None
Activity: SECURE OTV FOR DEORBIT

Personnel:

<table>
<thead>
<tr>
<th>Vehicle</th>
<th>Control Station</th>
</tr>
</thead>
<tbody>
<tr>
<td>Payload Specialist(s)</td>
<td>(2)</td>
</tr>
<tr>
<td>Engineering</td>
<td>(0)</td>
</tr>
<tr>
<td>Shop</td>
<td>(0)</td>
</tr>
<tr>
<td>Inspector</td>
<td>(0)</td>
</tr>
<tr>
<td>Other</td>
<td>(0)</td>
</tr>
<tr>
<td><strong>Sub Total</strong></td>
<td><strong>(2)</strong></td>
</tr>
</tbody>
</table>

Serial Time To Complete: 180 min
Total Manhours: 6.0

Automation Need: (Primary Key)
Automation Secondary Key(s):

Detailed Facility Resources

<table>
<thead>
<tr>
<th>Physical Size:</th>
<th>Crane Capacity:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air Lock: 000 [W/D/H][ft]</td>
<td>0 Ton 0 Ft.Hook Height</td>
</tr>
<tr>
<td>Doors: 000 [W/H][ft]</td>
<td>000 [W/D/H][ft]</td>
</tr>
<tr>
<td>High Bay: 000 [W/D/H][ft]</td>
<td>0 Ton 0 Ft.Hook Height</td>
</tr>
</tbody>
</table>

Standard Commercial Power: NA
Instrumentation Power [Uninterrupted]: NA

Cleanliness: OK
E.C.S: Humidity: 0 +/-% 0 %
Temperature: 0 +/-% 0 F

Closed Circuit Television: NA
Power Cutoff: NA
Facility GN2: NA

Fuel/Oxidizer Disposal: NA
Helium Supply: NA
Shop Air: NA

Fire Protection/Deluge(*): N
Shower/Eye Wash: NA
Vacuum: NA

Lightning Protection: NA
Potable Water: NA
Paging: NA

Commercial Telephone: NA
RF System(*): C
OIS: NA

Personnel Airlock: NA
Grounding: NA
Explosion Proof: NA

Detailed Equipment Resources

| Special Tool Kit: NA     | Slings: NA         |
| Breakout Boxes: NA       | Adapter Cables: NA |
| Air Pallet: NA           | Work Stands: NA    |
| NASA Canister: NA        | OTV Canister: NA   |

(*) Legend For Data Input

Fire Protection/Deluge= A: fire protection
or B: deluge
or C: both
or N: none

Hazard Level:= 1: None
or 2: Local Clear
or 3: Area Clear
or 4: Facility Clear

RF System= A: S Band & C Band
or B: Ku Band
or C: both
or N: none

Others:= Y: Yes
N: No
NA: Not Applicable
TD: To Be Determined
**Detailed Resources Identification**

**Task No:** 36
**RETURN TO LAUNCH SITE**

**Subtask No:** < 36.0100>
**Description:** <DE-ORBIT>

**Hazard Level(s):** 1 None
**Activity:** RE-ENTER EARTH'S ATMOSPHERE

**Personnel:**

<table>
<thead>
<tr>
<th>Vehicle</th>
<th>Control Station</th>
</tr>
</thead>
<tbody>
<tr>
<td>Payload Specialist(s)</td>
<td>(0)</td>
</tr>
<tr>
<td>Engineering</td>
<td>(0)</td>
</tr>
<tr>
<td>Shop</td>
<td>(0)</td>
</tr>
<tr>
<td>Inspector</td>
<td>(0)</td>
</tr>
<tr>
<td>Other</td>
<td>(0)</td>
</tr>
<tr>
<td><strong>Sub Total</strong></td>
<td>(0)</td>
</tr>
</tbody>
</table>

**Serial Time To Complete:** 0 min
**Total Manhours:** (0.0)

**Automation Need:** (Primary Key)

**Automation Secondary Key(s):**

**Detailed Facility Resources**

- **Physical Size:**
  - Air Lock: 0 0 0 [W/D/H][ft]
  - Doors: 0 0 [W/H][ft]
  - High Bay: 0 0 0 [W/D/H][ft]

- **Crane Capacity:**
  - 0 Ton 0 Ft. Hook Height

- **Standard Commercial Power:** NA
- **Instrumentation Power [Uninterrupted]:** NA

- **Cleanliness:** OK
- **E.C.S.:** Humidity: 0 +/- 0 %
- **Power Cutoff:** NA
- **Facility GN2:** NA

- **Closed Circuit Television:** NA
- **Power:** NA
- **Shop Air:** NA

- **Fuel/Oxidizer Disposal:** NA
- **Helium Supply:** NA
- **Vacuum:** NA

- **Lightning Protection:** NA
- **Potable Water:** NA
- **Paging:** NA

- **Commercial Telephone:** NA
- **RF System:** N
- **OIS:** NA

- **Personnel Airlock:** NA
- **Grounding:** NA
- **Explosion Proof:** NA

**Detailed Equipment Resources**

- **Special Tool Kit:** NA
- **Slings:** NA
- **OTV Adapter:** NA

- **Breakout Boxes:** NA
- **Adapter Cables:** NA
- **Ground Power Unit:** NA

- **Air Pallet:** NA
- **Work Stands:** NA
- **Special Hoisting Equip:** NA

- **NASA Canister:** NA
- **OTV Canister:** NA

**Legend For Data Input**

- **Fire Protection/Deluge:**
  - A: fire protection
  - B: deluge
  - C: both

- **Hazard Level:**
  - 1: None
  - 2: Local Clear
  - 3: Area Clear
  - 4: Facility Clear

- **Others:**
  - Y: Yes
  - N: No

- **TD:** To Be Determined

126
Detailed Resources Identification

Task No: 30   RETURN TO LAUNCH SITE

Subtask No: < 30.0200>   Description: <LAND AT KSC>
Hazard Level(*): 1   None
Activity: LAND SHUTTLE AT KSC SHUTTLE LANDING FACILITY

Personnel:

- Vehicle
  - Payload Specialist(s) (0)
  - Engineering (0)
  - Shop (0)
  - Inspector (0)
  - Other (0)
  - Sub Total (0)

- Control Station
  - (0)

Serial Time To Complete: 0 min
Total Manhours (0.0)

Automation Need: (Primary Key)
Automation Secondary Key(s):

Detailed Facility Resources

- Physical Size:
  - Air Lock: 0 0 0 [W/D/H][ft]
  - Doors: 0 0 [W/H][ft]
  - High Bay: 0 0 0 [W/D/H][ft]

- Crane Capacity:
  - 0 Ton 0 Ft.Hook Height

Standard Commercial Power: NA
Instrumentation Power [Uninterrupted]: NA

Cleanliness: OK
E.C.S.: Humidity: 0 +/- 0 %
Temperature: 0 +/- 0 F

Closed Circuit Television: NA
Power Cutoff: NA
Facility GN2: NA

Fuel/Oxidizer Disposal: NA
Helium Supply: NA
Shop Air: NA

Fire Protection/Deluge(*): N
Shower/Eye Wash: NA
Vacuum: NA

Lightning Protection: NA
Potable Water: NA
Paging: NA

Commercial Telephone: NA
RF System(*): N
OIS: NA

Personnel Airlock: NA
Grounding: NA
Explosion Proof: NA

Detailed Equipment Resources

- Special Tool Kit: NA
- Slings: NA
- OTV Adapter: NA

- Breakout Boxes: NA
- Adapter Cables: NA
- Ground Power Unit: NA

- Air Pallet: NA
- Work Stands: NA
- Special Hoisting Equip: NA

- NASA Canister: NA
- OTV Canister: NA

(*) Legend For Data Input

- Fire Protection/Deluge: A: fire protection
  or B: deluge
  or C: both
  or N: none

- Hazard Level: 1: None
  or 2: Local Clear
  or 3: Area Clear
  or 4: Facility Clear

- Others: Y: Yes
  or N: No

- TD: To Be Determined

127
Detailed Resources Identification

Task No: 31  REMOVE OTV FROM ORBITER

Subtask No: (31.0166)  Description: MOVE ORBITER TO OPF

Hazard Level(\(\ast\)): 1  None

Activity: MOVE ORBITER TO OPF FOR REMOVAL OF OTV AND OR COMPONENTS

Personnel:

<table>
<thead>
<tr>
<th>Vehicle</th>
<th>Control Station</th>
</tr>
</thead>
<tbody>
<tr>
<td>Payload Specialist(s)</td>
<td>0</td>
</tr>
<tr>
<td>Engineering</td>
<td>0</td>
</tr>
<tr>
<td>Shop</td>
<td>0</td>
</tr>
<tr>
<td>Inspector</td>
<td>0</td>
</tr>
<tr>
<td>Other</td>
<td>0</td>
</tr>
<tr>
<td><strong>Sub Total</strong></td>
<td><strong>0</strong></td>
</tr>
</tbody>
</table>

Serial Time To Complete: 120 min

Automation Need: (Primary Key)

Automation Secondary Key(s): 

Detailed Facility Resources

Physical Size:
- Air Lock: 0 0 6 [W/D/H][ft]
- Doors: 0 0 [W/H][ft]
- High Bay: 0 0 6 [W/D/H][ft]

Crane Capacity:
- 0 Ton 6 Ft.Hook Height

Instrumentation Power [Uninterrupted]: NA

Standard Commercial Power: Y

Cleanliness: 100K

E.C.S.: Humidity: 50 +/- 5 %

Closed Circuit Television: NA

Power Cutoff: NA

Fire Protection/Deluge\(\ast\): A

Helium Supply: NA

Facility GN2: NA

Lightning Protection: Y

Power Cutoff: NA

Potable Water: NA

Shop Air: NA

Commerical Telephone: NA

Shower/Eye Wash: NA

Shop Air: NA

Personnel Airlock: NA

OIS: NA

Grounding: NA

Explosion Proof: NA

Detailed Equipment Resources

<table>
<thead>
<tr>
<th>Special Tool Kit</th>
<th>Slings</th>
<th>OTV Adapter</th>
</tr>
</thead>
<tbody>
<tr>
<td>Breakout Boxes: NA</td>
<td>Adapter Cables: NA</td>
<td>Ground Power Unit: NA</td>
</tr>
<tr>
<td>Air Pallet: NA</td>
<td>Work Stands: NA</td>
<td>Special Hoisting Equip: NA</td>
</tr>
<tr>
<td>NASA Canister: NA</td>
<td>OTV Canister: NA</td>
<td></td>
</tr>
</tbody>
</table>

(\(\ast\)) Legend For Data Input

Fire Protection/Deluge\(\ast\): A: fire protection
or B: deluge
or C: both
or N: none

Hazard Level: 1: None
or 2: Local Clear
or 3: Area Clear
or 4: Facility Clear

Others: Y: Yes
or N: No
or NA: Not Applicable
or TD: To Be Determined

128
Detailed Resources Identification

Task No: 31  REMOVE OTV FROM ORBITER

Subtask No: < 31.0200>  Description: REMOVE OTV

Hazard Level*: 2  Local Clear

Activity: LOWER STRONGBACK INTO POSITION—REMOVE HOLDDOWN HARDWARE—ATTACH OTV TO STRONGBACK—LIFT OTV FROM THE ORBITER PAYLOAD BAY

Personnel:

<table>
<thead>
<tr>
<th>Vehicle</th>
<th>Control Station</th>
</tr>
</thead>
<tbody>
<tr>
<td>Payload Specialist(s) (6)</td>
<td>(8)</td>
</tr>
<tr>
<td>Engineering</td>
<td>(6)</td>
</tr>
<tr>
<td>Shop</td>
<td>(8)</td>
</tr>
<tr>
<td>Inspector</td>
<td>(2)</td>
</tr>
<tr>
<td>Other</td>
<td>(0)</td>
</tr>
</tbody>
</table>

Sub Total (8) Total (8)

Serial Time To Complete: 180 min  Total Manhours (24.0)

Automation Need: (Primary Key)

Automation Secondary Key(s):  

Detailed Facility Resources

Physical Size:

|----------------------|-----------------|---------------------|---------------------------------------|

Standard Commercial Power: Y

Cleanliness: 100K

Closed Circuit Television: NA

Fuel/Oxidizer Disposal: Y

Fire Protection/Deluge*: A

Lightning Protection: Y

Commercial Telephone: Y

Personnel Airlock: Y

Instrumentation Power [Uninterrupted]: NA

Temperature: 79°F ± 5°F

Facility GN2: NA

Shop Air: NA

Shower/Eye Wash: NA

Vacuum: NA

Paging: Y

OIS: NA

Explosion Proof: Y

Detailed Equipment Resources

Special Tool Kit: Y

Slings: Y

OTV Adapter: Y

Breakout Boxes: NA

Adapter Cables: NA

Ground Power Unit: NA

Air Pallet: NA

Work Stands: NA

Special Hoisting Equip: NA

NASA Canister: NA

OTV Canister: NA

(*) Legend For Data Input

Fire Protection/Deluge* = A: fire protection or B: deluge or C: both or N: none

RF System* = A: S Band & C Band or B: Ku Band or C: both or N: none

Hazard Level* = 1: None or 2: Local Clear or 3: Area Clear or 4: Facility Clear

Others* = Y: Yes or N: No or TD: To Be Determined

NA: Not Applicable

129
Detailed Resources Identification

Task No: 31  REMOVE OTV FROM ORBITER

Subtask No: < 31.0300> Description: <INSTALL OTV IN TRANSPORTER>
Hazard Level(*): 2 Local Clear
Activity: PLACE OTV INTO CANISTER AND SECURE FOR TRANSPORT

Personnel:

<table>
<thead>
<tr>
<th>Vehicle</th>
<th>Control Station</th>
</tr>
</thead>
<tbody>
<tr>
<td>Payload Specialist(s) (0)</td>
<td>(0)</td>
</tr>
<tr>
<td>Engineering</td>
<td>(1)</td>
</tr>
<tr>
<td>Shop</td>
<td>(5)</td>
</tr>
<tr>
<td>Inspector</td>
<td>(2)</td>
</tr>
<tr>
<td>Other</td>
<td>(0)</td>
</tr>
<tr>
<td>Sub Total</td>
<td>(8)</td>
</tr>
</tbody>
</table>

Serial Time To Complete: 120 min  Total Manhours (16.0)

Automation Need: (Primary Key)

Automation Secondary Key(s):

Detailed Facility Resources

<table>
<thead>
<tr>
<th>Physical Size:</th>
<th>Crane Capacity:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air Lock: 0 0 0 [W/D/H][ft]</td>
<td>0 Ton 0 Ft.Hook Height</td>
</tr>
<tr>
<td>Doors: 0 0 [W/H][ft]</td>
<td></td>
</tr>
<tr>
<td>High Bay: 0 0 0 [W/D/H][ft]</td>
<td></td>
</tr>
</tbody>
</table>

Standard Commercial Power: Y  Instrumentation Power [Uninterrupted]: NA
Cleanliness: 100K  E.C.S: Humidity: Temperature:
50 +/- 5 %  70 +/- 5 F
Closed Circuit Television: NA  Power Cutoff: NA  Facility GN2: NA
Fuel/Oxidizer Disposal: Y  Helium Supply: NA  Shop Air: NA
Fire Protection/Deluge(*): A  Shower/Eye Wash: NA  Vacuum: NA
Lightning Protection: Y  Potable Water: NA  Paging: Y
Commercial Telephone: Y  RF System(*): N  OIS: NA
Personnel Airlock: Y  Grounding: Y  Explosion Proof: Y

Detailed Equipment Resources

<table>
<thead>
<tr>
<th>Special Tool Kit: Y</th>
<th>Slings: Y</th>
<th>OTV Adapter: Y</th>
</tr>
</thead>
<tbody>
<tr>
<td>Breakout Boxes: NA</td>
<td>Adapter Cables: NA</td>
<td>Ground Power Unit: NA</td>
</tr>
<tr>
<td>Air Pallet: NA</td>
<td>Work Stands: NA</td>
<td>Special Hoisting Equip: NA</td>
</tr>
<tr>
<td>NASA Canister: NA</td>
<td>OTV Canister: Y</td>
<td></td>
</tr>
</tbody>
</table>

(* Legend For Data Input

Fire Protection/Deluge= A: fire protection  RF System= A: S Band & C Band
or B: deluge  or B: Ku Band
or C: both  or C: both
or N: none  or N: none

Hazard Level: 1: None  Others:= Y: Yes
2: Local Clear  or N: No
3: Area Clear  NA: Not Applicable
4: Facility Clear  TD: To Be Determined
Detailed Resources Identification

Task No: 34  MOVE TO PROCESSING FACILITY

Hazard Level(*): 1 None
Activity: TRANSPORT THE OTV TO THE OTV PROCESSING FACILITY

Personnel:

<table>
<thead>
<tr>
<th>Vehicle</th>
<th>Control Station</th>
</tr>
</thead>
<tbody>
<tr>
<td>Payload Specialist(s)</td>
<td>(0)</td>
</tr>
<tr>
<td>Engineering</td>
<td>(1)</td>
</tr>
<tr>
<td>Shop</td>
<td>(3)</td>
</tr>
<tr>
<td>Inspector</td>
<td>(1)</td>
</tr>
<tr>
<td>Other</td>
<td>(0)</td>
</tr>
</tbody>
</table>

Sub Total  (5) Total (5)

Serial Time To Complete: 120 min Total Manhours (10.0)

Automation Need: (Primary Key)
Automation Secondary Key(s):

Detailed Facility Resources

<table>
<thead>
<tr>
<th>Physical Size:</th>
<th>Crane Capacity:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air Lock: 000 W/D/H[ft]</td>
<td>0 Ton 0 Ft.Hook Height</td>
</tr>
<tr>
<td>Doors: 000 W/H[ft]</td>
<td></td>
</tr>
<tr>
<td>High Bay: 000 W/D/H[ft]</td>
<td></td>
</tr>
</tbody>
</table>

Standard Commercial Power: Y Instrumentation Power [Uninterrupted]: NA
Cleanliness: 100K E.C.S: Humidity: Temperature: 70 +/- 5 F
Closed Circuit Television: NA Power Cutoff: NA Facility GN2: NA
Fuel/Oxidizer Disposal: Y Helium Supply: NA Shop Air: NA
Fire Protection/Deluge(*): A Shower/Eye Wash: Y Vacuum: NA
Lightning Protection: Y Potable Water: Y Paging: Y
Commercial Telephone: Y RF System(*): N OIS: NA
Personnel Airlock: Y Grounding: Y Explosion Proof: Y

Detailed Equipment Resources

<table>
<thead>
<tr>
<th>Special Tool Kit: NA</th>
<th>Slings: NA</th>
<th>OTV Adapter: NA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Breakout Boxes: NA</td>
<td>Adapter Cables: NA</td>
<td>Ground Power Unit: NA</td>
</tr>
<tr>
<td>Air Pallet: NA</td>
<td>Work Stands: NA</td>
<td>Special Hoisting Equip: NA</td>
</tr>
<tr>
<td>NASA Canister: NA</td>
<td>OTV Canister: Y</td>
<td></td>
</tr>
</tbody>
</table>

(*) Legend For Data Input

Fire Protection/Deluge= A: fire protection  RF System= A: S Band & C Band
or B: deluge or B: Ku Band
or C: both or C: both
or N: none or N: none

Hazard Level:= 1: None Others:= Y: Yes
or 2: Local Clear  N: No
or 3: Area Clear or 4: Facility Clear NA: Not Applicable
or 4: Facility Clear TD: To Be Determined

131
Detailed Resources Identification

Task No: 34  MOVE TO PROCESSING FACILITY

Subtask No: 34.0266  Description: REMOVE OTV FROM TRANSPORTER

Hazard Level(*)  2: Local Clear

Activity: ATTACH O/H CRANE AND SLINGS. REMOVE HOLDDOWN HARDWARE. REMOVE OTV FROM THE TRANSPORTER

Personnel:

<table>
<thead>
<tr>
<th>Vehicle</th>
<th>Control Station</th>
</tr>
</thead>
<tbody>
<tr>
<td>Payload Specialist(s)</td>
<td>0</td>
</tr>
<tr>
<td>Engineering</td>
<td>0</td>
</tr>
<tr>
<td>Shop</td>
<td>0</td>
</tr>
<tr>
<td>Inspector</td>
<td>0</td>
</tr>
<tr>
<td>Other</td>
<td>0</td>
</tr>
</tbody>
</table>

Sub Total: 8  Total: 8

Serial Time To Complete: 300 min  Total Manhours: 40.0

Automation Need: (Primary Key)

Automation Secondary Key(s)

Detailed Facility Resources

Physical Size:

<table>
<thead>
<tr>
<th>Air Lock</th>
<th>Doors</th>
<th>High Bay</th>
</tr>
</thead>
<tbody>
<tr>
<td>46 46 50</td>
<td>0 0</td>
<td>6 6 6</td>
</tr>
</tbody>
</table>

Crane Capacity:

| Crane Capacity | 10 Ton 45 Ft.Hook Height | 0 Ton 0 Ft.Hook Height |

Standard Commercial Power: Y

Cleanliness: 100K

E.C.S.: Humidity: 50 +/- 5%  Temperature: 78 +/- 5 F

Closed Circuit Television: NA

Power Cutoff: NA

Facility GN2: NA

Fuel/Oxidizer Disposal: Y

Helium Supply: NA

Shop Air: NA

Fire Protection/Deluge(*): A

Shower/Eye Wash: Y

Vacuum: NA

Lightning Protection: Y

Potable Water: Y

Paging: Y

Commercial Telephone: Y

RF System(*): N

OIS: NA

Personnel Airlock: Y

Grounding: Y

Explosion Proof: Y

Detailed Equipment Resources

Special Tool Kit: NA

Slings: Y

OTV Adapter: Y

Breakout Boxes: NA

Adapter Cables: NA

Ground Power Unit: NA

Air Pallet: NA

Work Stands: NA

Special Hoisting Equip: Y

NASA Canister: NA

OTV Canister: Y

(*) Legend For Data Input

Fire Protection/Deluge: A: fire protection  RF System: A: S Band & C Band

or B: deluge  or B: Ku Band

or C: both  or C: both

or N: none  or N: none

Hazard Level: 1: None

Others: Y: Yes  N: No

or 2: Local Clear

or 3: Area Clear

or 4: Facility Clear

NA: Not Applicable

TD: To Be Determined
Detailed Resources Identification

Task No: 34  MOVE TO PROCESSING FACILITY

Subtask No: <34.0300>  Description: <INSTALL OTV IN WORKSTAND>

Hazard Level(s): 2  Local Clear
Activity: INSTALL/SECURE OTV IN THE OTV WORKSTAND

Personnel:

<table>
<thead>
<tr>
<th>Vehicle</th>
<th>Control Station</th>
</tr>
</thead>
<tbody>
<tr>
<td>Payload Specialist(s)</td>
<td>0</td>
</tr>
<tr>
<td>Engineering</td>
<td>1</td>
</tr>
<tr>
<td>Shop</td>
<td>5</td>
</tr>
<tr>
<td>Inspector</td>
<td>2</td>
</tr>
<tr>
<td>Other</td>
<td>0</td>
</tr>
</tbody>
</table>

Sub Total = 8

Serial Time To Complete: 240 min  Total Manhours (32.0)

Automation Need: (Primary Key)

Automation Secondary Key(s):

Detailed Facility Resources

Physical Size:
- Air Lock: 0 x 0 x 0 [W/D/H][ft]
- Doors: 35 x 45 [W/H][ft]
- High Bay: 70 x 100 x 85 [W/D/H][ft]

Crane Capacity:
- 0 Ton 0 Ft.Hook Height

Standard Commercial Power: Y
Cleanliness: 100K
Closed Circuit Television: NA
Fuel/Oxidizer Disposal: Y
Fire Protection/Deluge:* A
Lightning Protection: Y
Commerical Telephone: Y
Personnel Airlock: Y

Detailed Equipment Resources

Special Tool Kit: Y
Breakout Boxes: NA
Air Pallet: NA
NASA Canister: NA

Control Cables: Y
Adapter Cables: NA
Work Stands: Y
Special Hoisting Equip: Y

Fire Protection/Deluge:* A: fire protection
or B: deluge
or C: both
or N: none

Hazard Level:= 1: None
or 2: Local Clear
or 3: Area Clear
or 4: Facility Clear

Others:* Y: Yes
or N: No
or NA: Not Applicable
or TD: To Be Determined

(*) Legend For Data Input

Fire Protection/Deluge- A: fire protection
or B: deluge
or C: both
or N: none

RF System- A: S Band & C Band
or B: Ku Band
or C: both
or N: none

Facility GN2: NA
Shop Air: NA
Vacuum: NA
Paging: Y

Legend For Data Input

- Fire Protection/Deluge- A: fire protection
- or B: deluge
- or C: both
- or N: none

- Hazard Level:= 1: None
- or 2: Local Clear
- or 3: Area Clear
- or 4: Facility Clear

- Others:* Y: Yes
- or N: No
- or NA: Not Applicable
- or TD: To Be Determined

133
### Detailed Resources Identification

**Task No:** 34  **MOVE TO PROCESSING FACILITY**

**Subtask No:** 34.0400  **Description:** <REMOVE BATTERIES AND ORDNANCE>

**Hazard Level(s):** 2 Local Clear

**Activity:** REMOVE BATTERY ACCESS PANELS AND REMOVE BATTERIES, REMOVE ALL UNUSED ORDNANCE

**Personnel:**

<table>
<thead>
<tr>
<th>Vehicle</th>
<th>Control Station</th>
</tr>
</thead>
<tbody>
<tr>
<td>Payload Specialist(s)</td>
<td>(0)</td>
</tr>
<tr>
<td>Engineering</td>
<td>(0)</td>
</tr>
<tr>
<td>Shop</td>
<td>(4)</td>
</tr>
<tr>
<td>Inspector</td>
<td>(1)</td>
</tr>
<tr>
<td>Other</td>
<td>(0)</td>
</tr>
<tr>
<td><strong>Sub Total</strong></td>
<td>(6)</td>
</tr>
</tbody>
</table>

**Serial Time To Complete:** 186 min  **Total Manhours:** 18.0

**Automation Need:** (Primary Key)

**Automation Secondary Key(s):**

### Detailed Facility Resources

**Physical Size:**

<table>
<thead>
<tr>
<th>Air Lock: 0 x 0 x 0 [W/D/H][ft]</th>
<th>0 Ton 6 Ft Hook Height</th>
</tr>
</thead>
<tbody>
<tr>
<td>Doors: 0 x 0 [W/H][ft]</td>
<td>0 Ton 6 Ft Hook Height</td>
</tr>
<tr>
<td>High Bay: 70 x 100 x 85 [W/D/H][ft]</td>
<td>0 Ton 6 Ft Hook Height</td>
</tr>
</tbody>
</table>

**Standard Commercial Power:** Y

**Cleanliness:** 100K

**Closed Circuit Television:** NA

**Fuel/Oxidizer Disposal:** Y

**Fire Protection/Deluge(s):** A

**Lightning Protection:** Y

**Commercial Telephone:** Y

**Personnel Airlock:** Y

### Detailed Equipment Resources

**Special Tool Kit:** Y

**Breakout Boxes:** NA

**Air Pallet:** NA

**NASA Canister:** NA

**Special Hoisting Equip:** NA

**Slings:** NA

**Adapter Cables:** NA

**Ground Power Unit:** NA

**Work Stands:** Y

**OTV Canister:** NA

**OTV Adapter:** NA

**Special Hoisting Equip:** NA

**Grounding:** Y

**Explosion Proof:** Y

### (*) Legend For Data Input

**Fire Protection/Deluge:**

- A: fire protection
- B: deluge
- C: both
- N: none

**Hazard Level:**

- 1: None
- 2: Local Clear
- 3: Area Clear
- 4: Facility Clear

**Others:**

- Y: Yes
- N: No
- NA: Not Applicable
- TD: To Be Determined

---

134
Detailed Resources Identification

Task No: 34 MOVE TO PROCESSING FACILITY

Subtask No: < 34.0500> Description: <PURGE AND LEAK CHECK OTV CRYO >

Hazard Level(*): 3 Area Clear
Activity: CONNECT OTV CRYO LOAD PURGE CART, PURGE OTV CRYO SYSTEM AND PERFORM LEAK CHECKS

Personnel:

<table>
<thead>
<tr>
<th>Vehicle</th>
<th>Control Station</th>
</tr>
</thead>
<tbody>
<tr>
<td>Payload Specialist(s)</td>
<td>(0)</td>
</tr>
<tr>
<td>Engineering</td>
<td>(0)</td>
</tr>
<tr>
<td>Shop</td>
<td>(2)</td>
</tr>
<tr>
<td>Inspector</td>
<td>(1)</td>
</tr>
<tr>
<td>Other</td>
<td>(0)</td>
</tr>
<tr>
<td>Sub Total</td>
<td>(4)</td>
</tr>
</tbody>
</table>

Total Manhours: 12.0

Serial Time To Complete: 180 min

Automation Need: (Primary Key)

Automation Secondary Key(s):

Detailed Facility Resources

<table>
<thead>
<tr>
<th>Physical Size:</th>
<th>Crane Capacity:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air Lock: 0 0 0 [W/D/H][ft]</td>
<td>0 Ton 0 Ft.Hook Height</td>
</tr>
<tr>
<td>Doors: 0 0 [W/H][ft]</td>
<td></td>
</tr>
<tr>
<td>High Bay: 70 100 85 [W/D/H][ft]</td>
<td>0 Ton 0 Ft.Hook Height</td>
</tr>
</tbody>
</table>

Standard Commercial Power: Y Instrumentation Power [Uninterrupted]: NA

Cleanliness: 100K E.C.S.: Humidity: 50 +/- 5% Temperature: 70 +/- 5 F

Closed Circuit Television: Y Power Cutoff: NA Facility GN2: Y

Fuel/Oxidizer Disposal: Y Helium Supply: Y Shop Air: Y


Lightning Protection: Y Potable Water: Y Paging: Y

Commerical Telephone: Y RF System(*): N OIS: NA

Personnel Airlock: Y Grounding: Y Explosion Proof: Y

Detailed Equipment Resources

<table>
<thead>
<tr>
<th>Special Tool Kit: Y</th>
<th>Slings: NA</th>
<th>OTV Adapter: NA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Breakout Boxes: NA</td>
<td>Adapter Cables: NA</td>
<td>Ground Power Unit: NA</td>
</tr>
<tr>
<td>Air Pallet: NA</td>
<td>Work Stands: Y</td>
<td>Special Hoisting Equip: NA</td>
</tr>
<tr>
<td>NASA Canister: NA</td>
<td>OTV Canister: NA</td>
<td></td>
</tr>
</tbody>
</table>

(*) Legend For Data Input

Fire Protection/Deluge: A: fire protection or B: deluge or C: both or N: none

Hazard Level: = 1: None or 2: Local Clear or 3: Area Clear or 4: Facility Clear

RF System: A: S Band & C Band or B: Ku Band or C: both or N: none

Others: = Y: Yes or N: No or NA: Not Applicable or TD: To Be Determined

135
### Detailed Resources Identification

**Task No:** 34  **MOVE TO PROCESSING FACILITY**

**Subtask No:** 34.0000  **Description:** INSTALL OTV GPU/GSE

**Hazard Level(s):** 1 None

**Activity:** CONNECT GROUND POWER UNIT AND INSTRUMENTATION GSE TO OTV

#### Personnel:

<table>
<thead>
<tr>
<th>Vehicle</th>
<th>Control Station</th>
</tr>
</thead>
<tbody>
<tr>
<td>Payload Specialist(s)</td>
<td>0</td>
</tr>
<tr>
<td>Engineering</td>
<td>1</td>
</tr>
<tr>
<td>Shop</td>
<td>2</td>
</tr>
<tr>
<td>Inspector</td>
<td>1</td>
</tr>
<tr>
<td>Other</td>
<td>0</td>
</tr>
</tbody>
</table>

**Sub Total** (4) **Total** (4)

**Serial Time To Complete:** 120 min  **Total Manhours:** (8.6)

#### Detailed Facility Resources

<table>
<thead>
<tr>
<th>Physical Size</th>
<th>Crane Capacity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air Lock: 0 0 0 [W/D/H][ft]</td>
<td>0 Ton 0 Ft.Hook Height</td>
</tr>
<tr>
<td>Doors: 0 0 [W/H][ft]</td>
<td>0 Ton 0 Ft.Hook Height</td>
</tr>
<tr>
<td>High Bay: 70 100 85 [W/D/H][ft]</td>
<td>0 Ton 0 Ft.Hook Height</td>
</tr>
</tbody>
</table>

**Standard Commercial Power:** Y  **Instrumentation Power [Uninterrupted]:** NA

**Cleanliness:** 100K  **E.C.S.:** Humidity: 50 +/- 5%  **Temperature:** 70 +/- 5°F

**Closed Circuit Television:** NA  **Power Cutoff:** NA  **Facility GN2:** NA

**Fuel/Oxidizer Disposal:** N  **Helium Supply:** NA  **Shop Air:** NA

**Fire Protection/Deluge:** A  **Shower/Eye Wash:** NA  **Vacuum:** NA

**Lightning Protection:** Y  **Potable Water:** NA  **Paging:** Y

**Commercial Telephone:** Y  **RF System:** N  **OIS:** NA

**Personnel Airlock:** Y  **Grounding:** Y  **Explosion Proof:** NA

#### Detailed Equipment Resources

<table>
<thead>
<tr>
<th>Special Tool Kit: Y</th>
<th>Slings: NA</th>
<th>OTV Adapter: NA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Breakout Boxes: Y</td>
<td>Adapter Cables: Y</td>
<td>Ground Power Unit: Y</td>
</tr>
<tr>
<td>Air Pallet: NA</td>
<td>Work Stands: Y</td>
<td>Special Hoisting Equip: NA</td>
</tr>
<tr>
<td>NASA Canister: NA</td>
<td>OTV Canister: NA</td>
<td></td>
</tr>
</tbody>
</table>

#### (+) Legend For Data Input

- **Fire Protection/Deluge:** A: fire protection  
  or B: deluge  
  or C: both  
  or N: none

- **Hazard Level:** 1: None  
  or 2: Local Clear  
  or 3: Area Clear  
  or 4: Facility Clear

- **Others:** Y: Yes  
  or N: No  
  or NA: Not Applicable  
  or TD: To Be Determined

---

136
Detailed Resources Identification

Task No: 35  CONDUCT PLANNED MAINTENANCE

Subtask No: < 35.0100> Description: <REFURBISH AEROBRAKE SYSTEM>

Hazard Level(s): 2 Local Clear

Activity: PERFORM MAINTENANCE AND REFURBISHMENT OF THE AEROBRAKE SYSTEM

Personnel:

<table>
<thead>
<tr>
<th>Vehicle</th>
<th>Control Station</th>
</tr>
</thead>
<tbody>
<tr>
<td>Payload Specialist(s)</td>
<td>0</td>
</tr>
<tr>
<td>Engineering</td>
<td>2</td>
</tr>
<tr>
<td>Shop</td>
<td>6</td>
</tr>
<tr>
<td>Inspector</td>
<td>2</td>
</tr>
<tr>
<td>Other</td>
<td>0</td>
</tr>
<tr>
<td><strong>Sub Total</strong></td>
<td><strong>(10)</strong></td>
</tr>
</tbody>
</table>

Serial Time To Complete: 600 min  
Total Manhours (100.0)

Automation Need: (Primary Key)

Automation Secondary Key(s)

Detailed Facility Resources

Physical Size:

| Air Lock: | 0 0 0 [W/D/H][ft] | 0 Ton 0 Ft.Hook Height |
| Doors:    | 0 0 [W/H][ft]     |
| High Bay: | 70 100 85 [W/D/H][ft] |

Crane Capacity:

| 20 Ton 70 Ft.Hook Height |

Standard Commercial Power: Y  
Cleanliness: 100K

Closed Circuit Television: NA  
Fuel/Oxidizer Disposal: N

Fire Protection/Deluge(*): A  
Fire Protection/Deluge: NA

Lightning Protection: Y  
Potable Water: NA  
Commerical Telephone: Y  
Personnel Airlock: Y

Detailed Equipment Resources

| Special Tool Kit: Y | Slings: NA | OTV Adapter: NA |
| Breakout Boxes: NA  | Adapter Cables: NA | Ground Power Unit: NA |
| Air Pallet: NA      | Work Stands: Y | Special Hoisting Equip: Y |
| NASA Canister: NA   | OTV Canister: NA |

(*/ Legend For Data Input

Fire Protection/Deluge A: fire protection  
RF System A: S Band & C Band

or B: deluge  
or C: both

or N: none  
Hazard Level: 1: None

or 2: Local Clear

or 3: Area Clear

or 4: Facility Clear

Others: Y: Yes  
N: No  
NA: Not Applicable  
TD: To Be Determined

137
### Detailed Resources Identification

**Task No:** 35  
**CONDUCT PLANNED MAINTENANCE**

**Subtask No: 35.0200**  
**Description:** <REMOVE ENGINE PUMPS FOR REFURB>

- **Hazard Level:** 2 Local Clear
- **Activity:** REMOVE THE ENGINE/PUMPS USING THE SPECIAL TOOL KIT AND ROUTE TO SHOP FOR REPAIR AND REFURBISHMENT

#### Personnel:

<table>
<thead>
<tr>
<th>Vehicle</th>
<th>Control Station</th>
</tr>
</thead>
<tbody>
<tr>
<td>Payload Specialist(s)</td>
<td>0</td>
</tr>
<tr>
<td>Engineering</td>
<td>2</td>
</tr>
<tr>
<td>Shop</td>
<td>0</td>
</tr>
<tr>
<td>Inspector</td>
<td>2</td>
</tr>
<tr>
<td>Other</td>
<td>0</td>
</tr>
</tbody>
</table>

**Sub Total** — 10  
**Total** — 10

**Serial Time To Complete:** 360 min  
**Total Manhours:** 60.0

#### Automation Need:
- **(Primary Key)**
- **Secondary Key(s):**

**Detailed Facility Resources**

<table>
<thead>
<tr>
<th>Physical Size</th>
<th>Crane Capacity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air Lock 0 0 0 [W/D/H][ft]</td>
<td>0 Ton 0 Ft. Hook Height</td>
</tr>
<tr>
<td>Doors 0 0 [W/H][ft]</td>
<td>20 Ton 70 Ft. Hook Height</td>
</tr>
<tr>
<td>High Bay 70 100 85 [W/D/H][ft]</td>
<td></td>
</tr>
</tbody>
</table>

- **Standard Commercial Power:** Y  
- **Instrumentation Power [Uninterrupted]:** NA
- **Cleanliness:** 100K  
- **E.C.S:** Humidity: 50 +/- 5%  
- **Temperature:** 70 +/- 5F
- **Closed Circuit Television:** NA  
- **Power Cutoff:** NA  
- **Facility GN2:** NA
- **Fuel/Oxidizer Disposal:** N  
- **Helium Supply:** NA  
- **Shop Air:** NA
- **Fire Protection/Deluge:** A  
- **Shower/Eye Wash:** NA  
- **Vacuum:** NA
- **Lightning Protection:** Y  
- **Potable Water:** NA  
- **Paging:** Y
- **Commerical Telephone:** Y  
- **RF System:** N  
- **OIS:** NA
- **Personnel Airlock:** Y  
- **Grounding:** Y  
- **Explosion Proof:** NA

**Detailed Equipment Resources**

- **Special Tool Kit:** Y  
- **Slings:** NA  
- **OTV Adapter:** NA
- **Breakout Boxes:** NA  
- **Adapter Cables:** NA  
- **Ground Power Unit:** NA
- **Air Pallet:** NA  
- **Work Stands:** Y  
- **Special Hoisting Equip:** Y
- **NASA Canister:** NA  
- **OTV Canister:** NA

#### (* Legend For Data Input)

- **Fire Protection/Deluge:** A: fire protection  
  B: deluge  
  C: both  
  N: none  
- **RF System:** A: S Band & C Band  
  B: Ku Band  
  C: both  
  N: none
- **Hazard Level:** 1: None  
  2: Local Clear  
  3: Area Clear  
  4: Facility Clear
- **Others:** Y: Yes  
  N: No  
  NA: Not Applicable  
  TD: To Be Determined

---

138
Detailed Resources Identification

Task No: 35 CONDUCT PLANNED MAINTENANCE

Subtask No: <35.0300> Description: <REINSTALL ENGINE/PUMPS>
Hazard Level(*) : 2 Local Clear
Activity: REINSTALL AND RETEST ENGINE/PUMPS

Personnel:

<table>
<thead>
<tr>
<th>Vehicle</th>
<th>Control Station</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fuel Specialist(s)</td>
<td>(0)</td>
</tr>
<tr>
<td>Engineering</td>
<td>(0)</td>
</tr>
<tr>
<td>Shop</td>
<td>(0)</td>
</tr>
<tr>
<td>Inspector</td>
<td>(0)</td>
</tr>
<tr>
<td>Other</td>
<td>(0)</td>
</tr>
<tr>
<td>Sub Total</td>
<td>(10)</td>
</tr>
</tbody>
</table>

Serial Time To Complete: 360 min Total Manhours (60.0)

Automation Need: (Primary Key)
Automation Secondary Key(s): 

Detailed Facility Resources

Physical Size:
- Air Lock: 0 0 0 [W/D/H][ft]
- Doors: 0 0 [W/H][ft]
- High Bay: 70 100 85 [W/D/H][ft]

Crane Capacity:
- 0 Ton 0 Ft.Hook Height
- 20 Ton 70 Ft.Hook Height

Standard Commercial Power: Y

Cleanliness: 100K
Closed Circuit Television: NA
Fuel/Oxidizer Disposal: N
Fire Protection/Deluge(*): A
Lightning Protection: Y
Commercial Telephone: Y
Personnel Airlock: Y

Instrumentation Power [Uninterrupted]: NA
E.C.S: Humidity: 50 +/- 5 %
Power Cutoff: NA
Shop Air: NA
Helium Supply: NA
Shop Air: NA

Detailed Equipment Resources

Special Tool Kit: Y Slings: NA
Breakout Boxes: NA Adapter Cables: NA
Air Pallet: NA Work Stands: Y
NASA Canister: NA OTV Canister: NA
OTV Adapter: NA

Special Hoisting Equip: Y
Ground Power Unit: NA

(*) Legend For Data Input

Fire Protection/Deluge(*) : A: fire protection
or B: deluge
or C: both
or N: none

RF System(*) : A: S Band & C Bond
or B: Ku Band
or C: both
or N: none

Hazard Level(*) : 1: None
or 2: Local Clear
or 3: Area Clear
or 4: Facility Clear

Others(*) : Y: Yes
or N: No
NA: Not Applicable
TD: To Be Determined

139
**Detailed Resources Identification**

**Task No:** 35  
**Description:** REINSTALL AEROBRAKE ASSEMBLY

**Hazard Level:** 2 Local Clear

**Activity:** REINSTALL AEROBRAKE ASSEMBLY USING SPECIAL TOOL KIT

**Personnel:**

<table>
<thead>
<tr>
<th>Role</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vehicle</td>
<td>0</td>
</tr>
<tr>
<td>Payload Specialist(s)</td>
<td>0</td>
</tr>
<tr>
<td>Engineering</td>
<td>0</td>
</tr>
<tr>
<td>Shop</td>
<td>0</td>
</tr>
<tr>
<td>Inspector</td>
<td>2</td>
</tr>
<tr>
<td>Other</td>
<td>0</td>
</tr>
</tbody>
</table>

**Sub Total** (10)  
**Total** (0)

**Serial Time To Complete:** 240 min

**Automation Need:** (Primary Key)

**Automation Secondary Key(s):**

<table>
<thead>
<tr>
<th>Key</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Detailed Facility Resources**

<table>
<thead>
<tr>
<th>Physical Size</th>
<th>Crane Capacity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air Lock: 0 0 0 [W/D/H][ft]</td>
<td>0 Ton 0 Ft.Hook Height</td>
</tr>
<tr>
<td>Doors: 0 0 [W/H][ft]</td>
<td>20 Ton 70 Ft.Hook Height</td>
</tr>
<tr>
<td>High Bay: 70 100 85 [W/D/H][ft]</td>
<td></td>
</tr>
</tbody>
</table>

**Standard Commercial Power:** Y

**Cleanliness:** 100K

**Closed Circuit Television:** NA

**Fuel/Oxidizer Disposal:** N

**Fire Protection/Deluge:** A

**Lightning Protection:** Y

**Commerical Telephone:** Y

**Personnel Airlock:** Y

**Detailed Equipment Resources**

<table>
<thead>
<tr>
<th>Resource</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Special Tool Kit</td>
<td>Y</td>
</tr>
<tr>
<td>Slings</td>
<td>NA</td>
</tr>
<tr>
<td>OTV Adapter</td>
<td>NA</td>
</tr>
<tr>
<td>Breakout Boxes</td>
<td>NA</td>
</tr>
<tr>
<td>Adapter Cables</td>
<td>NA</td>
</tr>
<tr>
<td>Ground Power Unit</td>
<td>NA</td>
</tr>
<tr>
<td>Air Pallet</td>
<td>NA</td>
</tr>
<tr>
<td>Work Stands</td>
<td>Y</td>
</tr>
<tr>
<td>OTV Canister</td>
<td>NA</td>
</tr>
<tr>
<td>NASA Canister</td>
<td>NA</td>
</tr>
</tbody>
</table>

**Legend For Data Input**

- **Fire Protection/Deluge**: A: fire protection  
  or B: deluge  
  or C: both  
  or N: none  

- **Hazard Level**: 1: None  
  or 2: Local Clear  
  or 3: Area Clear  
  or 4: Facility Clear

- **Others**:  
  Y: Yes  
  N: No  
  NA: Not Applicable  
  TD: To Be Determined
Detailed Resources Identification

Task No: 36

CONDUCT UNPLANNED MAINTENANCE

Description: CONDUCT UNPLANNED MAINTENANCE

Hazard Level: 1 None
Activity: AS REQUIRED

Personnel:

Vehicle
Payload Specialist(s) (0)
Engineering (0)
Shop (0)
Inspector (0)
Other (0)

Sub Total (0)

Total (0)

Serial Time To Complete: 0 min
Total Manhours (0.0)

Automation Need: (Primary Key)

Automation Secondary Key(s): 

Detailed Equipment Resources

Special Tool Kit: NA
Breakout Boxes: NA
Air Pallet: NA
NASA Canister: NA

(*) Legend For Data Input

Fire Protection/Deluge: A: fire protection
or B: deluge
or C: both
or N: none

RF System: A: S Band & C Band
or B: Ku Band
or C: both
or N: none

Hazard Level: 1: None
or 2: Local Clear
or 3: Area Clear
or 4: Facility Clear

Others: Y: Yes
or N: No
NA: Not Applicable
TD: To Be Determined

141
Detailed Resources Identification

Task No: 37  INSTALL MODIFICATIONS

Subtask No: <37.0100> Description: <INSTALL MODIFICATIONS>

Hazard Level:*1 None
Activity: AS REQUIRED

Personnel:

Vehicle
Payload Specialist(s) (0) Control Station
Engineering (0) (0)
Shop (0) (0)
Inspector (0) (0)
Other (0) (0)

Sub Total (0) Total (0)

Serial Time To Complete: 0 min Total Manhours (0.0)

Automation Need: (Primary Key)
Automation Secondary Key(s):

Detailed Facility Resources

Physical Size:
Air Lock: 0 0 0 [W/D/H][ft] Crane Capacity:
Doors: 0 0 [W/H][ft]
High Bay: 70 100 85 [W/D/H][ft]

Standard Commercial Power: Y Instrumentation Power [Uninterrupted]: NA

Cleanliness: 100K E.C.S.: Humidity: Temperature:
50 +/- 5 % 70 +/- 5 F

Closed Circuit Television: NA Power Cutoff: NA Facility GN2: NA
Fuel/Oxidizer Disposal: N Shop Air: N

Fire Protection/Deluge(*): A Helium Supply: N
Lightning Protection: Y Shower/Eye Wash: NA
Commercial Telephone: Y Potable Water: NA
Personnel Airlock: Y Paging: Y

Detailed Equipment Resources

Special Tool Kit: Y Slings: NA OTV Adapter: NA
Breakout Boxes: NA Adapter Cables: NA Ground Power Unit: NA
Air Pallet: NA Work Stands: Y Special Hoisting Equip: NA
NASA Canister: NA OTV Canister: NA

(*) Legend For Data Input

Fire Protection/Deluge- A: fire protection or B: deluge or C: both or N: none
RF System- A: S Band & C Band or B: Ku Band or C: both or N: none
Hazard Level: 1: None or 2: Local Clear or 3: Area Clear or 4: Facility Clear
Others: Y: Yes or N: No or NA: Not Applicable or TD: To Be Determined

142
Detailed Resources Identification

Task No: 38  RETEST VERIFICATION

Subtask No: <38.0100> Description: <APPLY POWER TO OTV>
Activity: APPLY POWER TO OTV USING TEST SET OR OTVCS—VERIFY POWER PROFILE TO
INSURE MOD PACKAGE POWER REQUIREMENTS

Personnel:

<table>
<thead>
<tr>
<th>Vehicle</th>
<th>Control Station</th>
</tr>
</thead>
<tbody>
<tr>
<td>Payload Specialist(s)</td>
<td>0</td>
</tr>
<tr>
<td>Engineering</td>
<td>1</td>
</tr>
<tr>
<td>Shop</td>
<td>2</td>
</tr>
<tr>
<td>Inspector</td>
<td>1</td>
</tr>
<tr>
<td>Other</td>
<td>0</td>
</tr>
</tbody>
</table>

Sub Total— 4 | Total— 8

Serial Time To Complete: 60 min  Total Manhours (10.0)

Automation Need: (Primary Key)
Automation Secondary Key(s): 

Detailed Facility Resources

Physical Size:

<table>
<thead>
<tr>
<th>Air Lock:</th>
<th>0</th>
<th>0</th>
<th>6 [W/D/H][ft]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Doors:</td>
<td>0</td>
<td>0</td>
<td>6 [W/H][ft]</td>
</tr>
<tr>
<td>High Bay:</td>
<td>60</td>
<td>100</td>
<td>85 [W/D/H][ft]</td>
</tr>
</tbody>
</table>

Crane Capacity:

<table>
<thead>
<tr>
<th>0 Ton</th>
<th>0 Ft.Hook Height</th>
</tr>
</thead>
</table>

Standard Commercial Power: Y  Instrumentation Power [Uninterrupted]: Y

Cleanliness: 100K  E.C.S: Humidity: 50 +/- 5 %  Temperature: 70 +/- 5 F

Closed Circuit Television: NA  Power Cutoff: Y  Facility GN2: NA

Fuel/Oxidizer Disposal: N  Helium Supply: NA  Shop Air: NA

Fire Protection/Deluge(*): A  Shower/Eye Wash: NA  Vacuum: NA

Lightning Protection: Y  Potable Water: NA  Paging: Y

Commercial Telephone: Y  RF System(*): A  OIS: Y

Personnel Airlock: Y  Grounding: Y  Explosion Proof: NA

Detailed Equipment Resources

<table>
<thead>
<tr>
<th>Special Tool Kit: NA</th>
<th>Slings: NA</th>
<th>OTV Adapter: NA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Breakout Boxes: Y</td>
<td>Adapter Cables: Y</td>
<td>Ground Power Unit: Y</td>
</tr>
<tr>
<td>Air Pallet: NA</td>
<td>Work Stands: Y</td>
<td>Special Hoisting Equip: NA</td>
</tr>
<tr>
<td>NASA Canister: NA</td>
<td>OTV Canister: NA</td>
<td></td>
</tr>
</tbody>
</table>

(*) Legend For Data Input

Fire Protection/Deluge(*): A: fire protection  RF System(*): A: S Band & C Band
or B: deluge  or B: Ku Band
or C: both  or C: both
or N: none  or N: none

Hazard Level(*): 1: None  Others(*): Y: Yes
or 2: Local Clear  or N: No
or 3: Area Clear  or NA: Not Applicable
or 4: Facility Clear  or TD: To Be Determined

143
Detailed Resources Identification

Task No: 38 RETEST VERIFICATION

Subtask No: <38.0200> Description: PERFORM OTV HEALTH CHECKS

Activity: PERFORM OTV RETEST/REVERIFICATION TO VERIFY HEALTH AND STATUS OF OTV

Personnel:

<table>
<thead>
<tr>
<th>Vehicle</th>
<th>Control Station</th>
</tr>
</thead>
<tbody>
<tr>
<td>Payload Specialist(s) (0)</td>
<td>()</td>
</tr>
<tr>
<td>Engineering (1)</td>
<td>(0)</td>
</tr>
<tr>
<td>Shop (2)</td>
<td>(2)</td>
</tr>
<tr>
<td>Inspector (1)</td>
<td>(2)</td>
</tr>
<tr>
<td>Other (0)</td>
<td>(4)</td>
</tr>
<tr>
<td>Sub Total</td>
<td>(6)</td>
</tr>
</tbody>
</table>

Serial Time To Complete: 60 min  Total Manhours: 10.0

Automation Need: (Primary Key)

Automation Secondary Key(s)

Detailed Facility Resources

Physical Size:

<table>
<thead>
<tr>
<th>Air Lock: [W/D/H]</th>
<th>[ft]</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 0 0</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Doors: [W/H]</th>
<th>[ft]</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 0</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>High Bay: [W/D/H]</th>
<th>[ft]</th>
</tr>
</thead>
<tbody>
<tr>
<td>70 100 85</td>
<td></td>
</tr>
</tbody>
</table>

Crane Capacity:

<table>
<thead>
<tr>
<th>0 Ton 0 Ft.Hook Height</th>
</tr>
</thead>
</table>

Standard Commercial Power: Y

<table>
<thead>
<tr>
<th>Instrumentation Power [Uninterrupted]:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Y</td>
</tr>
</tbody>
</table>

Cleanliness: 100K

<table>
<thead>
<tr>
<th>E.C.S: Humidity:</th>
</tr>
</thead>
<tbody>
<tr>
<td>50 +/- 5 %</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Temperature:</th>
</tr>
</thead>
<tbody>
<tr>
<td>70 +/- 5 F</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Closed Circuit Television:</th>
</tr>
</thead>
<tbody>
<tr>
<td>NA</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Fuel/Oxidizer Disposal:</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Fire Protection/Deluge(•):</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Lightning Protection:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Y</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Potable Water:</th>
</tr>
</thead>
<tbody>
<tr>
<td>NA</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Commercial Telephone:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Y</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Paging:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Y</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Robber Airlock:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Y</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Grounding:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Y</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Explosion Proof:</th>
</tr>
</thead>
<tbody>
<tr>
<td>NA</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Special Power Unit:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Y</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Ground Adapter:</th>
</tr>
</thead>
<tbody>
<tr>
<td>NA</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Special Hoisting Equip:</th>
</tr>
</thead>
<tbody>
<tr>
<td>NA</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>OTV Adapter:</th>
</tr>
</thead>
<tbody>
<tr>
<td>NA</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Work Stands:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Y</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Special Tool Kit:</th>
</tr>
</thead>
<tbody>
<tr>
<td>NA</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Slings:</th>
</tr>
</thead>
<tbody>
<tr>
<td>NA</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>NASA Canister:</th>
</tr>
</thead>
<tbody>
<tr>
<td>NA</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>OTV Canister:</th>
</tr>
</thead>
<tbody>
<tr>
<td>NA</td>
</tr>
</tbody>
</table>

(*) Legend For Data Input

Fire Protection/Deluge: A: fire protection or: B: deluge or: C: both or: N: none

<table>
<thead>
<tr>
<th>RF System:</th>
</tr>
</thead>
<tbody>
<tr>
<td>A: S Band &amp; C Band</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Hazard Level:</th>
</tr>
</thead>
<tbody>
<tr>
<td>1: None</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Others:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Y: Yes</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>N: No</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>NA: Not Applicable</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>TD: To Be Determined</th>
</tr>
</thead>
</table>

144
Detailed Resources Identification

Task No: 38  RETEST VERIFICATION

Subtask No: < 38.6366>  Description: <REMOVE POWER FROM OTV

Hazard Level(*): 2  Local Clear
Activity: USING THE TEST SET OR THE OTVCS, REMOVE OTV POWER. REMOVE POWER FROM THE OTV GPU.

Personnel:

<table>
<thead>
<tr>
<th>Vehicle</th>
<th>Control Station</th>
</tr>
</thead>
<tbody>
<tr>
<td>Payload Specialist(s)</td>
<td>0</td>
</tr>
<tr>
<td>Engineering</td>
<td>2</td>
</tr>
<tr>
<td>Shop</td>
<td>2</td>
</tr>
<tr>
<td>Inspector</td>
<td>1</td>
</tr>
<tr>
<td>Other</td>
<td>0</td>
</tr>
<tr>
<td><strong>Sub Total</strong></td>
<td>4</td>
</tr>
</tbody>
</table>

Total: 6

Serial Time To Complete: 60 min  Total Manhours: 10.0

Automation Need: (Primary Key)

Automation Secondary Key(s): 

Detailed Facility Resources

Physical Size:

- Air Lock: 0 0 0 [W/D/H][ft]
- Doors: 0 0 [W/H][ft]
- High Bay: 70 105 85 [W/D/H][ft]

Crane Capacity:

- 0 Ton 0 Ft.Hook Height

Standard Commerical Power: Y

<table>
<thead>
<tr>
<th>Cleanliness: 100K</th>
<th>E.C.S: Humidity: 50 +/− 5%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Closed Circuit Television: NA</td>
<td>Power Cutoff: Y</td>
</tr>
<tr>
<td>Fuel/Oxidizer Disposal: N</td>
<td>Helium Supply: NA</td>
</tr>
<tr>
<td>Fire Protection/Deluge(*): A</td>
<td>Shop Air: NA</td>
</tr>
<tr>
<td>Lightning Protection: Y</td>
<td>Shower/Eye Wash: NA</td>
</tr>
<tr>
<td>Commercial Telephone: Y</td>
<td>Vacuum: NA</td>
</tr>
<tr>
<td>Personnel Airlock: Y</td>
<td>Ground: Y</td>
</tr>
</tbody>
</table>

Instrumentation Power [Uninterrupted]: Y

Temperature: 70 +/− 5°F

Facility GN2: NA

Special Equipment Resources

<table>
<thead>
<tr>
<th>Special Tool Kit: NA</th>
<th>Slings: NA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Breakout Boxes: Y</td>
<td>Adapter Cables: Y</td>
</tr>
<tr>
<td>Air Pallet: NA</td>
<td>Work Stands: Y</td>
</tr>
<tr>
<td>NASA Canister: NA</td>
<td>OTV Canister: NA</td>
</tr>
</tbody>
</table>

OTV Adapter: NA

Ground Power Unit: Y

Special Hoisting Equip: NA

(*) Legend For Data Input

- Fire Protection/Deluge: A: fire protection
  or B: deluge
  or C: both
  or N: none

- RF System: A: S Band & C Band
  or B: Ku Band
  or C: both
  or N: none

- Hazard Level: 1: None
  or 2: Local Clear
  or 3: Area Clear
  or 4: Facility Clear

- Others: Y: Yes
  or N: No
  NA: Not Applicable
  TD: To Be Determined

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Detailed Resources Identification

Task No: 39  
OTV STORAGE AND RETURN TO FLOW

Subtask No: <39.0100>  
Description: <COVER OTV  
Hazard Level: 1 None  
Activity: PLACE PROTECTIVE COVERS ON OTV

Personnel:

<table>
<thead>
<tr>
<th>Vehicle</th>
<th>Control Station</th>
</tr>
</thead>
<tbody>
<tr>
<td>Payload Specialist(s)</td>
<td>(6)</td>
</tr>
<tr>
<td>Engineering</td>
<td>(0)</td>
</tr>
<tr>
<td>Shop</td>
<td>(0)</td>
</tr>
<tr>
<td>Inspector</td>
<td>(2)</td>
</tr>
<tr>
<td>Other</td>
<td>(0)</td>
</tr>
<tr>
<td><strong>Sub Total</strong></td>
<td><strong>(7)</strong></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>(7)</strong></td>
</tr>
</tbody>
</table>

Serial Time To Complete: 60 min  
Total Manhours: 7.0

Automation Need: (Primary Key)

Automation Secondary Key(s):

Detailed Facility Resources

<table>
<thead>
<tr>
<th>Physical Size:</th>
<th>Crane Capacity:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air Lock:</td>
<td>0 Ton 0 Ft.Hook Height</td>
</tr>
<tr>
<td>Doors:</td>
<td>0 Ton 0 Ft.Hook Height</td>
</tr>
<tr>
<td>High Bay:</td>
<td>0 Ton 0 Ft.Hook Height</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Standard Commercial Power:</th>
<th>Instrumentation Power [Uninterrupted]:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Y</td>
<td>NA</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Cleanliness:</th>
<th>E.C.S: Humidity:</th>
<th>Temperature:</th>
</tr>
</thead>
<tbody>
<tr>
<td>100K</td>
<td>50 +/- 5 %</td>
<td>70 +/- 5 F</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Closed Circuit Television:</th>
<th>Power Cutoff:</th>
<th>Facility GN2:</th>
</tr>
</thead>
<tbody>
<tr>
<td>NA</td>
<td>NA</td>
<td>NA</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Fuel/Oxidizer Disposal:</th>
<th>Helium Supply:</th>
<th>Shop Air:</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>NA</td>
<td>NA</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Fire Protection/Deluge( ):</th>
<th>Shower/Eye Wash:</th>
<th>Vacuum:</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>NA</td>
<td>NA</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Lightning Protection:</th>
<th>Potable Water:</th>
<th>Paging:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Y</td>
<td>NA</td>
<td>Y</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Commercial Telephone:</th>
<th>RF System( ):</th>
<th>OIS:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Y</td>
<td>N</td>
<td>NA</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Personnel Airlock:</th>
<th>Grounding:</th>
<th>Explosion Proof:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Y</td>
<td>Y</td>
<td>NA</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Detailed Equipment Resources</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Special Tool Kit:</th>
<th>Slings:</th>
<th>OTV Adapter:</th>
</tr>
</thead>
<tbody>
<tr>
<td>NA</td>
<td>NA</td>
<td>NA</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Breakout Boxes:</th>
<th>Adapter Cables:</th>
<th>Ground Power Unit:</th>
</tr>
</thead>
<tbody>
<tr>
<td>NA</td>
<td>NA</td>
<td>NA</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Air Pallet:</th>
<th>Work Stands:</th>
<th>Special Hoisting Equip:</th>
</tr>
</thead>
<tbody>
<tr>
<td>NA</td>
<td>Y</td>
<td>NA</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>NASA Canister:</th>
<th>OTV Canister:</th>
</tr>
</thead>
<tbody>
<tr>
<td>NA</td>
<td>NA</td>
</tr>
</tbody>
</table>

| (*) Legend For Data Input |

<table>
<thead>
<tr>
<th>Fire Protection/Deluge( )</th>
<th>RF System( ):</th>
<th>Others:</th>
</tr>
</thead>
<tbody>
<tr>
<td>A: fire protection</td>
<td>A: S Band &amp; C Band</td>
<td>Y: Yes</td>
</tr>
<tr>
<td>or B: deluge</td>
<td>or B: Ku Band</td>
<td>N: No</td>
</tr>
<tr>
<td>or C: both</td>
<td>or C: both</td>
<td>NA: Not Applicable</td>
</tr>
<tr>
<td>or N: none</td>
<td>or N: none</td>
<td>TD: To Be Determined</td>
</tr>
</tbody>
</table>

Hazard Level: 1: None  
or 2: Local Clear  
or 3: Area Clear  
or 4: Facility Clear

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**Detailed Resources Identification**

**Task No:** 39  
**OTV STORAGE AND RETURN TO FLOW**

**Subtask No:** < 39.6200>  
**Description:** <SEAL OTV>

**Hazard Level:** 1 None

**Activity:** INSTALL SEALS OTV AND MONITOR FOR PROPER TEMP AND HUMIDITY.

**Personnel:**

<table>
<thead>
<tr>
<th>Role</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vehicle</td>
<td>6</td>
</tr>
<tr>
<td>Payload Specialist(s)</td>
<td>0</td>
</tr>
<tr>
<td>Engineering</td>
<td>1</td>
</tr>
<tr>
<td>Shop</td>
<td>0</td>
</tr>
<tr>
<td>Inspector</td>
<td>2</td>
</tr>
<tr>
<td>Other</td>
<td>0</td>
</tr>
<tr>
<td><strong>Sub Total</strong></td>
<td>9</td>
</tr>
</tbody>
</table>

**Serial Time To Complete:** 60 min  
**Total Manhours:** 9.0

**Automation Need:** (Primary Key)

<table>
<thead>
<tr>
<th>Automation Secondary Key(s)</th>
</tr>
</thead>
</table>

**Detailed Facility Resources**

**Physical Size:**

<table>
<thead>
<tr>
<th>Compartment</th>
<th>W/D/H [ft]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air Lock</td>
<td>0 0 0</td>
</tr>
<tr>
<td>Doors</td>
<td>0 0</td>
</tr>
<tr>
<td>High Bay</td>
<td>70 100 85</td>
</tr>
</tbody>
</table>

**Crane Capacity:**

<table>
<thead>
<tr>
<th>Capacity</th>
<th>Hook Height</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 Ton</td>
<td>0 Ft.</td>
</tr>
</tbody>
</table>

**Standard Commercial Power:** Y

**Cleanliness:** 100K

**Closed Circuit Television:** NA

**Fuel/Oxidizer Disposal:** N

**Fire Protection/Deluge:** A

**Lightning Protection:** Y

**Commercial Telephone:** Y

**Personnel Airlock:** Y

**Instrumentation Power [Uninterrupted]:** NA

**E.C.S.:** Humidity: 50 +/- 5 %  
Temperature: 70 +/- 5 F

**Power Cutoff:** NA  
Facility GN2: NA

**Helium Supply:** NA  
Shop Air: NA

**Fire Protection/Deluge:**

<table>
<thead>
<tr>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
</table>

**Lightning Protection:**

<table>
<thead>
<tr>
<th>Description</th>
</tr>
</thead>
</table>

**Commercial Telephone:**

<table>
<thead>
<tr>
<th>Description</th>
</tr>
</thead>
</table>

**Personnel Airlock:**

<table>
<thead>
<tr>
<th>Description</th>
</tr>
</thead>
</table>

**Detailed Equipment Resources**

<table>
<thead>
<tr>
<th>Equipment</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Special Tool Kit</td>
<td>NA</td>
</tr>
<tr>
<td>Breakout Boxes</td>
<td>NA</td>
</tr>
<tr>
<td>Air Pallet</td>
<td>NA</td>
</tr>
<tr>
<td>NASA Canister</td>
<td>NA</td>
</tr>
<tr>
<td>OTV Canister</td>
<td>NA</td>
</tr>
<tr>
<td>Adapter Cables</td>
<td>NA</td>
</tr>
<tr>
<td>Work Stands</td>
<td>Y</td>
</tr>
<tr>
<td>Ground Power Unit</td>
<td>NA</td>
</tr>
<tr>
<td>Special Hoisting Equip</td>
<td>NA</td>
</tr>
<tr>
<td>OTV Adapter</td>
<td>NA</td>
</tr>
</tbody>
</table>

**Legend For Data Input**

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
</table>

1. **Fire Protection/Deluge**  
   - A: fire protection  
   - B: deluge  
   - C: both  
   - N: none

2. **Hazard Level:**
   - 1: None  
   - 2: Local Clear  
   - 3: Area Clear  
   - 4: Facility Clear

3. **Others:**
   - Y: Yes  
   - N: No  
   - NA: Not Applicable  
   - TD: To Be Determined

4. **RF System:**
   - A: S Band & C Band  
   - B: Ku Band  
   - C: both  
   - N: none
Detailed Resources Identification

Task No: 39 OTV STORAGE AND RETURN TO FLOW

Subtask No: <39.0300>

Description: <REMOVE SEAL>

Activity: REMOVE SEALS INSTALLED ON OTV

Personnel:

Vehicle
Payload Specialist(s) (0)
Engineering (0)
Shop (0)
Inspector (0)
Other (0)
Sub Total (0)

Control Station
(0)
Total (0)

Serial Time To Complete: 60 min
Total Manhours: 6.0

Automation Need: (Primary Key)

Automation Secondary Key(s)

Detailed Facility Resources

Physical Size:
Air Lock: 0 0 0 [W/D/H][ft]
Doors: 0 0 [W/H][ft]
High Bay: 78 100 85 [W/D/H][ft]

Crane Capacity:
0 Ton 0 Ft.Hook Height

Standard Commercial Power: Y

Instrumentation Power [Uninterrupted]: NA

Cleanliness: 100K
E.C.S: Humidity: 50 +/- 5 %

Closed Circuit Television: NA
Power Cutoff: NA
Facility GN2: NA

Fuel/Oxidizer Disposal: N
Shop Air: NA

Fire Protection/Deluge*: A
Shower/Eye Wash: NA
Vacuum: NA

Lightning Protection: Y
Potable Water: NA
Paging: Y

Commercial Telephone: Y
RF System*: N
OIS: NA

Personnel Airlock: Y
Grounding: Y
Explosion Proof: NA

Detailed Equipment Resources

Special Tool Kit: NA
Sling: NA
OTV Adapter: NA

Breakout Boxes: NA
Adapter Cables: NA
Ground Power Unit: NA

Air Pallet: NA
Work Stands: Y
Special Hoisting Equip: NA

NASA Canister: NA
OTV Canister: NA

(*): Legend For Data Input

Fire Protection/Deluge*: A: fire protection
or B: deluge
or C: both
or N: none

Hazard Level*: 1: None
or 2: Local Clear
or 3: Area Clear
or 4: Facility Clear

Others*: Y: Yes
or N: No
NA: Not Applicable
TD: To Be Determined

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Task No: 39 OTV STORAGE AND RETURN TO FLOW

Subtask No: 39.0400

Description: REMOVE COVERS ON OTV

Hazard Level*: 1 None

Activity: REMOVE COVERS ON OTV

Personnel:

<table>
<thead>
<tr>
<th>Vehicle</th>
<th>Control Station</th>
</tr>
</thead>
<tbody>
<tr>
<td>Payload Specialist(s)</td>
<td>(0)</td>
</tr>
<tr>
<td>Engineering</td>
<td>(1)</td>
</tr>
<tr>
<td>Shop</td>
<td>(4)</td>
</tr>
<tr>
<td>Inspector</td>
<td>(1)</td>
</tr>
<tr>
<td>Other</td>
<td>(0)</td>
</tr>
</tbody>
</table>

Sub Total: (6) Total: (6)

Serial Time To Complete: 60 min Total Manhours: 6.0

Automation Need: (Primary Key)

Automation Secondary Key(s): (Primary Key)

Detailed Facility Resources

Physical Size:
- Air Lock: 0 0 0 [W/D/H][ft]
- Doors: 0 0 [W/H][ft]
- High Bay: 70 100 85 [W/D/H][ft]

Crane Capacity:
- 0 Ton 0 Ft.Hook Height

Standard Commercial Power: Y Instrumentation Power (Uninterrupted): NA

Cleanliness: 100K E.C.S: Humidity: 50 +/- 5 % Temperature: 70 +/- 5 F

Closed Circuit Television: NA Power Cutoff: NA Facility GN2: NA

Fuel/Oxidizer Disposal: N Helium Supply: NA Shop Air: NA

Fire Protection/Deluge(*): A Shower/Eye Wash: NA Vacuum: NA

Lightning Protection: Y Potable Water: NA Paging: Y

Commercial Telephone: Y RF System(*): N OIS: NA

Personnel Airlock: Y Grounding: Y Explosion Proof: NA

Detailed Equipment Resources

Special Tool Kit: NA Slings: NA OTV Adapter: NA

Breakout Boxes: NA Adapter Cables: NA Ground Power Unit: NA

Air Pallet: NA Work Stands: Y Special Hoisting Equip: NA

NASA Canister: NA OTV Canister: NA

(*) Legend For Data Input

Fire Protection/Deluge: A: fire protection or B: deluge or C: both or N: none

RF System: A: S Band & C Band or B: Ku Band or C: both or N: none

Hazard Level*: 1: None or 2: Local Clear or 3: Area Clear or 4: Facility Clear

Others: Y: Yes or N: No or NA: Not Applicable or TD: To Be Determined
## Detailed Resources Identification

### Task No: 39 OTV STORAGE AND RETURN TO FLOW

**Subtask No:** <39.0500>

**Description:** RETURN OTV TO FLOW

**Hazard Level:** 2 Local Clear

**Activity:** PREPARE FOR INTEGRATED TEST. VERIFY ALL AVIONICS CONFIGURED FOR POWER APPLICATION

### Personnel:

<table>
<thead>
<tr>
<th>Vehicle</th>
<th>Control Station</th>
</tr>
</thead>
<tbody>
<tr>
<td>Payload Specialist(s)</td>
<td>0</td>
</tr>
<tr>
<td>Engineering</td>
<td>1</td>
</tr>
<tr>
<td>Shop</td>
<td>2</td>
</tr>
<tr>
<td>Inspector</td>
<td>1</td>
</tr>
<tr>
<td>Other</td>
<td>0</td>
</tr>
</tbody>
</table>

**Sub Total:** (4) **Total:** 4

**Serial Time To Complete:** 186 min **Total Manhours:** (12.6)

**Automation Need:** (Primary Key)

### Detailed Facility Resources

<table>
<thead>
<tr>
<th>Physical Size:</th>
<th>Crane Capacity:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air Lock: [W/D/H] [ft]</td>
<td>0 Ton 0 Ft. Hook Height</td>
</tr>
<tr>
<td>Doors: [W/H] [ft]</td>
<td></td>
</tr>
<tr>
<td>High Bay: [W/D/H] [ft]</td>
<td></td>
</tr>
</tbody>
</table>

**Standard Commercial Power:** Y

**Cleanliness:** 100K

**E.C.S.: Humidity:** 50 +/- 5%

**Power Cutoff:** NA

**Facility GN2:** NA

**Closed Circuit Television:** NA

**Heimium Supply:** NA

**Shop Air:** NA

**Fire Protection/Deluge:** A

**Shower/Eye Wash:** NA

**Vacuum:** NA

**Fire Protection/Deluge:** NA

**Lightning Protection:** Y

**Potable Water:** NA

**Paging:** Y

**Commerical Telephone:** Y

**RF System:** N

**Ground:** Y

**Explosion Proof:** NA

### Detailed Equipment Resources

<table>
<thead>
<tr>
<th>Special Tool Kit: NA</th>
<th>Slings: NA</th>
<th>OTV Adapter: NA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Breakout Boxes: NA</td>
<td>Adapter Cables: NA</td>
<td>Ground Power Unit: NA</td>
</tr>
<tr>
<td>Air Pallet: NA</td>
<td>Work Stands: Y</td>
<td>Special Hoisting Equip: NA</td>
</tr>
<tr>
<td>NASA Canister: NA</td>
<td>OTV Canister: NA</td>
<td></td>
</tr>
</tbody>
</table>

### (*) Legend For Data Input

- **Fire Protection/Deluge:** A: fire protection
- **B:** deluge
- **C:** both
- **N:** none

- **RF System:** A: S Band & C Band
- **B:** Ku Band
- **C:** both
- **N:** none

- **Hazard Level:** 1: None
- **2:** Local Clear
- **3:** Area Clear
- **4:** Facility Clear

- **Others:** Y: Yes
- **N:** No
- **NA:** Not Applicable
- **TD:** To Be Determined

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APPENDIX C

SPACE BASED ORBITAL TRANSFER VEHICLE FLOW
FIRST TIME ONLY FOR EACH S.B. VEHICLE (IF REQUIRED)

1. OTV R & I
2. OTV MECHANICAL ASSEMBLY
3. OTV ELECTRICAL ASSEMBLY
4. MECHANICAL SYSTEM TESTS
5. ELECTRICAL SYSTEM TESTS
6. INTEGRATED SYSTEMS TEST
7. OTV/CS-G TEST
8. RF TEST
9. MECH MATE
10. ELECT MATE
11. OTV/SC INTEGRATION TEST
12. CMD/DATA (RF) INTFC TEST

FUNCTIONAL FLOW BLOCK IDENTIFICATION NUMBERS ARE CONSISTENT WITH THE FLOW FOR THE GROUND BASED PAYLOAD BAY CRYO CONFIGURATION. TASKS WITH DECIMAL NUMBERS ARE NEW FUNCTIONS ON THIS FLOW -- MISSING NUMBERS ARE G.B. OTV FUNCTIONS NOT REQUIRED FOR THE S.B. FLOW.
APPENDIX D

SPACE BASED RESOURCE IDENTIFICATION SHEETS
The following Space Based Resource Identification Sheets (RIS's) represent the tasks/subtasks associated with processing the OTV in the Space Station environment. The Space Based tasks are numbered 1 thru 39 as are the Ground Based RIS's, however only those tasks required for Space Based vehicle processing are included. The task/subtask numbers are identical for both Ground Based and Space Based activities that are the same to facilitate direct comparisons of requirements for the similar tasks. Any variance in the subtask numbering indicates a variance in the Space Based processing requirements.

The RIS for each subtask is divided into 4 sections; Personnel, Control System-Station, OTV Hangar, and Propellant Servicing Facility and Equipment.

The Personnel section details manpower requirements at either the Space Station (IVA or EVA) or the Ground Control Station. Along with the manning requirements is the serial time to complete the subtask and the computed total manhours. An entry is also made as to whether SC-PDCC support is required. The Primary and Secondary keys associated with the Automation Technology Knowledge Base (ATKB) have not been keyed at this time.

The Control System-Station (CS-S) section details the support requirements of the specific subtask on the CS-S control system aboard the Space Station. The requirements include all the remote control capabilities required for the operations in the OTV hanger.

The OTV Hangar section details the facility requirements of the OTV hangar utilized for assembly and checkout of the Space Based OTV.

The Propellant Servicing Facility details the facility equipment required for propellant and fuel cell servicing of the OTV at the Space Station. Included in this section is the miscellaneous support equipment utilized for OTV processing.

It should also be noted that the Space Based RIS's are presented in Space Based OTV processing order which may or may not be in numerical sequence.
SPACE STATION DETAILED RESOURCES IDENTIFICATION

TASK NO: 1 RECEIVING AND INSPECTION

SUBTASK NO: 1.0400 DESCRIPTION: TRANSFER TO RECEIVING

ACTIVITY: REMOVE OTV AND COMPONENTS FROM ORBITER AND TRANSPORT TO ASSEMBLY PORT

Personnel:
- SPACE STATION
  - STATION SPECIALIST(S) IVA (1)
  - STATION SPECIALIST(S) EVA (2)
- GROUND STATION
  - CS-G (0)

Total:
- Personel: (3)
- Sub Total: (3)

Serial Time To Complete: 240 min Total Manhours: (12.0)

SC-PDCC Support Required: (N)

AUTOMATION NEED: (Primary Key)
AUTOMATION SECONDARY KEY(S): •

CONTROL SYSTEM — STATION (CS—S)
OVT Control & monitor system: N Tracking: N Data Dump: N

EVA MONITOR:
- Audio: Y, Video: Y, Telemetry: Y

OTV HANGER REMOTE CONTROL:
- Door(s): Y, Lights: Y, TV(signed data auto scan): Y, RR Umbilical control: N

TRAINING VIDEO SYSTEM:
- On-board: N, Up-link: N, MRMS teleoeration control: Y

Handing and Positioning Aid (HPA) teleoeration: Y
OMV support: N, Prop. load & drain computer system: N
ORU Bar code data base: Y, Paging: N, MPAC: N
Planning work station (computer): Y

OVT HANGER
Aerobrake storage fitting: N, OTV flight support structure: N
Personnel EVA door: Y, MPAC connection: N
HPA's (local & teleoerated): Y, Hand & foot restraints: Y
ORU storage lockers: Y, Tool lockers: Y
Thermal control system: N

PROPELLANT SERVICING FACILITY AND EQUIPMENT

PROPELLANT SERVICING FACILITY
Standard Servicing Interface (remote latch/unlatch): N
Remote Control Remoetable Quick Disconnects, Fill/drain/vent/pressurization: N
Fuel cell fill/drain/purge/pressurization: N, Propellant metering system: N
EVA Personnel equipment: Y, EVA equipment box: Y, Support Equipment: Y
Video Cameras: Y, Tools manual/power: Y
External ORU storage boxes: Y
SC electrical/mechanical interface simulator: N
SPACE STATION DETAILED RESOURCES IDENTIFICATION

TASK NO: 1 RECEIVING AND INSPECTION

SUBTASK NO: < 1.0550> DESCRIPTION: <RECEIVING >

ACTIVITY: MANIFEST VERIFICATION, COMPONENT STORAGE AND LOCATION IDENTIFICATION

Personnel: SPACE STATION GROUND STATION
STATION SPECIALIST(S) IVA (3) CS-G (0)
STATION SPECIALIST(S) EVA (0)
Sub Total (3)
Total (3)

Serial Time To Complete: 300 min
Total Manhours (15.0)

SC-POCC Support Required: (N)

AUTOMATION NEED: (Primary Key)
AUTOMATION SECONDARY KEY(S)

CONTROL SYSTEM - STATION (CS-S)

OTV Control & monitor system: N Tracking: N Data Dump: N
EVA MONITOR:
Audio: N Video: N Telemetry: N

OTV HANGER REMOTE CONTROL:
Door(s): Y Lights: Y TV(signature data auto scan): Y
FSS latch/unlatch: N RR Umbilical control: N

TRAINING VIDEO SYSTEM:
On-board: Y Up-link: N

Handling and Positioning Aid (HPA) teleoperation: Y

OMV support: N Prop. load & drain computer system: N
ORU Bar code data base: Y Paging: Y MPAC: N
Planning work station (computer): Y

Aerobrake storage fitting: Y OTV flight support structure: N
Personnel EVA door: N MPAC connection: N
HPA's (local & teleoperated): Y Hand & foot restraints: N
ORU storage lockers: Y Tool lockers: N

Thermal control system: Y

PROPELLANT SERVICING FACILITY AND EQUIPMENT

PROPELLANT SERVICING FACILITY

Standard Servicing Interface (remote latch/unlatch): N
Remote Control Remateable Quick Disconnects,
Fill/drain/vent/pressurization: N
Fuel cell fill/drain/purge/pressurization: N
Propellant metering system: N
EVA Personnel equipment: N EVA equipment box: N Support Equipment: N
Portable MPAC: N Lights: Y Bar code reader: Y
Video Cameras: Y Tools manual/power: N
External ORU storage boxes: Y
SC electrical/mechanical interface simulator: N
SPACE STATION DETAILED RESOURCES IDENTIFICATION

SUBTASK NO: 2.0100

DESCRIPTION: INSTALL ASSEMBLY STRUCTURE

ACTIVITY: USING THE MRMS AND THE HPA. MOVE THE OTV ASSEMBLY INTO THE WORKSTAND

INPECT GUIDEPINS AND WORKSTAND ATTACH POINTS

Personnel: SPACE STATION

STATION SPECIALIST(S) IVA (2)

STATION SPECIALIST(S) EVA (6)

Serial Time To Complete: 960 min

Total Manhours (32.6)

SC-POCC Support Required: (N)

AUTOMATION NEED: (Primary Key)

AUTOMATION SECONDARY KEY(S)

*************** CONTROL SYSTEM - STATION (CS-S) ****************************

OTV Control & monitor system: N  Tracking: N  Data Dump: N

EVA MONITOR:

Audio: N  Video: N  Telemetry: N

OTV HANGER REMOTE CONTROL:

Door(s): Y  Lights: Y  TV(signature data auto scan): Y

FSS latch/un latch: Y  RR Umbilical control: Y

TRAINING VIDEO SYSTEM:

On-board: N  Up-link: N

Handling and Positioning Aid (HPA) teleoperation: Y

OMV support: N  Prop. load & drain computer system: N

ORU Bar code data base: N  Paging: Y  MPAC: N

Planning work station (computer): Y

************ OTV HANGER ****************************

Aerobrake storage fitting: N  OTV flight support structure: Y

Personnel EVA door: N  MPAC connection: N

HPA’s (local & teleoperated): Y  Hand & foot restraints: N

ORU storage lockers: N  Tool lockers: N

Thermal control system: Y

********** PROPELLANT SERVICING FACILITY AND EQUIPMENT ********************

PROPELLANT SERVICING FACILITY

Standard Servicing Interface (remote latch/un latch): N

Remote Control Remateable Quick Disconnects,

Fuel cell fill/drain/purge/pressurization: N

Propellant metering system: N

EVA Personnel equipment: N  EVA equipment box: N  Support Equipment: N

Portable MPAC: N  Lights: Y  Bar code reader: N

Video Cameras: N  Tools manual/power: N

External ORU storage boxes: Y

SC electrical/mechanical interface simulator: N
SPACE STATION DETAILED RESOURCES IDENTIFICATION
TASK NO: 2 OTV MECHANICAL ASSEMBLY

SUBTASK NO: < 2.0206> DESCRIPTION: <INSTALL CRYO TANK SET >

ACTIVITY: MOVE TANK SET INTO POSITION, INSPECT DISCONNECT GUIDE PINS AND STRUCTURE ATTACH POINTS, SECURE, SAFE AND VERIFY.

Personnel: SPACE STATION
STATION SPECIALIST(S) IVA ( 2)
STATION SPECIALIST(S) EVA ( 6)
Sub Total ( 2)

GROUND STATION
CS-G ( 8)
Total ( 10)

Serial Time To Complete: 300 min Total Manhours ( 10.0)

SC-POCC Support Required: (N)

AUTOMATION NEED: (Primary Key)

AUTOMATION SECONDARY KEY(S)

*************** CONTROL SYSTEM - STATION (CS-S) ***************

OTV Control & monitor system: N Tracking: N Data Dump: N

EVA MONITOR:
Audio: N Video: N Telemetry: N

OTV HANGER REMOTE CONTROL:
Door(s): N Lights: Y FSS latch/unlatch: Y
TV(signature data auto scan): Y RR Umbilical control: N

TRAINING VIDEO SYSTEM:
On-board: N Up-link: N

Handling and Positioning Aid (HPA) teleoperation: Y

OMV support: N Prop. load & drain computer system: N

Planning work station (computer): N

********** PROPELLANT SERVICING FACILITY AND EQUIPMENT **********

PRPPELLANT SERVICING FACILITY

Standard Servicing Interface (remote latch/unlatch): N Remote Control Removable Quick Disconnects,
Fill/drain/vent/pressurization: N Fuel cell fill/drain/purge/pressurization: N Propellant metering system: N

EVA Personnel equipment: N EVA equipment box: N Support Equipment: Y
Portable MPAC: N Lights: Y Bar code reader: N
Video Cameras: Y Tools manual/power: N
External ORU storage boxes: Y

SC electrical/mechanical interface simulator: N
SPACE STATION DETAILED RESOURCES IDENTIFICATION

TASK NO: 2 OTV MECHANICAL ASSEMBLY

SUBTASK NO: < 2.0300> DESCRIPTION: <INSTALL RCS TANK SET>

ACTIVITY: IMPLEMENT SAFETY PROCEDURE—REMOVE TANK SET FROM STORAGE SITE, INSPECT, REMOVE PROTECTIVE COVER/DEVICES, INSTALL IN ASSEMBLY STRUCTURE, SECURE AND SAFE

Personnel: SPACE STATION STATION SPECIALIST(S) IVA (2)
GROUND STATION STATION SPECIALIST(S) EV (0)
Sub Total (2)
Total (2)

Serial Time To Complete: 360 min Total Manhours (12.0)

SC-POCC Support Required: (N)
AUTOMATION NEED: (Primary Key)
AUTOMATION SECONDARY KEY(S)

*************** CONTROL SYSTEM — STATION (CS-S) ***************

OTV Control & monitor system: N Tracking: N Data Dump: N

EVA MONITOR:
Audio: N Video: N Telemetry: N

OTV HANGER REMOTE CONTROL:
Door(s): N Lights: Y
FSS latch/unlatch: Y TV (signature data auto scan): Y

TRAINING VIDEO SYSTEM:
On-board: N Up-link: N

Handling and Positioning Aid (HPA) teleoperation: Y
OMV support: N Prop. load & drain computer system: N
ORU Bar code data base: N Paging: Y MPAC: N

Planning work station (computer): Y

************************** OTV HANGER **************************

Aerobrake storage fitting: N OTV flight support structure: N
Personnel EVA door: N MPAC connection: N
HPA’s (local & teleoperated): Y Hand & foot restraints: N
ORU storage lockers: Y Tool lockers: N

Thermal control system: Y

******** PROPPELLANT SERVICING FACILITY AND EQUIPMENT ********

PROPPELLANT SERVICING FACILITY

Standard Servicing Interface (remote latch/unlatch): N Remote Control Remateable Quick Disconnects: N
Fill/drain/vent/pressurization: N Fuel cell fill/drain/purge/pressurization: N Propellant metering system: N

EVA Personnel equipment: N EVA equipment box: N Support Equipment: Y
Portable MPAC: N Lights: Y Bar code reader: Y
Video Cameras: Y Tools manual/power: N
External ORU storage boxes: Y

SC electrical/mechanical interface simulator: N

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SPACE STATION DETAILED RESOURCES IDENTIFICATION
TASK NO: 2 OTV MECHANICAL ASSEMBLY

SUBTASK NO: < 2.040
DESCRIPTION: <INSTL PROPL SYS PLMB & CONTROL>

ACTIVITY: USING MRMS AND HPA, MOVE AND ALIGN COMPONENTS INTO PLACE AND INSTALL
PER PROCEDURES.

Personnel: SPACE STATION
STATION SPECIALIST(S) IVA (2)
STATION SPECIALIST(S) EVA (0)
Sub Total (2)

Total (2)

Serial Time To Complete: 480 min
Total Manhours (16.0)

SC-POCC Support Required: (N)

AUTOMATION NEED: (Primary Key)

AUTOMATION SECONDARY KEY(S)

*************** CONTROL SYSTEM - STATION (CS-S) ***************

OTV Control & monitor system: N Tracking: N Data Dump: N

EVA MONITOR:
Audio: N Video: N Telemetry: N

OTV HANGER REMOTE CONTROL:
Doo(r): N Lights: Y FSS latch/unlatch: Y
TV(signature data auto scan): Y RR Umbilical control: N

TRAINING VIDEO SYSTEM:
On-board: N Up-link: N

Handling and Positioning Aid (HPA) teleoperation: Y

OMV support: N Prop. load & drain computer system: N

ORU Bar code data base: N Paging: Y MPAC: N

Planning work station (computer): Y

*************** OTV HANGER ***************

Aerobrake storage fitting: N OTV flight support structure: Y

Personnel EVA door: N MPAC connection: N

HPA's (local & teleoperated): Y Hand & foot restraints: N

ORU storage lockers: Y Tool lockers: N

Thermal control system: Y

********** PROPELLANT SERVICING FACILITY AND EQUIPMENT **********

PROPELLANT SERVICING FACILITY

Standard Servicing Interface (remote latch/unlatch): N
Remote Control Removable Quick Disconnects,
Fill/drain/vent/pressurization: N
Fuel cell fill/drain/purge/pressurization: N
Propellant metering system: N

EVA Personnel equipment: N EVA equipment box: N Support Equipment: Y
Portable MPAC: N Lights: Y Bar code reader: N
Video Cameras: Y Tools manual/power: N

External ORU storage boxes: Y

SC electrical/mechanical interface simulator: N

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SPACE STATION DETAILED RESOURCES IDENTIFICATION
TASK NO: 2 OTV MECHANICAL ASSEMBLY

SUBTASK NO: < 2.0500> DESCRIPTION: <INSTALL RCS/ENGINES >

ACTIVITY: INSTALL RCS NOZZLES AND ENGINES

Personnel: SPACE STATION
STATION SPECIALIST(S) IVA ( 2)
STATION SPECIALIST(S) EVA ( 0)
Sub Total ( 2) ( 0)

Serial Time To Complete: 480 min Total Manhours ( 16.0)

SC-POCC Support Required: (N)

AUTOMATION NEED: (Primary Key)

AUTOMATION SECONDARY KEY(S) :

CONTROL SYSTEM — STATION (CS-S)

OTV Control & monitor system: N Tracking: N Data Dump: N
EVA MONITOR:
Audio: N Video: N Telemetry: N

OTV HANGER REMOTE CONTROL:
Door(s): N Lights: Y FSS latch/unlatch: Y TV(signature data auto scan): Y

TRAINING VIDEO SYSTEM:
On-board: N Up-link: N

OMV support: N Prop. load & drain computer system: N

Planning work station (computer): Y

AEROKRABE HANGER

Aerobrake storage fitting: N OTV flight support structure: N
Personnel EVA door: N MPAC connection: N
HPA's (local & teleoperated): Y Hand & foot restraints: N
ORU storage lockers: Y Tool lockers: N

Thermal control system: Y

PROPELLANT SERVICING FACILITY AND EQUIPMENT

PROPELLANT SERVICING FACILITY

Standard Servicing Interface (remote latch/unlatch): N
Remote Control Remateable Quick Disconnects,
Fill/drain/vent/pressurization: N
Fuel cell fill/drain/purge/pressurization: N

EVA Personnel equipment: N EVA equipment box: N Support Equipment: Y
Portable MPAC: N Lights: Y Bar code reader: N
Video Cameras: Y Tool manual/power: N
External ORU storage boxes: Y
SC electrical/mechanical interface simulator: N
SPACE STATION DETAILED RESOURCES IDENTIFICATION

TASK NO: 3 ELECTRICAL ASSEMBLY

SUBTASK NO: < 3.0200> DESCRIPTION: <INSTALL POWER SYSTEM>

ACTIVITY: ATTACH ELECTRICAL POWER SYSTEM TO THE MRMS OR HPA. ALIGN GUIDE PINS AND ATTACH POINTS. INSTALL, SECURE, AND SAFE.

Personnel: SPACE STATION GROUND STATION
STATION SPECIALIST(S) IVA (2) CS-G (0)
STATION SPECIALIST(S) EVA (0)
Sub Total (2) Total (0)

Serial Time To Complete: 480 min Total Manhours (16.0)

SC-POCC Support Required: (N)

AUTOMATION NEED: (Primary Key)

AUTOMATION SECONDARY KEY(S)

CONTROL SYSTEM - STATION (CS-S)

OTV Control & monitor system: N Tracking: N Data Dump: N
EVA MONITOR:
Audio: N Video: N Telemetry: N

OTV HANGER REMOTE CONTROL:
Door(s): N Lights: Y TV (signature data auto scan): Y
FSS latch/unlatch: Y RR Umbilical control: N

TRAINING VIDEO SYSTEM:
On-board: N Up-link: N MRMS teleoperation control: Y

Handling and Positioning Aid (HPA) teleoperation: Y

OMV support: N Prop, load & drain computer system: N
ORU Bar code data base: N Paging: Y MPAC: N
Planning work station (computer): Y

OTV HANGER

Aerobrake storage fitting: N OTV flight support structure: N
Personnel EVA door: Y MPAC connection: N
HPA's (local & teleoperated): Y Hand & foot restraints: N
ORU storage lockers: Y Tool lockers: N

Thermal control system: Y

PROPELLANT SERVICING FACILITY AND EQUIPMENT

PROPELLANT SERVICING FACILITY

Standard Servicing Interface (remote latch/unlatch): N Remote Control Remateable Quick Disconnects:
Fill/drain/vent/pressurization: N Fuel cell fill/drain/purge/pressurization: N
Propellant metering system: N

EVA Personnel equipment: N EVA equipment box: N Support Equipment: Y
Portable MPAC: N Lights: Y Bar code reader: N
Video Cameras: Y Tools manual/power: N
External ORU storage boxes: Y
SC electrical/mechanical interface simulator: N

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SPACE STATION DETAILED RESOURCES IDENTIFICATION
TASK NO: 3 ELECTRICAL ASSEMBLY

SUBTASK NO: <3.0300> DESCRIPTION: <INSTALL GN&C SYSTEM>

ACTIVITY: ATTACH MRMS OR HPA TO GN&C. MOVE GN&C INTO POSITION, INSPECT GUIDE PINS AND INTERFACE, LIFT INTO POSITION INSTALL, SECURE AND SAFE.

Personnel:
SPACE STATION
STATION SPECIALIST(S) IVA (2)
STATION SPECIALIST(S) EVA (0)
Sub Total (2)

GROUND STATION
CS-G (0)
Total (2)

Serial Time To Complete: 249 min
Total Manhours (8.6)

SC-POCC Support Required: (N)

AUTOMATION NEED: (Primary Key)

AUTOMATION SECONDARY KEY(S):

*********************** CONTROL SYSTEM - STATION (CS-S) ***********************

OTV Control & monitor system: N Tracking: N Data Dump: N
EVA MONITOR:
Audio: N Video: N Telemetry: N

OTV HANGER REMOTE CONTROL:
Door(s): N Lights: Y FSS latch/unlatch: Y
TV(signature data auto scan): Y RR Umbilical control: N

TRAINING VIDEO SYSTEM:
On-board: N Up-link: N

MRMS teleoperation control: Y

Handling and Positioning Aid (HPA) teleoperation: Y

ORU Bar code data base: N Paging: Y MPAC: N
Planning work station (computer): Y OTV HANGER ***********************

Aerobrake storage fitting: N OTV flight support structure: N
Personnel EVA door: N MPAC connection: N
HPA's (local & teleoperated): Y Hand & foot restraints: N
ORU storage lockers: Y Tool lockers: N

Thermal control system: Y

********** PROPELLANT SERVICING FACILITY AND EQUIPMENT **********

PROPELLANT SERVICING FACILITY

Standard Servicing Interface (remote latch/unlatch): N
Remote Control Removable Quick Disconnects, Fill/drain/vent/pressurization: N
Fuel cell fill/drain/purge/pressurization: N
Propellant metering system: N

EVA Personnel equipment: N EVA equipment box: N Support Equipment: Y
Portable MPAC: N Lights: Y Bar code reader: N
Video Cameras: Y Tools manual/power: N
External ORU storage boxes: Y

SC electrical/mechanical interface simulator: N
SPACE STATION DETAILED RESOURCES IDENTIFICATION

TASK NO: 3 ELECTRICAL ASSEMBLY

SUBTASK NO: < 3.0400>

DESCRIPTION: <INSTALL AVIONICS SYSTEM>

ACTIVITY: ATTACH MRMS OR HPA TO THE AVIONICS SYSTEM, INSPECT GUIDE PINS, ATTACH POINTS AND INTERFACE, LIFT TO POSITION, INSTALL, SECURE AND SAFE.

Personnel:

SPACE STATION
STATION SPECIALIST(S) EVA (2)
STATION SPECIALIST(S) EVA (6)

GROUND STATION
CS-G (0)

Sub Task (2) Total (2)

Serial Time To Complete: 240 min Total Manhours (8.0)

SC-POCC Support Required: (N)

AUTOMATION NEED: (Primary Key)

AUTOMATION SECONDARY KEY(S)

*************** CONTROL SYSTEM - STATION (CS-S) ***************

OTV Control & monitor system: N Tracking: N Data Dump: N

EVA MONITOR:
Audio: N Video: N Telemetry: N

OTV HANGER REMOTE CONTROL:
Door(s): N Lights: Y TV(signature data auto scan): Y
FSS latch/unlatch: Y RR Umbilical control: N

TRAINING VIDEOD SYSTEM:
On-board: N Up-link: N

Handling and Positioning Aid (HPA) teleoperation: Y

OMV support: N Prop. load & drain computer system: N

ORU Bar code data base: N Paging: Y MPAC: N

Planning work station (computer): Y

*************** OTV HANGER ***************

Aerobrake storage fitting: N OTV flight support structure: N

Personnel EVA door: N MPAC connection: N

HPA's (local & teleoperated): Y Hand & foot restraints: N

ORU storage lockers: Y Tool lockers: N

Thermal control system: Y

*********** PROPPELLANT SERVICING FACILITY AND EQUIPMENT ***********

PROPPELLANT SERVICING FACILITY

Standard Servicing Interface (remote latch/unlatch): N Remote Control Remotable Quick Disconnects: N
Fuel cell fill/drain/vent/pressure: N Propellant metering system: N

EVA Personnel equipment: N EVA equipment box: N Support Equipment: Y

Portable MPAC: N Lights: Y Bar code reader: N

Video Cameras: Y Tools manual/power: N

External ORU storage boxes: Y

SC electrical/mechanical interface simulator: N
SPACE STATION DETAILED RESOURCES IDENTIFICATION
TASK NO: 4 MECHANICAL SYSTEM TEST

SUBTASK NO: < 4.0100> DESCRIPTION: <LEAK AND PRESSURE CHECKS>

ACTIVITY: VERIFY PLUMBING CONNECTIONS, CONFIGURE N2 SYSTEM, PRESSURIZE TANK SET PLUMBING, PROPELLATION SYSTEM PLUMBING.

Personnel:

SPACE STATION
STATION SPECIALIST(S) IVA (2)
STATION SPECIALIST(S) EVA (8)

GROUND STATION
CS-G (0)

Sub Total: (2)
Total: (2)

Serial Time To Complete: 1380 min
Total Manhours: (46.0)

SC-POCC Support Required: (N)

AUTOMATION NEED: (Primary Key)

AUTOMATION SECONDARY KEY(S)

CONTROL SYSTEM - STATION (CS-S)

OTV Control & monitor system: N Tracking: N Data Dump: N

EVA MONITOR:
Audio: N Video: N Telemetry: N

OTV HANGER REMOTE CONTROL:
Door(s): N Lights: N TV(signature data auto scan): N
FSS latch/unlatch: Y RR Umbilical control: Y

TRAINING VIDEO SYSTEM:
On-board: N Up-link: N

Handling and Positioning Aid (HPA) teleoperation: N

OMV support: N Prop. load & drain computer system: N

ORU Bar code data base: N Paging: Y MPAC: N

Planning work station (computer): Y

Aerobrake storage fitting: N OTV flight support structure: N

Personnel EVA door: N MPAC connection: N

HPA's (local & teleoperated): N Hand & foot restraints: N

ORU storage lockers: N Tool lockers: N

Thermal control system: N

PROPELLANT SERVICING FACILITY AND EQUIPMENT

PROPELLANT SERVICING FACILITY

Standard Servicing Interface (remote latch/unlatch): N Remote Control Remotable Quick Disconnects, Fill/Drain/Vent/Pressurization: N
Fuel cell fill/drain/purge/pressurization: N Propellant metering system: N

EVA Personnel equipment: N EVA equipment box: N Support Equipment: N

Portable MPAC: N Lights: N Bar code reader: N

Video Cameras: N Tools manual/power: N

External ORU storage boxes: N

SC electrical/mechanical interface simulator: N

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SPACE STATION DETAILED RESOURCES IDENTIFICATION

SUBTASK NO: < 5.0156>

DESCRIPTION: <SPACE STATION POWER ACTIVATION>

ACTIVITY: POWER ON SPACE STATION POWER UNIT PER PROCEDURE. VERIFY POWER PROFILE

Personnel: SPACE STATION
STATION SPECIALIST(S) IVA (2)
STATION SPECIALIST(S) EVA (6)
Sub Total (2)

GROUND STATION
CS-G (0)
Total (0)

Serial Time To Complete: 240 min
Total Manhours (8.0)

SC-POCC Support Required: (N)

AUTOMATION NEED: (Primary Key)

AUTOMATION SECONDARY KEY(S)

*************** CONTROL SYSTEM - STATION (CS-S) ***************

OTV Control & monitor system: N Tracking: N Data Dump: N

EVA MONITOR:
Audio: N Video: N Telemetry: N

OTV HANGER REMOTE CONTROL:
Door(s): N Lights: Y TV(signon data auto scan): Y
FSS latch/unlatch: Y RR Umbilical control: N

TRAINING VIDEO SYSTEM:
On-board: N Up-link: N

Handling and Positioning Aid (HPA) teleoperation: N

OMV support: N Prop. load & drain computer system: N

ORU Bar code data base: N Paging: Y MPAC: N

Planning work station (computer): Y

********** PROPELLANT SERVICING FACILITY AND EQUIPMENT **********

PROPELLANT SERVICING FACILITY

Standard Servicing Interface (remote latch/unlatch): N
Remote Control Removable Quick Disconnects: N
Fuel cell fill/drain/vent/pressurization: N
Propellant metering system: N

EVA Personnel equipment: N EVA equipment box: N Support Equipment: N
Portable MPAC: N Lights: N Bar code reader: N
Video Cameras: N Tools manual/power: N

External ORU storage boxes: N

SC electrical/mechanical interface simulator: N
SPACE STATION DETAILED RESOURCES IDENTIFICATION
TASK NO: 5 ELECTRICAL SYSTEM TEST

SUBTASK NO: < 5.0200> DESCRIPTION: <SINGLE POINT GROUND CHECKS >

ACTIVITY: PERFORM SINGLE POINT GROUND CHECKS

Personnel: SPACE STATION STATION SPECIALIST(S) IVA (2)  GROUND STATION STATION SPECIALIST(S) CS-G (0)  
STATION SPECIALIST(S) EVA (0)  Sub Total (2)  Total (0)

Serial Time To Complete: 180 min  Total Manhours (6.0)

SC-POCC Support Required: (N)

AUTOMATION NEED: (Primary Key)

AUTOMATION SECONDARY KEY(S)

*************** CONTROL SYSTEM - STATION (CS-S) ***************

OTV Control & monitor system: N  Tracking: N  Data Dump: N

EVA MONITOR:
Audio: N  Video: N  Telemetry: N

OTV HANGER REMOTE CONTROL:
Door(s): N  Lights: Y  TV(signature data auto scan): Y  RR Umbilical control: N

TRAINING VIDEO SYSTEM:
On-board: N  Up-link: N  MRMS teleoperation control: N

Handling and Positioning Aid (HPA) teleoperation: N

OMV support: N  Prop. load & drain computer system: N

ORU Bar code data base: N  Paging: Y  MPAC: N

Planning work station (computer): Y  

**************** PROPELLANT SERVICING FACILITY AND EQUIPMENT ****************

PROPELLANT SERVICING FACILITY

Standard Servicing Interface (remote latch/unlatch): N  
Remote Control Removable Quick Disconnects, Fill/drain/vent/pressurization: N  
Fuel cell fill/drain/purge/pressurization: N

EVA Personnel equipment: N  EVA equipment box: N  Support Equipment: N

Portable MPAC: N  Lights: Y  Bar code reader: N

Video Cameras: Y  Tools manual/power: N

External ORU storage boxes: N

SC electrical/mechanical interface simulator: N

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SPACE STATION DETAILED RESOURCES IDENTIFICATION
TASK NO: 5 ELECTRICAL SYSTEM TEST

SUBTASK NO: 5.63ee
DESCRIPTION: ACTIVATE POWER/ESSENTIAL BUS

ACTIVITY: POWER ON THE POWER BUS AND VERIFY POWER PROFILE. POWER ON THE ESSENTIAL BUS AND VERIFY POWER PROFILE.

Personnel:
SPACE STATION SPECIALIST(S) IVA (2)
GROUND STATION SPECIALIST(S) CS-G (0)
Total (2)

Serial Time To Complete: 60 min
Total Manhours (2.0)

SC-POCC Support Required: (N)
AUTOMATION NEED: (Primary Key)

AUTOMATION SECONDARY KEY(S)

************** CONTROL SYSTEM - STATION (CS-S) ***************

OTV Control & monitor system: N Tracking: N Data Dump: N

EVA MONITOR:
Audio: N Video: N Telemetry: N

OTV HANGER REMOTE CONTROL:
Door(s): N Lights: Y TV(signature data auto scan): Y
FSS latch/unlatch: Y RR Umbilical control: N

TRAINING VIDEO SYSTEM:
On-board: N Up-link: N

Handling and Positioning Aid (HPA) teleoperation: N

OMV support: N Prop. load & drain computer system: N

ORU Bar code data base: N Paging: Y MPAC: N

Planning work station (computer): Y

************** OTV HANGER **************

Aerobrake storage fitting: N OTV flight support structure: N

Personnel EVA door: N MPAC connection: N

HPA's (local & teleoperated): N Hand & foot restraints: N

ORU storage lockers: N Tool lockers: N

Thermal control system: Y

******** PROPELLANT SERVICING FACILITY AND EQUIPMENT ********

PROPELLANT SERVICING FACILITY

Standard Servicing Interface (remote latch/unlatch): N
Remote Control Removable Quick Disconnects, Fill/drain/vent/pressurization: N
Fuel cell fill/drain/purge/pressurization: N
Propellant metering system: N

EVA Personnel equipment: N EVA equipment box: N Support Equipment: N

Portable MPAC: N Lights: N Bar code reader: N

Video Cameras: N Tools manual/power: N

External ORU storage boxes: N

SC electrical/mechanical interface simulator: N
SPACE STATION DETAILED RESOURCES IDENTIFICATION
TASK NO: 5 ELECTRICAL SYSTEM TEST

SUBTASK NO: <5.0400> DESCRIPTION: AVIONICS POWER ON CHECKS

ACTIVITY: APPLY OTV AVIONICS BUS POWER AND VERIFY THE POWER PROFILE.

Personnel:
SPACE STATION
STATION SPECIALIST(S) IVA (2)
STATION SPECIALIST(S) EVA (8)

GROUND STATION
CS-G (0)

Sub Total (2) Total (2)

Serial Time To Complete: 180 min Total Manhours (6.0)

SC-POCC Support Required: (N)

AUTOMATION NEED: (Primary Key)

AUTOMATION SECONDARY KEY(S)

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CONTROL SYSTEM - STATION (CS-S) ------------------------------

OTV Control & monitor system: N Tracking: N Data Dump: N

EVA MONITOR:
Audio: N Video: N Telemetry: N

OTV HANGER REMOTE CONTROL:
Door(s): N Lights: Y TV(signature data auto scan): Y
FSS latch/unlatch: Y RR U melical control: N

TRAINING VIDEO SYSTEM:
On-board: N Up-link: N

Handling and Postioning Aid (HPA) teleoperation: N

OMV support: N Prop. load & drain computer system: N

ORU Bar code data base: N Paging: Y MPAC: N

Planning work station (computer): Y

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Aerobrake storage fitting: N OTV flight support structure: N
Personnel EVA door: N MPAC connection: N
HPA's (local & teleoperated): N Hand & foot restraints: N
ORU storage lockers: N Tool lockers: N

Thermal control system: N

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PROPELLANT SERVICING FACILITY AND EQUIPMENT ------------------

PROPELLANT SERVICING FACILITY

Standard Servicing Interface (remote latch/unlatch): N
Remote Control Removable Quick Disconnects, Fill/drain/vent/pressurization: N
Fuel cell fill/drain/purge/pressurization: N
Propellant metering system: N

EVA Personnel equipment: N EVA equipment box: N Support Equipment: N
Portable MPAC: N Lights: N Bar code reader: N
Video Cameras: N Tools manual/power: N
External ORU storage boxes: N

SC electrical/mechanical interface simulator: N

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SPACE STATION DETAILED RESOURCES IDENTIFICATION
TASK NO: 5 ELECTRICAL SYSTEM TEST

SUBTASK NO: < 5.0500> DESCRIPTION: <DPA SUBSYSTEM CHECKOUT >

ACTIVITY: VERIFY ALL AVIONICS ARE ON AND TELEMETRY MEASUREMENTS ARE PROPER AT THE SPACE STATION AND GROUND.

Personnel: SPACE STATION GROUND STATION
STATION SPECIALIST(S) IVA (2) CS-G (0)
STATION SPECIALIST(S) EVA (0) Sub Total (2)
Serial Time To Complete: 30 min Total Manhours (1.0)

SC-POCC Support Required: (N)
AUTOMATION NEED: (Primary Key)
AUTOMATION SECONDARY KEY(S)

************************** CONTROL SYSTEM - STATION (CS-S) ****************************

OTV Control & monitor system: N Tracking: N Data Dump: N

EVA MONITOR:
Audio: N Video: N Telemetry: N

OTV HANGER REMOTE CONTROL:
Door(s): N Lights: Y FSS latch/unlatch: Y TV(signature data auto scan): Y
RR Umbilical control: N

TRAINING VIDEO SYSTEM:
On-board: N Up-link: N
MRMS teleoperation control: N

Handling and Positioning Aid (HPA) teleoperation: N

OMV support: N Prop. load & drain computer system: N
ORU Bar code data base: N Paging: Y MPAC: N
Planning work station (computer): Y OTV HANGER

Aerobrake storage fitting: N OTV flight support structure: N
Personnel EVA door: N MPAC connection: N
HPA's (local & teleoperated): N Hand & foot restraints: N
ORU storage lockers: N Tool lockers: N
Thermal control system: N

********** PROPELLANT SERVICING FACILITY AND EQUIPMENT ************

PROPELLANT SERVICING FACILITY

Fuel cell fill/drain/purge/pressurization: N Propellant metering system: N

EVA Personnel equipment: N EVA equipment box: N Support Equipment: N
Portable MPAC: N Lights: N Bar code reader: N
Video Cameras: N Tools manual/power: N
External ORU storage boxes: N
SC electrical/mechanical interface simulator: N
SPACE STATION DETAILED RESOURCES IDENTIFICATION
TASK NO: 6 INTEGRATED SYSTEM TEST

SUBTASK NO: < 6.6100>

DESCRIPTION: <AEROBRAKE CONTROL CHECKS>

ACTIVITY: PERFORM AEROBRAKE CHECKS TO VERIFY PROPER OPERATION OF ALL COMPONENTS

Personnel: SPACE STATION
STATION SPECIALIST(S) IVA (2)
STATION SPECIALIST(S) EVA (8)
Sub Total (2) Total (8)

Serial Time To Complete: 246 min Total Manhours (32.0)

SC-POCC Support Required: (Y)

AUTOMATION NEED: (Primary Key)

AUTOMATION SECONDARY KEY(S)

CONTROL SYSTEM - STATION (CS-S)

OTV Control & monitor system: Y Tracking: N Data Dump: Y

EVA MONITOR:
Audio: N Video: N Telemetry: N

OTV HANGER REMOTE CONTROL:
Door(s): N Lights: Y TV(signature data auto scan): Y
FSS latch/unlatch: Y RR Umbilical control: N

TRAINING VIDEO SYSTEM:
On-board: N Up-link: N

Handling and Positioning Aid (HPA) teleoperation: N

OMV support: N Prop. load & drain computer system: N
ORU Bar code data base: N Paging: Y MPAC: N

Planning work station (computer): Y

Aerobrake storage fitting: N OTV flight support structure: N
Personnel EVA door: N MPAC connection: N
HPA's (local & teleoperated): N Hand & foot restraints: N
ORU storage lockers: N Tool lockers: N

Thermal control system: N

************* PROPELLENT SERVICING FACILITY AND EQUIPMENT

PROPELLENT SERVICING FACILITY

Standard Servicing Interface (remote latch/unlatch): N
Remote Control Remateable Quick Disconnects, Fill/drain/vent/pressurization: N
Fuel cell fill/drain/purge/pressurization: N
Propellant metering system: N

EVA Personnel equipment: N EVA equipment box: N Support Equipment: N
Portable MPAC: N Lights: N Bar code reader: N
Video Cameras: N Tools manual/power: N
External ORU storage boxes: N

SC electrical/mechanical interface simulator: N

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SPACE STATION DETAILED RESOURCES IDENTIFICATION
TASK NO: 6 INTEGRATED SYSTEM TEST

SUBTASK NO: < 6.0200> DESCRIPTION: <EXTENDABLE ENGINE CONE CHECKS>

ACTIVITY: EXTEND/RETRACT EEC-VERIFY ALL COMPONENTS ARE OPERATING PROPERLY

Personnel:  
SPACE STATION
STATION SPECIALIST(S) IVA (2)  
STATION SPECIALIST(S) EVA (6)

GROUND STATION
CS-G (6)

Sub Total—(2)——(6)—Total—(8)—

Serial Time To Complete: 60 min  
Total Manhours (8.0)

SC-POCC Support Required: (Y)

AUTOMATION NEED: (Primary Key)

AUTOMATION SECONDARY KEY(S)  

*************** CONTROL SYSTEM — STATION (CS—S) ***************

OTV Control & monitor system: Y  
Tracking: N  
Data Dump: Y

EVA MONITOR:  
Audio: N  
Video: N  
Telemetry: N

OTV HANGER REMOTE CONTROL:  
Door(s): N  
Lights: Y  
FSS latch/unlatch: Y  
TV(signature data auto scan): Y  
RR Umbilical control: N

TRAINING VIDEO SYSTEM:  
MRMS teleoperation control: N

Handling and Positioning Aid (HPA) teleoperation: N

OMV support: N  
Prop. load & drain computer system: N

ORU Bar code data base: N  
Paging: Y  
MPAC: N

Planning work station (computer): Y

************************** OTV HANGER **************************

Aerobrake storage fitting: N  
OTV flight support structure: N

Personnel EVA door: N  
MPAC connection: N

HPA’s (local & teleoperated): N  
Hand & foot restraints: N

ORU storage lockers: N  
Tool lockers: N

Thermal control system: N

******** PROPELLANT SERVICING FACILITY AND EQUIPMENT **********

PROPELLANT SERVICING FACILITY

Standard Servicing Interface (remote latch/unlatch): N  
Remote Control Removable Quick Disconnects,  
Fill/drain/vent/pressurization: N

Fuel cell fill/drain/purge/pressurization: N  
Propellant metering system: N

EVA Personnel equipment: N  
EVA equipment box: N  
Support Equipment: N

Portable MPAC: N  
Lights: N  
Bar code reader: N

Video Cameras: N  
Tools manual/power: N

External ORU storage boxes: N

SC electrical/mechanical interface simulator: N
SPACE STATION DETAILED RESOURCES IDENTIFICATION

ACTIVITY: CONFIGURE GPS/OTV GSE AND TRANSMISSION SYSTEM, TRANSMIT COMMAND (Ku-BAND CLR)

Personnel:  
SPACE STATION  
STATION SPECIALIST(S) IVA (2)  
STATION SPECIALIST(S) EVA (8)  

GROUND STATION  

Sub Total (2)  
Total (8)

Serial Time To Complete: 120 min  
Total Manhours (16.0)

SC-POCC Support Required: (Y)

AUTOMATION NEED: (Primary Key)

AUTOMATION SECONDARY KEY(S)

*************** CONTROL SYSTEM - STATION (CS-S) **********************

OTV Control & monitor system: Y  Tracking: N  Data Dump: Y

EVA MONITOR:
  Audio: N  Video: N  Telemetry: N

OTV HANGER REMOTE CONTROL:
  Door(s): N  Lights: Y  TV(signature data auto scan): Y  RR Umbilical control: N

TRAINING VIDEO SYSTEM:
  On-board: N  Up-link: N

Handling and Positioning Aid (HPA) teleoperation: N

OMV support: N  Prop. load & drain computer system: N

ORU Bar code data base: N  Paging: Y  MPAC: N

Planning work station (computer): Y

************** OTV HANGER **************

Aerobrake storage fitting: N  OTV flight support structure: N

Personnel EVA door: N  MPAC connection: N

HPA's (local & teleoperated): N  Hand & foot restraints: N

ORU storage lockers: N  Tool lockers: N

Thermal control system: N

************* PROPELLANT SERVICING FACILITY AND EQUIPMENT *************

PROPELLANT SERVICING FACILITY

Standard Servicing Interface (remote latch/unlatch): N  
Remote Control Remateable Quick Disconnects: N
  Fill/drain/vent/pressurization: N
  Fuel cell fill/drain/purge/pressurization: N
  Propellant metering system: N

EVA Personnel equipment: N  EVA equipment box: N  Support Equipment: N

Portable MPAC: N  Lights: N  Bar code reader: N

Video Cameras: N  Tools manual/power: N

External ORU storage boxes: N

SC electrical/mechanical interface simulator: N
SPACE STATION DETAILED RESOURCES IDENTIFICATION

TASK NO: 6  INTEGRATED SYSTEM TEST

SUBTASK NO: < 6.6408>  DESCRIPTION: <INTEGRATED SYSTEM CHECKS> >

ACTIVITY: CONFIGURE GPS/OTV GSE AND TRANSMISSION SYSTEM. TRANSMIT COMMAND (KU-BAND CLR)

Personnel:
SPACE STATION
STATION SPECIALIST(S) IVA (2)
STATION SPECIALIST(S) EVA (6)

GROUND STATION
CS-G (6)

Sub Total (2)  Total (6)

Serial Time To Complete: 1440 min  Total Manhours (192.6)

SC-POCC Support Required: (Y)

AUTOMATION NEED: (Primary Key)

AUTOMATION SECONDARY KEY(S)


CONTROL SYSTEM - STATION (CS-S) --------------

OTV Control & monitor system: Y  Tracking: N  Data Dump: Y

EVA MONITOR:
Audio: N  Video: N  Telemetry: N

OTV HANGER REMOTE CONTROL:
Door(s): N  Lights: Y  TV(signature data auto scan): Y  RR Umbilical control: N

TRAINING VIDEO SYSTEM:
On-board: N  Up-link: N  MRMS teleoperation control: N

Handling and Positioning Aid (HPA) teleoperation: N

OMV support: N  Prop. load & drain computer system: N

ORU Bar code data base: N  Paging: Y  MPAC: N

Planning work station (computer): Y

********* PROPELLANT SERVICING FACILITY AND EQUIPMENT ***********

********** PROPELLANT SERVICING FACILITY

Standard Servicing Interface (remote latch/unlatch): N
Remote Control Remateable Quick Disconnects: N
Fuel cell fill/drain/purge/pressurization: N
Propellant metering system: N

EVA Personnel equipment: N  EVA equipment box: N  Support Equipment: N

Portable MPAC: N  Lights: N  Bar code reader: N

Video Cameras: N  Tools manual/power: N

External ORU storage boxes: N

SC electrical/mechanical interface simulator: N
SPACE STATION DETAILED RESOURCES IDENTIFICATION
TASK NO: 6 INTEGRATED SYSTEM TEST

SUBTASK NO: < 6.0500> DESCRIPTION: <GPS OPERATION CHECKS>

ACTIVITY: CONFIGURE GPS/OTV/GSE AND TRANSMISSION SYSTEM

Personnel: SPACE STATION
STATION SPECIALIST(S) IVA (2)
STATION SPECIALIST(S) EVA (6)
Sub Total (2)

GROUND STATION
CS-G (6)
Total (8)

Serial Time To Complete: 120 min
Total Manhours (16.6)

SC-POCC Support Required: (Y)

AUTOMATION NEED: (Primary Key)
AUTOMATION SECONDARY KEY(S)

*************** CONTROL SYSTEM - STATION (CS—S) ***************

OTV Control & monitor system: Y Tracking: N Data Dump: Y

EVA MONITOR:
Audio: N Video: N Telemetry: N

OTV HANGER REMOTE CONTROL:
Door(s): N Lights: Y FSS latch/unlatch: Y

RR Umbilical control: N

TRAINING VIDEO SYSTEM:
On-board: N Up-link: N

Handling and Positioning Aid (HPA) teleoperation: N

OMV support: N Prop. load & drain computer system: N

ORU Bar code data base: N Paging: Y MPAC: N

Planning work station (computer): Y

*************** OTV HANGER ***************

Aerobrake storage fitting: N OTV flight support structure: N

Personnel EVA door: N MPAC connection: N

HPA's (local & teleoperated): N Hand & foot restraints: N

ORU storage lockers: N Tool lockers: N

Thermal control system: N

************* PROPELLANT SERVICING FACILITY AND EQUIPMENT *************

PROPELLANT SERVICING FACILITY

Standard Servicing Interface (remote latch/unlatch): N
Remote Control Removable Quick Disconnects: N
Fuel cell fill/drain/purge/pressurization: N

EVA Personnel equipment: N EVA equipment box: N Support Equipment: N

Portable MPAC: N Lights: N Bar code reader: N

Video Cameras: N Tools manual/power: N

External ORU storage boxes: N

SC electrical/mechanical interface simulator: N
SPACE STATION DETAILED RESOURCES IDENTIFICATION
TASK NO: 7 OTV/CS-G TEST

SUBTASK NO: < 7.0100> DESCRIPTION: <OTV/CS RF TEST >

ACTIVITY: CONFIGURE OTV/GPS/GSE AND TRANSMISSION SYSTEM, TRANSMIT COMMANDS

Personnel: SPACE STATION GROUND STATION
STATION SPECIALIST(S) IVA (2) CS-G (6)
STATION SPECIALIST(S) EVA (6) Sub Total- ________ (2) Total—in______ (8)

Serial Time To Complete: 960 min Total Manhours (128.0)

SC-POCC Support Required: (Y)

AUTOMATION NEED: (Primary Key)

AUTOMATION SECONDARY KEY(S)

********** CONTROL SYSTEM - STATION (CS-S) **********

OTV Control & monitor system: Y Tracking: N Data Dump: Y

EVA MONITOR:
Audio: N Video: N Telemetry: N

OTV HANGER REMOTE CONTROL:
Door(s): N Lights: Y TV(signature data auto scan): Y
FSS latch/unlatch: N RR Umbilical control: N

TRAINING VIDEO SYSTEM:
On-board: N Up-link: N

Handling and Positioning Aid (HPA) teleoperation: N

OMV support: N Prop. load & drain computer system: N

ORU Bar code data base: N Paging: Y MPAC: N

Planning work station (computer): Y

********** OTV HANGER **********

Aerobrake storage fitting: N OTV flight support structure: N

Personnel EVA door: N MPAC connection: N
HPA's (local & teleoperated): N Hand & foot restraints: N

ORU storage lockers: N Tool lockers: N

Thermal control system: N

********** PROPELLANT SERVICING FACILITY AND EQUIPMENT **********

PROPELLANT SERVICING FACILITY

Standard Servicing Interface (remote latch/unlatch): N
Remote Control Removable Quick Disconnects, Fill/drain/vent/pressurization: N
Fuel cell fill/drain/purge/pressurization: N
Propellant metering system: N

EVA Personnel equipment: N EVA equipment box: N Support Equipment: N
Portable MPAC: N Lights: N Bar code reader: N
Video Cameras: N Tools manual/power: N
External ORU storage boxes: N

SC electrical/mechanical interface simulator: N
SPACE STATION DETAILED RESOURCES IDENTIFICATION
TASK NO: 11  OTV SPACECRAFT MATE

SUBTASK NO: < 11.0100>  DESCRIPTION: MECHANICALLY MATE OTV TO SC

ACTIVITY: USING SPACECRAFT ADAPTER HARDWARE AND HANDLING EQUIPMENT
MECHANICALLY MATE OTV AND SPACECRAFT.

Personnel:  SPACE STATION
STATION SPECIALIST(S) IVA (1)
STATION SPECIALIST(S) EVA (2)
Sub Total: 3

GROUND STATION
CS-G (6)
EVA (2)
Sub Total: 8

Serial Time To Complete: 360 min  Total Manhours: 54.0

SC-POCC Support Required: (Y)

AUTOMATION NEED: (Primary Key)

AUTOMATION SECONDARY KEY(S)

**************** CONTROL SYSTEM — STATION (CS-S) ****************

OTV Control & monitor system: Y  Tracking: N  Data Dump: Y

EVA MONITOR:
Audio: Y  Video: Y  Telemetry: Y

OTV HANGER REMOTE CONTROL:
Door(s): Y  Lights: Y  TV(signature data auto scan): Y
FSS latch/unlatch: Y  RR Umbilical control: N

TRAINING VIDEO SYSTEM:
On-board: N  Up-link: N

Handling and Positioning Aid (HPA) teleoperation: Y

OMV support: Y  Prop. load & drain computer system: N
ORU Bar code data base: N  Paging: Y  MPAC: N
Planning work station (computer): Y

**************** OTV HANGER ****************

Aerobrake storage fitting: N  OTV flight support structure: N
Personnel EVA door: Y  MPAC connection: N
HPA’s (local & teleoperated): Y  Hand & foot restraints: Y
ORU storage lockers: N  Tool lockers: N

Thermal control system: N

********* PROPELLANT SERVICING FACILITY AND EQUIPMENT ***********

PROPELLANT SERVICING FACILITY

Standard Servicing Interface (remote latch/unlatch): N
Remote Control Remanable Quick Disconnects: N
Fill/drain/vent/pressurization: N
Fuel cell fill/drain/purge/pressurization: N
Propellant metering system: N

EVA Personnel equipment: Y  EVA equipment box: Y  Support Equipment: N
Portable MPAC: N  Lights: N  Bar code reader: N
Video Cameras: N  Tools manual/power: N
External ORU storage boxes: N
SC electrical/mechanical interface simulator: N
SPACE STATION DETAILED RESOURCES IDENTIFICATION
TASK NO: 11 OTV SPACECRAFT MATE

SUBTASK NO: <11.0200> DESCRIPTION: <ELECTRICALLY MATE OTV TO S/C>
ACTIVITY: VERIFY/CONNECT ALL S/C ELECTRICAL CABLES

Personnel: SPACE STATION
STATION SPECIALIST(S) IVA (1) GROUND STATION
STATION SPECIALIST(S) EVA (2) CS-G (6)
Sub Total (3) Total (6)

Serial Time To Complete: 240 min Total Manhours (36.0)
SC-POCC Support Required: (Y)
AUTOMATION NEED: (Primary Key)
AUTOMATION SECONDARY KEY(S)

*************** CONTROL SYSTEM - STATION (CS-S) ***********************
OTV Control & monitor system: Y Tracking: N Data Dump: Y

EVA MONITOR:
Audio: Y Video: Y Telemetry: Y

OTV HANGER REMOTE CONTROL:
Door(s): N Lights: Y TV(signature data auto scan): Y
FSS latch/unlatch: Y RR Uambilical control: N

TRAINING VIDE0 SYSTEM:
MRMS teleoperation control: N
On-board: N Up-link: N

Handling and Positioning Aid (HPA) teleoperation: Y

OMV support: Y Prop. load & drain computer system: N
ORU Bar code data base: N Paging: Y MPAC: N
Planning work station (computer): Y

*************** OTV HANGER ***********************
Aerobrake storage fitting: N OTV flight support structure: N
Personnel EVA door: Y MPAC connection: N
HPA's (local & teleoperated): Y Hand & foot restraints: Y
ORU storage lockers: N Tool lockers: N

Thermal control system: N

********** PROPELLANT SERVICING FACILITY AND EQUIPMENT ***************

PROPELLANT SERVICING FACILITY

Standard Servicing Interface (remote latch/unlatch): N Remote Control Removable Quick Disconnects: N
Fill/drain/vent/pressurization: N Fuel cell fill/drain/purge/pressurization: N
Propellant metering system: N

EVA Personnel equipment: Y EVA equipment box: Y Support Equipment: Y
Portable MPAC: Y Lights: Y Bar code reader: Y
Video Cameras: Y Tools manual/power: Y
External ORU storage boxes: Y

SC electrical/mechanical interface simulator: Y
SPACE STATION DETAILED RESOURCES IDENTIFICATION

TASK NO: 12 OTV SPACECRAFT INTEGRATION

SUBTASK NO: < 12.0500> DESCRIPTION: <CMD/DATA RF CHECKS>

ACTIVITY: VERIFY TELEMETRY AND COMMAND RF LINKS TO OTV AND S/C

Personnel: SPACE STATION STATION SPECIALIST(S) IVA (2) STATION SPECIALIST(S) EVA (6)
GROUND STATION CS-G (6)

Sub Total (2) Total (6)

Serial Time To Complete: 300 min Total Manhours (40,0)

SC-POCC Support Required: (Y)

AUTOMATION NEED: (Primary Key)

AUTOMATION SECONDARY KEY(S)

*************** CONTROL SYSTEM — STATION (CS—S) ****************************

OTV Control & monitor system: Y Tracking: N Data Dump: Y

EVA MONITOR:
  Audio: N Video: N Telemetry: N

OTV HANGER REMOTE CONTROL:
  Door(s): N Lights: Y TV(signature data auto scan): Y
  FSS latch/unlatch: Y RR umbilical control: N

TRAINING VIDEO SYSTEM:
  On-board: N Up-link: N

Handling and Positioning Aid (HPA) teleoperation: N

OMV support: N Prop. load & drain computer system: N

ORU Bar code data base: N Paging: Y MPAC: N

Planning work station (computer): Y

************ OTV HANGER ***************************

Aerobrake storage fitting: N OTV flight support structure: N

Personnel EVA door: N MPAC connection: N

HPA's (local & teleoperated): N Hand & foot restraints: N

ORU storage lockers: N Tool lockers: N

Thermal control system: N

************* PROPELLANT SERVICING FACILITY AND EQUIPMENT ******************

PROPELLANT SERVICING FACILITY

  Standard Servicing Interface (remote latch/unlatch): N Remote Control Removable Quick Disconnects,
  Fill/drain/vent/pressurization: N Fuel cell fill/drain/purge/pressurization: N Propellant metering system: N

EVA Personnel equipment: N EVA equipment box: N Support Equipment: N

Portable MPAC: N Lights: N Bar code reader: N

Video Cameras: N Tools manual/power: N

External ORU storage boxes: N

SC electrical/mechanical interface simulator: N

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SPACE STATION DETAILED RESOURCES IDENTIFICATION
TASK NO: 12 OTV SPACECRAFT INTEGRATION

SUBTASK NO: < 12.0600>

DESCRIPTION: <OTV S/C INTERFACE TEST>

ACTIVITY: VERIFY MECHANICAL/ELECTRICAL INTERFACES BETWEEN OTV AND S/C

Personnel:

<table>
<thead>
<tr>
<th>SPACE STATION</th>
<th>GROUND STATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>STATION SPECIALIST(S)</td>
<td>CS-G (6)</td>
</tr>
<tr>
<td>IVA (2)</td>
<td></td>
</tr>
<tr>
<td>SUBTOTAL (2)</td>
<td></td>
</tr>
<tr>
<td>Total (8)</td>
<td></td>
</tr>
</tbody>
</table>

Serial Time To Complete: 120 min
Total Manhours (16.8)

SC-POOC Support Required: (Y)

AUTOMATION NEED: (Primary Key)

AUTOMATION SECONDARY KEY(S)


CONTROL SYSTEM - STATION (CS-S)

OTV Control & monitor system: Y
Tracking: N
Data Dump: Y

EVA MONITOR:
Audio: N
Video: N
Telemetry: N

OTV HANGER REMOTE CONTROL:
Door(s): N
Lights: Y
FSS latch/unlatch: Y
TV(signature data auto scan): Y
RR Umbilical control: N

TRAINING VIDEO SYSTEM:
On-board: N
Up-link: N
MRMS teleoperation control: N

Handling and Positioning Aid (HPA) teleoperation: N

OMV support: N
Prop. load & drain computer system: N

Planning work station (computer): Y

Aerobrake storage fitting: N
OTV flight support structure: N

Personnel EVA door: N
MPAC connection: N
HPA’s (local & teleoperated): N
Hand & foot restraints: N

ORU storage lockers: N
Tool lockers: N

Thermal control system: N

PROPELLANT SERVICING FACILITY AND EQUIPMENT

PROPELLANT SERVICING FACILITY

Standard Servicing Interface (remote latch/unlatch): N
Remote Control Remoteable Quick Disconnects:
Fuel cell fill/drain/vent/pressurization: N
Propellant metering system: N

EVA Personnel equipment: N
EVA equipment box: N
Support Equipment: N
Portable MPAC: N
Lights: N
Bar code reader: N
Video Cameras: N
Tools manual/power: N

External ORU storage boxes: N

SC electrical/mechanical interface simulator: N
SPACE STATION DETAILED RESOURCES IDENTIFICATION

TASK NO: 17 INSTALL BATTERIES AND ORDNANCE

SUBTASK NO: < 17.0260 DESCRIPTION: <INSTALL BATTERIES>

ACTIVITY: REMOVE THE ACCESS PANELS—INSTALL BATTERIES—PERFORM THE BATTERY TEST PROCEDURE—CLOSE THE ACCESS PANELS

Personnel:  SPACE STATION
            STATION SPECIALIST(S) IVA (2) CS-G (6)
            STATION SPECIALIST(S) EVA (6)
            Sub Total (2) Total (6)

Serial Time To Complete: 180 min Total Manhours (24.0)

SC–POCC Support Required: (Y)

AUTOMATION NEED: (Primary Key)

AUTOMATION SECONDARY KEY(S)

****************** CONTROL SYSTEM – STATION (CS–S) ******************

OTV Control & monitor system: Y Tracking: N Data Dump: Y

EVA MONITOR:
  Audio: N Video: N Telemetry: N

OTV HANGER REMOTE CONTROL:
  Door(s): N Lights: Y TV(signature data auto scan): Y
  FSS latch/unlatch: Y RR Umbilical control: N

TRAINING VIDEO SYSTEM:
  On-board: N Up-link: N

Handling and Positioning Aid (HPA) teleoperation: Y

OMV support: N Prop. load & drain computer system: N

ORU Bar code data base: N Paging: Y MPAC: N

Planning work station (computer): Y **************** OTV HANGER ****************

Aerobrake storage fitting: N OTV flight support structure: N

Personnel EVA door: N MPAC connection: N

HPA’s (local & teleoperated): Y Hand & foot restraints: Y

ORU storage lockers: N Tool lockers: N

Thermal control system: N

*********** PROPELLANT SERVICING FACILITY AND EQUIPMENT ***********

PROPELLANT SERVICING FACILITY

Standard Servicing Interface (remote latch/unlatch): N
Remote Control Remateable Quick Disconnects,
  Fuel cell fill/drain/vent/pressurization: N
  Propellant metering system: N

EVA Personnel equipment: N EVA equipment box: N Support Equipment: Y
Portable MPAC: N Lights: Y Bar code reader: Y
Video Cameras: Y Tools manual/power: Y

External ORU storage boxes: Y
SC electrical/mechanical interface simulator: N
### Task No: 17 Install Batteries and Ordnance

#### Description: Install Ordnance

**Activity:** Remove access panels—perform static voltage checks—install ordnance—perform static voltage checks—electrically connect squibs—replace access panels.

**Personnel:**
- **SPACE STATION SPECIALIST(S) IVA (2)**
- **CS-G (6)**
- **STATION SPECIALIST(S) EVA (6)**

**Serial Time To Complete:** 360 min

**Total Manhours:** 48.0

**SC-POCC Support Required:** (Y)

**Automation Need:** (Primary Key)

**Automation Secondary Key(s):**

---

### Control System - Station (CS-S)

- **OTV Control & Monitor System:** Y
- **Tracking:** N
- **Data Dump:** Y

**EVA Monitor:**
- Audio: N
- Video: N
- Telemetry: N

**OTV Hanger Remote Control:**
- Door(s): N
- Lights: Y
- TV (signature data auto scan): Y
- RR Umbilical control: N

**Training Video System:**
- WETMMS teleoperation control: N

**Handling and Positioning Aid (HPA) Teleoperation:** N

**OMV Support:** N

**Planning Work Station (Computer):** Y

---

### ProPELLANT Servicing Facility and Equipment

**Standard Servicing Interface (remote latch/unlatch):** N

**Remote Control Removable Quick Disconnects:**
- Fill/drain/vent/pressurization: N
- Fuel cell fill/drain/purge/pressurization: N
- Propellant metering system: N

**EVA Personnel Equipment:** N
- **EVA Equipment Box:** N
- **Support Equipment:** N

**Portable MPAC:** N
- **Lights:** N
- **Bar Code Reader:** N

**Video Cameras:** N
- **Tools Manual/power:** N

**External ORU Storage Boxes:** N

**SC Electrical/Mechanical Interface Simulator:** N
**SPACE STATION DETAILED RESOURCES IDENTIFICATION**

**TASK NO: 17 INSTALL BATTERIES AND ORDNANCE**

**SUBTASK NO: < 17.0500>**

**DESCRIPTION:** <PERFORM POWER TRANSFER CHECKS >

**ACTIVITY:** PERFORM OTV POWER ON TEST-TRANSFER POWER TO BATTERY POWER—PERFORM BATTERY POWER CHECKS—TRANSFER POWER TO SPACE STATION POWER.

Personnel:

<table>
<thead>
<tr>
<th>SPACE STATION STATION SPECIALIST(S) IVA</th>
<th>GROUND STATION CS-G</th>
</tr>
</thead>
<tbody>
<tr>
<td>(2)</td>
<td>(6)</td>
</tr>
</tbody>
</table>

**Sub Total**

| 2 | Total | 8 |

**Serial Time To Complete:** 120 min

**Total Manhours:** 16.0

**SC-POCC Support Required:** (Y)

**AUTOMATION NEED:** (Primary Key)

**AUTOMATION SECONDARY KEY(S):**

*************** CONTROL SYSTEM — STATION (CS-S) **************

**OTV Control & monitor system:** Y **Tracking:** N **Data Dump:** Y

**EVA MONITOR:**

| Audio: N | Video: N | Telemetry: N |

**OTV HANGER REMOTE CONTROL:**

| Door(s): N | Lights: Y | TV (signature data auto scan): Y |

| FSS latch/unlatch: Y | RR Umbilical control: N |

**TRAINING VIDEO SYSTEM:**

| MRMS teleoperation control: N |

**On-board: N | Up-link: N**

**Handling and Positioning Aid (HPA) teleoperation:** N

**OMV support:** N **Prop. load & drain computer system:** N

**ORU Bar code data base:** N **Paging:** Y **MPAC:** N

**Planning work station (computer):** Y

*************** PROPELLANT SERVICING FACILITY AND EQUIPMENT ***************

**Aerobrake storage fitting:** N **OTV flight support structure:** N

**Personnel EVA door:** N **MPAC connection:** N

**HPA’s (local & teleoperated):** N **Hand & foot restraints:** N

**ORU storage lockers:** N **Tool lockers:** N

**Thermal control system:** N

********** PROPELLANT SERVICING FACILITY **********

**Standard Servicing Interface (remote latch/unlatch):** N **Remote Control Removable Quick Disconnects, Fill/drain/vent/pressurization:** N **Fuel cell fill/drain/purge/pressurization:** N **Propellant metering system:** N

**EVA Personnel equipment:** N **EVA equipment box:** N **Support Equipment:** N

**Portable MPAC:** N **Lights:** N **Bar code reader:** N

**Video Cameras:** N **Tools manual/power:** N

**External ORU storage boxes:** N

**SC electrical/mechanical interface simulator:** N
**SPACE STATION DETAILED RESOURCES IDENTIFICATION**

**TASK NO: 18 LOAD OTV RCS**

**SUBTASK NO: < 18.0200>**  
**DESCRIPTION: <FILL RCS TANKS>**  
**ACTIVITY: VERIFY RCS MECHANICAL CONNECTIONS, COMMAND START OF FILL OPERATIONS—VERIFY PRESSURE/TEMP DATA.**

**Personnel:**  
- **SPACE STATION SPECIALIST(S) IVA (2)**  
- **GROUND STATION SPECIALIST(S) CS-G (6)**  
- Sub Total  
  **2**  
- Total  
  **8**

**Serial Time To Complete:** 120 min  
**Total Manhours:** (16.0)

**SC-POCC Support Required:** (Y)

**AUTOMATION NEED:** (Primary Key)

**AUTOMATION SECONDARY KEY(S):**

*************** CONTROL SYSTEM — STATION (CS-S) ***************

**OTV Control & monitor system:** Y  
**Tracking:** N  
**Data Dump:** Y

**EVA MONITOR:**
- Audio: N  
- Video: N  
- Telemetry: N

**OTV HANGER REMOTE CONTROL:**
- Door(s): N  
- Lights: Y  
- TV (signature data auto scan): Y  
- FSS latch/unlatch: Y  
- RR Umbilical control: Y

**TRAINING VIDEO SYSTEM:**
- On-board: N  
- Up-link: N

**Handling and Positioning Aid (HPA) teleoperation:** N

**OMV support:** N  
**Prop. load & drain computer system:** Y

**ORU Bar code data base:** N  
**Paging:** Y  
**MPAC:** N

**Planning work station (computer):** Y

*************** OTV HANGER ***************

**Aerobrake storage fitting:** N  
**OTV flight support structure:** N

**Personnel EVA door:** N  
**MPAC connection:** N

**HPA's (local & teleoperated):** N  
**Hand & foot restraints:** N

**ORU storage lockers:** N  
**Tool lockers:** N

**Thermal control system:** N

********** PROPELLANT SERVICING FACILITY AND EQUIPMENT **********

**PROPELLANT SERVICING FACILITY**

- **Standard Servicing Interface (remote latch/unlatch):** Y  
- **Remote Control Removable Quick Disconnects:** Filling/drain/vent/pressurization: Y  
- **Fuel cell fill/drain/purge/pressurization:** Y  
- **Propellant metering system:** Y

**EVA Personnel equipment:** N  
**EVA equipment box:** N  
**Support Equipment:** Y

**Portable MPAC:** N  
**Lights:** Y  
**Bar code reader:** N

**Video Cameras:** Y  
**Tools manual/power:** N

**External ORU storage boxes:** N

**SC electrical/mechanical interface simulator:** N
SPACE STATION DETAILED RESOURCES IDENTIFICATION
TASK NO: 21 SPACECRAFT POCC TEST

SUBTASK NO: < 21.0100> DESCRIPTION: <ISSUE S/C COMMANDS FROM POCC >

ACTIVITY: ISSUE COMMANDS FROM POCC VIA TDRSS-KSC TELEMETRY-ORBITER COMMAND AND DATA SYSTEM.

Personnel: SPACE STATION
   STATION SPECIALIST(S) IVA (2)
   STATION SPECIALIST(S) EVA (6)
   Sub Total (2) (6)

GROUND STATION
   CS-G (6)
   Total (6)

Serial Time To Complete: 240 min
Total Manhours: 32.0

SC-POCC Support Required: (Y)

AUTOMATION NEED: (Primary Key)

AUTOMATION SECONDARY KEY(S)

*************** CONTROL SYSTEM — STATION (CS-S) ***********************

OTV Control & monitor system: Y Tracking: N Data Dump: Y

EVA MONITOR:
   Audio: N Video: N Telemetry: N

OTV HANGER REMOTE CONTROL:
   Door(s): N Lights: Y TV(signature data auto scan): Y
   FSS latch/unlatch: Y RR Umbilical control: N

TRAINING VIDEO SYSTEM:
   MRM teleoperation control: N

On-board: N Up-link: N

Handling and Positioning Aid (HPA) teleoperation: N

OMV support: N Prop. load & drain computer system: N

ORU Bar code data base: N Paging: Y MPAC: N

Planning work station (computer): Y

*************** OTV HANGER ***********************

Aerobrake storage fitting: N OTV flight support structure: N

Personnel EVA door: N MPAC connection: N

HPA's (local & teleoperated): N Hand & foot restraints: N

ORU storage lockers: N Tool lockers: N

Thermal control system: N

*************** PROPPELLANT SERVICING FACILITY AND EQUIPMENT ***********************

PROPELLANT SERVICING FACILITY

Standard Servicing Interface (remote latch/unlatch): N
Remote Control Removable Quick Disconnects,
Fuel cell fill/drain/purge/pressurization: N
Propellant metering system: N

EVA Personnel equipment: N EVA equipment box: N Support Equipment: N
Portable MPAC: N Lights: N Bar code reader: N
Video Cameras: N Tools manual/power: N

External ORU storage boxes: N

SC electrical/mechanical interface simulator: N
SPACE STATION DETAILED RESOURCES IDENTIFICATION

TASK NO: 21 SPACECRAFT POCC TEST

SUBTASK NO: <21.020> DESCRIPTION: <VERIFY SPACECRAFT RESPONSE>

ACTIVITY: VERIFY DATA INDICATES POCC IS ABLE TO ISSUE COMMANDS TO THE S/C AND RECEIVE PROPER RESPONSE.

Personnel: SPACE STATION
STATION SPECIALIST(S) IVA (2)
STATION SPECIALIST(S) EVA (6)

GROUND STATION
CS-G (6)
Sub Total: (2) Total: (8)

Serial Time To Complete: 120 min Total Manhours: (16.0)

SC-POCC Support Required: (Y)

AUTOMATION NEED: (Primary Key)

AUTOMATION SECONDARY KEY(S)

**************** CONTROL SYSTEM - STATION (CS-S) ****************

OTV Control & monitor system: Y Tracking: N Data Dump: Y

EVA MONITOR:
Audio: N Video: N Telemetry: N

OTV HANGER REMOTE CONTROL:
Door(s): N Lights: Y TV: (signature data auto scan): Y
FSS latch/unlatch: Y RR Umbilical control: N

TRAINING VIDEO SYSTEM:
On-board: N Up-link: N

Handling and Positioning Aid (HPA) teleoperation: N

OMV support: N Prop. load & drain computer system: N

ORU Bar code data base: N Paging: Y MPAC: N

Planning work station (computer): Y

***************** OTV HANGER *****************

Aerobrake storage fitting: N OTV flight support structure: N

Personnel EVA door: N MPAC connection: N

HPA's (local & teleoperated): N Hand & foot restraints: N

ORU storage lockers: N Tool lockers: N

Thermal control system: N

************************** PROPELLANT SERVICING FACILITY AND EQUIPMENT ***************

PROPELLANT SERVICING FACILITY

Standard Servicing Interface (remote latch/unlatch): N
Remote Control Remanetable Quick Disconnects, Fill/drain/vent/pressurization: N
Fuel cell fill/drain/purge/pressurization: N
Propellant metering system: N

EVA Personnel equipment: N EVA equipment box: N Support Equipment: N

Portable MPAC: N Lights: N Bar code reader: N

Video Cameras: N Tools manual/power: N

External ORU storage boxes: N

SC electrical/mechanical interface simulator: N
**SPACE STATION DETAILED RESOURCES IDENTIFICATION**

**TASK NO: 21 SPACECRAFT POCC TEST**

**SUBTASK NO: 21.6300**

**DESCRIPTION:** <POWER DOWN SPACECRAFT>

**ACTIVITY:** REMOVE SPACECRAFT POWER

<table>
<thead>
<tr>
<th>Personnel: SPACE STATION STATION SPECIALIST(S) IVA</th>
<th>GROUND STATION CS-G</th>
</tr>
</thead>
<tbody>
<tr>
<td>(2)</td>
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</table>

<table>
<thead>
<tr>
<th>Personnel: SPACE STATION STATION SPECIALIST(S) EVA</th>
<th>Total</th>
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</thead>
<tbody>
<tr>
<td>(6)</td>
<td>(6)</td>
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</table>

**Serial Time To Complete:** 60 min

**Total Manhours:** 8.0

**SC-POCC Support Required:** (Y)

**AUTOMATION NEED:** (Primary Key)

**AUTOMATION SECONDARY KEY(S):**

---------- CONTROL SYSTEM - STATION (CS-S) -------------------------------

**OTV Control & monitor system:** Y  **Tracking:** N  **Data Dump:** Y

**EVA MONITOR:**
- Audio: N
- Video: N
- Telemetry: N

**OTV HANGER REMOTE CONTROL:**
- Door(s): N
- Lights: Y
- TV (signature data auto scan): Y
- RR Umbilical control: N

**TRAINING VIDEO SYSTEM:**
- MRMS teleoperation control: N
- On-board: N
- Up-link: N

**Handling and Positioning Aid (HPA) teleoperation:** N

**OMV support:** N  **Prop. load & drain computer system:** N

**ORU Bar code data base:** N  **Paging:** Y  **MPAC:** N

**Planning work station (computer):** Y

---------- OTV HANGER -------------------------------

**Aerobrake storage fitting:** N  **OTV flight support structure:** N

**Personnel EVA door:** N  **MPAC connection:** N

**HPA's (local & teleoperated):** N  **Hand & foot restraints:** N

**ORU storage lockers:** N  **Tool lockers:** N

**Thermal control system:** N

---------- PROPELLANT SERVICING FACILITY AND EQUIPMENT -------------------------------

**PROPELLANT SERVICING FACILITY**

- Standard Servicing Interface (remote latch/unlatch): N
- Remote Control Removable Quick Disconnects: N
- Fill/drain/vent/pressurization: N
- Fuel cell fill/drain/purge/pressurization: N
- Propellant metering system: N

**EVA Personnel equipment:** N  **EVA equipment box:** N  **Support Equipment:** N

**Portable MPAC:** N  **Lights:** N  **Bar code reader:** N

**Video Cameras:** N  **Tools manual/power:** N

**External ORU storage boxes:** N

**SC electrical/mechanical interface simulator:** N
SPACE STATION DETAILED RESOURCES IDENTIFICATION

TASK NO: 22 CLOSOUT AND PREPS TO MOVE

SUBTASK NO: < 22.0158> DESCRIPTION: <DISCONNECT UMBILICALS>

ACTIVITY: DEMATE AND INSPECT ELECTRICAL CONNECTORS, INSTALL PROTECTIVE COVERS/DEVICES. ATTACH MRPS OR HPA TO OTV ASSEMBLY IN PREPS TO EXIT HANGAR.

Personnel:

SPACE STATION
STATION SPECIALIST(S) IVA (2) STATION SPECIALIST(S) EVA (0)

GROUND STATION
CS-C (6)

Sub Total (2) Total (6)

Serial Time To Complete: 720 min Total Manhours (96.0)

SC-POCC Support Required: (Y)

AUTOMATION NEED: (Primary Key)

AUTOMATION SECONDARY KEY(S)

******************************************************************** CONTROL SYSTEM - STATION (CS-S) ********************************************************************

OTV Control & monitor system: Y Tracking: N Data Dump: Y

EVA MONITOR:
Audio: N Video: N Telemetry: N

OTV HANGER REMOTE CONTROL:
Door(s): N Lights: Y TV(signature data auto scan): Y
FSS latch/unlatch: Y RR Umbilical control: Y

TRAINING VIDEO SYSTEM:
On-board: N Up-link: N MRMS teleoperation control: Y

Handling and Positioning Aid (HPA) teleoperation: Y

OMV support: N Prop. load & drain computer system: N

ORU Bar code data base: N Paging: Y MPAC: N

Planning work station (computer): Y

******************************************************************** OTV HANGER ********************************************************************

Aerobrake storage fitting: N OTV flight support structure: N
Personnel EVA door: N MPAC connection: N
HPA's (local & teleoperated): Y Hand & foot restraints: N
ORU storage lockers: N Tool lockers: N

Thermal control system: N

******************************************************************** PROPELLANT SERVICING FACILITY AND EQUIPMENT ********************************************************************

PROPELLANT SERVICING FACILITY


EVA Personnel equipment: N EVA equipment box: N Support Equipment: N
Portable MPAC: N Lights: N Bar code reader: N
Video Cameras: N Tools manual/power: N
External ORU storage boxes: N

SC electrical/mechanical interface simulator: N
SPACE STATION DETAILED RESOURCES IDENTIFICATION

TASK NO: 22 CLOSEOUT AND PREPS TO MOVE

SUBTASK NO: <22.0256> DESCRIPTION: MOVE FROM HANGAR

ACTIVITY: USING THE MRMS AND HPA, MOVE THE OTV OUT OF THE HANGAR. MONITOR FOR CHANGE IN HEALTH PARAMETERS. POSITION OTV FOR AEROBRAKE INSTALLATION.

Personnel:
- SPACE STATION
  - STATION SPECIALIST(S) IVA (2)
  - STATION SPECIALIST(S) EVA (8)
  Sub Total: (2)
- GROUND STATION
  - CS-G (6)
  Total: (8)

Serial Time To Complete: 240 min
Total Manhours: 32.8

SC-POCC Support Required: (Y)

AUTOMATION NEED: (Primary Key)

AUTOMATION SECONDARY KEY(S)

CONTROL SYSTEM - STATION (CS-S)

OTV Control & monitor system: Y
Tracking: Y
Data Dump: Y

EVA MONITOR:
- Audio: N
- Video: N
- Telemetry: N

OTV HANGER REMOTE CONTROL:
- Door(s): Y
- Lights: Y
- FSS latch/unlatch: Y
- TV (signature data auto scan): Y
- RR Umbilical control: N

TRAINING VIDEO SYSTEM:
- On-board: N
- Up-link: N
- MRMS teleoperation control: Y

Handling and Positioning Aid (HPA) teleoperation: Y

OMV support: N
Prop. load & drain computer system: N

Planning work station (computer): Y
Paging: Y
MPAC: N

Aerobrake storage fitting: N
OTV flight support structure: Y

Personnel EVA door: N
MPAC connection: N
HPA’s (local & teleoperated): Y
Hand & foot restraints: N

ORU storage lockers: N
Tool lockers: N

Thermal control system: Y

PROPELLANT SERVICING FACILITY AND EQUIPMENT

PROPELLANT SERVICING FACILITY

Standard Servicing Interface (remote latch/unlatch): N
Remote Control Removable Quick Disconnects,
Fuel cell fill/drain/vent/pressurization: N
Propellant metering system: N

EVA Personnel equipment: N
EVA equipment box: N
Support Equipment: N
Portable MPAC: N
Lights: N
Bar code reader: N
Video Cameras: N
Tools manual/power: N
External ORU storage boxes: N
SC electrical/mechanical interface simulator: N
SPACE STATION DETAILED RESOURCES IDENTIFICATION

TASK NO: 22 CLOSEDOUT AND PREPS TO MOVE

SUBTASK NO: <22.0350> DESCRIPTION: <INSTALL/DEPLOY AEROBRAKE>

ACTIVITY: INSTALL/DEPLOY AEROBRAKE SYSTEM ON THE OTV

Personnel: SPACE STATION
    STATION SPECIALIST(S) IVA (2)
    STATION SPECIALIST(S) EVA (0)
Sub Total (2)

GROUND STATION
    CS-G (6)
Total (6)

Serial Time To Complete: 120 min Total Manhours (16.0)

SC-POCC Support Required: (Y)

AUTOMATION NEED: (Primary Key)

AUTOMATION SECONDARY KEY(S)

------------- CONTROL SYSTEM — STATION (CS—S) -------------

OTV Control & Monitor system: Y Tracking: Y Data Dump: Y

EVA MONITOR:
    Audio: N Video: N Telemetry: N

OTV HANGER REMOTE CONTROL:
    Door(s): N Lights: N
    FSS latch/unlatch: N
    TV(signature data auto scan): N
    RR Umbilical control: N

TRAINING VIDEO SYSTEM:
    On-board: N Up-link: N
    MRMS teleoperation control: Y

Handling and Positioning Aid (HPA) teleoperation: Y

OMV support: N

ORU Bar code data base: N Paging: Y MPAC: N

Planning work station (computer): Y

-------------- OTV HANGER ------------------------------

Aerobrake storage fitting: N

Personnel EVA door: N

HPA's (local & teleoperated): N

ORU storage lockers: N

Thermal control system: N

********** PROPELLANT SERVICING FACILITY AND EQUIPMENT **********

PROPELLANT SERVICING FACILITY

Standard Servicing Interface (remote latch/unlatch): N
Remote Control Removable Quick Disconnects, Fill/drain/vent/pressurization: N
Fuel cell fill/drain/purge/pressurization: N
Propellant metering system: N

EVA Personnel equipment: N EVA equipment box: N Support Equipment: N
Portable MPAC: N Lights: N Bar code reader: N
Video Cameras: N Tools manual/power: N
External ORU storage boxes: N

SC electrical/mechanical interface simulator: N
SPACE STATION DETAILED RESOURCES IDENTIFICATION
TASK NO: 22 CLOSEOUT AND PREPS TO MOVE

SUBTASK NO: < 22.8458> DESCRIPTION: <INSTALL OMV ON THE OTV >

ACTIVITY: INSTALL OMV ON THE OTV-VERIFY ALL POSITION LATCHES ARE LOCKED AND SECURE.

Personnel: SPACE STATION
STATION SPECIALIST(S) IVA (2)
STATION SPECIALIST(S) EVA (6)

GROUND STATION
CS-G (6)

Sub Total (2) Total (6)

Serial Time To Complete: 240 min Total Manhours (32.0)
SC-POCC Support Required: (Y)
AUTOMATION NEED: (Primary Key)

AUTOMATION SECONDARY KEY(S)

********CONTROL SYSTEM - STATION (CS-S)********

OTV Control & monitor system: Y Tracking: Y Data Dump: Y

EVA MONITOR:
Audio: N Video: N Telemetry: N

OTV HANGER REMOTE CONTROL:
Door(s): N Lights: N TV(signature data auto scan): N
FSS latch/unlatch: N RR Umbilical control: N

TRAINING VIDEO SYSTEM:
On-board: N Up-link: N

Handling and Positioning Aid (HPA) teleoperation: N
OMV support: Y Prop. load & drain computer system: N
ORU Bar code data base: N Paging: Y MPAC: N

Planning work station (computer): Y

********** OTV HANGER **********

Aerobrake storage fitting: N OTV flight support structure: N
Personnel EVA door: N MPAC connection: N
HPA's (local & teleoperated): N Hand & foot restraints: N
ORU storage lockers: N Tool lockers: N

******** PROPELLANT SERVICING FACILITY AND EQUIPMENT **********

PROPELLANT SERVICING FACILITY

Standard Servicing Interface (remote latch/unlatch): N
Remote Control Removable Quick Disconnects,
Fill/drain/vent/pressurization: N
Fuel cell fill/drain/purge/pressurization: N
Propellant metering system: N

EVA Personnel equipment: N EVA equipment box: N Support Equipment: N
Portable MPAC: N Lights: N Bar code reader: N
Video Cameras: N Tools manual/power: N
External ORU storage boxes: N

SC electrical/mechanical interface simulator: N

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SPACE STATION DETAILED RESOURCES IDENTIFICATION

SUBTASK NO: 22.0556 DESCRIPTION: MOVE P/L & OMV TO LAUNCH SITE

ACTIVITY: COMMAND OMV TO MOVE P/L TO LAUNCH AREA FOR LAUNCH PREPS VIA THE SPACE STATION CONTROL CENTER.

Personnel:

<table>
<thead>
<tr>
<th>SPACE STATION STATION SPECIALIST(S) IVA</th>
<th>GROUND STATION CS-G</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPACE STATION STATION SPECIALIST(S) EVA</td>
<td></td>
</tr>
</tbody>
</table>

Sub Total (2) Total (6)

Serial Time To Complete: 240 min Total Minhours (32.6)

SC-POCC Support Required: (Y)

AUTOMATION NEED: (Primary Key)

AUTOMATION SECONDARY KEY(S)

CONTROL SYSTEM - STATION (CS-S)

OTV Control & monitor system: Y Tracking: Y Data Dump: Y

EVA MONITOR:

Audio: N Video: N Telemetry: N

OTV HANGER REMOTE CONTROL:

Door(s): N Lights: N TV(signature data auto scan): N

FSS latch/unlatch: N RR Umbilical control: N

TRAINING VIDEO SYSTEM:

On-board: N Up-link: N

Handling and Positioning Aid (HPA) teleoperation: Y

OMV support: Y Prop. load & drain computer system: N

ORU Bar code data base: N Paging: Y MPAC: N

Planning work station (computer): Y

OTV HANGER

Aerobrake storage fitting: Y OTV flight support structure: Y

Personnel EVA door: Y MPAC connection: Y

HPA's (local & teleoperated): Y Hand & foot restraints: Y

ORU storage lockers: Y Tool lockers: Y

Thermal control system: Y

PROPELLANT SERVICING FACILITY AND EQUIPMENT

PROPELLANT SERVICING FACILITY


Fill/drain/vent/pressurization: N Fuel cell fill/drain/purge/pressurization: N

Propellant metering system: N

EVA Personnel equipment: N EVA equipment box: N Support Equipment: N

Portable MPAC: N Lights: N Bar code reader: N

Video Cameras: N Tools manual/power: N

External ORU storage boxes: N

SC electrical/mechanical interface simulator: N
SPACE STATION DETAILED RESOURCES IDENTIFICATION
TASK NO: 23 OTV/SC LAUNCH PREPS

SUBTASK NO: <23.0100> DESCRIPTION: <APPLY POWER TO OTV>

ACTIVITY: APPLY POWER TO OTV

Personnel: SPACE STATION
STATION SPECIALIST(S) IVA (2)
STATION SPECIALIST(S) EVA (8)

GROUND STATION
CS-G (6)

Sub Total: (2) Total: (8)

Serial Time To Complete: 60 min Total Monhours: (8.0)

SC-POCC Support Required: (Y)

AUTOMATION NEED: (Primary Key)

AUTOMATION SECONDARY KEY(S)

CONTROL SYSTEM - STATION (CS-S)

OTV Control & monitor system: Y Tracking: Y Data Dump: Y

EVA MONITOR:
Audio: N Video: N Telemetry: N

OTV HANGER REMOTE CONTROL:
Door(s): N Lights: N TV (signature data auto scan): N
FSS latch/unlatch: N RR Umbilical control: N

TRAINING VIDEO SYSTEM:
On-board: N Up-link: N

Handling and Positioning Aid (HPA) teleoperation: N

OMV support: Y Prop. load & drain computer system: N

ORU Bar code data base: N Paging: Y MPAC: N

Planning work station (computer): Y

OTV HANGER

Aerobrake storage fitting: N OTV flight support structure: N
Personnel EVA door: N MPAC connection: N
HPA's (local & teleoperated): N Hand & foot restraints: N
ORU storage lockers: N Tool lockers: N

Thermal control system: N

PROPELLANT SERVICING FACILITY AND EQUIPMENT

PROPELLANT SERVICING FACILITY

Standard Servicing Interface (remote latch/unlatch): N
Remote Control Removable Quick Disconnects, Fill/drain/vent/pressurization: N
Fuel cell fill/drain/purge/pressurization: N
Propellant metering system: N

EVA Personnel equipment: N EVA equipment box: N Support Equipment: N
Portable MPAC: N Lights: N Bar code reader: N
Video Cameras: N Tools manual/power: N
External ORU storage boxes: N

SC electrical/mechanical interface simulator: N

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SPACE STATION DETAILED RESOURCES IDENTIFICATION
TASK NO: 23 OTV/SC LAUNCH PREPS

SUBTASK NO: < 23.0200> DESCRIPTION: <LOAD/MONITOR CRYO>

ACTIVITY: LOAD CRYO AND MONITOR FOR PRESSURE AND VOLUME(INCLUDE FUEL CELLS)

Personnel:
SPACE STATION
STATION SPECIALIST(S) IVA (2)
STATION SPECIALIST(S) EVA (6)
Sub Total (2) ———— Total (6)

Serial Time To Complete: 480 min
Total Manhours (64.8)

SC-PCCC Support Required: (Y)

AUTOMATION NEED: (Primary Key)

AUTOMATION SECONDARY KEY(S)

---------------- CONTROL SYSTEM - STATION (CS-S) ----------------

OTV Control & monitor system: Y Tracking: Y Data Dump: Y

EVA MONITOR:
Audio: N Video: N Telemetry: N

OTV HANGER REMOTE CONTROL:
Door(s): N Lights: N TV(signature data auto scan): N
FSS latch/unlatch: N RR Umbilical control: N

TRAINING VIDEO SYSTEM:
On-board: N Up-link: N

Handling and Positioning Aid (HPA) teleoperation: N

OMV support: Y Prop. load & drain computer system: Y

ORU Bar code data base: N Paging: Y MPAC: N

Planning work station (computer): Y

************************** OTV HANGER ****************************

Aerobrake storage fitting: N OTV flight support structure: N

Personnel EVA door: N MPAC connection: N
HPA's (local & teleoperated): N Hand & foot restraints: N

ORU storage lockers: N Tool lockers: N

Thermal control system: N

**************** PROPELLANT SERVICING FACILITY AND EQUIPMENT *****************

PROPELLANT SERVICING FACILITY

Standard Servicing Interface (remote latch/unlatch): Y
Remote Control Removable Quick Disconnects,
Fill/drain/vent/pressurization: Y
Fuel cell fill/drain/purge/pressurization: Y
Propellant metering system: Y

EVA Personnel equipment: N EVA equipment box: N Support Equipment: Y
Portable MPAC: N Lights: Y Bar code reader: N
Video Cameras: Y Tools manual/power: N
External ORU storage boxes: N
SC electrical/mechanical interface simulator: N
SPACE STATION DETAILED RESOURCES IDENTIFICATION
TASK NO: 23 OTV/SC LAUNCH PREPS

SUBTASK NO: <23.0300>

DESCRIPTION: <ACTIVATE/LOAD FUEL CELLS>

ACTIVITY: TRANSFER LOAD FROM SPACE STATION TO OTV FUEL CELLS—VERIFY ALL LOAD PARAMETERS

Personnel: SPACE STATION
STATION SPECIALIST(S) IVA (2)
STATION SPECIALIST(S) EVA (6)

GROUND STATION
CS-G (6)

Sub Total (2) Total (6)

Serial Time To Complete: 120 min Total Manhours (16.6)

SC-POCC Support Required: (Y)

AUTOMATION NEED: (Primary Key)

AUTOMATION SECONDARY KEY(S)

*************** CONTROL SYSTEM – STATION (CS-S) ***************

OTV Control & monitor system: Y Tracking: Y Data Dump: Y

EVA MONITOR:
Audio: N Video: N Telemetry: N

OTV HANGER REMOTE CONTROL:
Door(s): N Lights: N TV(signature data auto scan): N
FSS latch/unlatch: N RR umbilical control: N

TRAINING VIDEO SYSTEM:
On-board: N Up-link: N

Handling and Positioning Aid (HPA) teleoperation: N

OMV support: Y Prop. load & drain computer system: N
ORU Bar code data base: N Paging: Y MPAC: N

Planning work station (computer): Y *************** OTV HANGER ***************

Aerobrake storage fitting: N OTV flight support structure: N

Personnel EVA door: N MPAC connection: N
HPA’s (local & teleoperated): N Hand & foot restraints: N
ORU storage lockers: N Tool lockers: N

Thermal control system: N

************ PROPELLANT SERVICING FACILITY AND EQUIPMENT ************

PROPELLANT SERVICING FACILITY

Standard Servicing Interface (remote latch/unlatch): N
Remote Control Removable Quick Disconnects, Fill/drain/vent/pressurization: N
Fuel cell fill/drain/purge/pressurization: N
Propellant metering system: N

EVA Personnel equipment: N EVA equipment box: N Support Equipment: N
Portable MPAC: N Lights: Y Bar code reader: N
Video Cameras: Y Tools manual/power: N

External ORU storage boxes: N

SC electrical/mechanical interface simulator: N

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SPACE STATION DETAILED RESOURCES IDENTIFICATION
TASK NO: 23 OTV/SC LAUNCH PREPS

SUBTASK NO: < 23.0456> DESCRIPTION: <APPLY POWER TO SPACECRAFT >

ACTIVITY: APPLY POWER TO THE SPACECRAFT

Personnel: SPACE STATION
STATION SPECIALIST(S) IVA (2)
STATION SPECIALIST(S) EVA (6)

GROUNO STATION
CS-G (6)

Sub Total (2) Total (6)

Serial Time To Complete: 240 min Total Manhours (32.6)

SC-POCC Support Required: (Y)

AUTOMATION NEED: (Primary Key)

AUTOMATION SECONDARY KEY(S)

*************** CONTROL SYSTEM - STATION (CS-S) ***************

OTV Control & monitor system: Y Tracking: Y Data Dump: Y

EVA MONITOR:
Audio: N Video: N Telemetry: N

OTV HANGER REMOTE CONTROL:
Door(s): N Lights: N TV(signature data auto scan): N
FSS latch/unlatch: N RR Umbilical control: N

TRAINING VIDE0 SYSTEM:
On-board: N Up-link: N

Handling and Positioning Aid (HPA) teleoperation: N

OMV support: Y Prop. load & drain computer system: N

ORU Bar code data base: N Paging: Y MPAC: N

Planning work station (computer): Y

************** OTV HANGER **************

Aerobrake storage fitting: N OTV flight support structure: N

Personnel EVA door: N MPAC connection: N

HPA's (local & teleoperated): N Hand & foot restraints: N

ORU storage lockers: N Tool lockers: N

Thermal control system: N

************ PROPELLANT SERVICING FACILITY AND EQUIPMENT ************

PROPELLANT SERVICING FACILITY

Standard Servicing Interface (remote latch/unlatch): N
Remote Control Removable Quick Disconnects. Fill/drain/vent/pressurization: N
Fuel cell fill/drain/purge/pressurization: N Propellant metering system: N

EVA Personnel equipment: N EVA equipment box: N Support Equipment: N

Portable MPAC: N Lights: N Bar code reader: N

Video Cameras: N Tools manual/power: N

External ORU storage boxes: N

SC electrical/mechanical interface simulator: N
SPACE STATION DETAILED RESOURCES IDENTIFICATION
TASK NO: 23  OTV/SC LAUNCH PREPS

SUBTASK NO: 23.0550  DESCRIPTION: COMMAND S/C TO PRELAUNCH MODE

ACTIVITY: SECURE SPACECRAFT SYSTEMS IN PRELAUNCH MODE

Personnel:  SPACE STATION
STATION SPECIALIST(S) IVA (2)  GROUND STATION
STATION SPECIALIST(S) EVA (6)
Sub Total  2)
Total  (8)

Serial Time To Complete: 30 min  Total Manhours: (4.0)

SC-POCC Support Required: (Y)

AUTOMATION NEED: (Primary Key)

AUTOMATION SECONDARY KEY(S)

*************** CONTROL SYSTEM - STATION (CS-S)  ***************

OTV Control & monitor system: Y  Tracking: Y  Data Dump: Y

EVA MONITOR:
  Audio: N  Video: N  Telemetry: N

OTV HANGER REMOTE CONTROL:
  Door(s): N  Lights: N  TV(signature data auto scan): N
  FSS latch/unlatch: N  RR Umbilical control: N

TRAINING VIDEO SYSTEM:
  On-board: N  Up-link: N

Handling and Positioning Aid (HPA) teleoperation: N

OMV support: Y  Prop. load & drain computer system: N

ORU Bar code data base: N  Paging: Y  MPAC: N

Planning work station (computer): Y  OTV HANGER  ***************

Aerobrake storage fitting: N  OTV flight support structure: N

Personnel EVA door: N  MPAC connection: N

HPA's (local & teleoperated): N  Hand & foot restraints: N

ORU storage lockers: N  Tool lockers: N

Thermal control system: N  ********** PROPELLANT SERVICING FACILITY AND EQUIPMENT  **********

PROPELLANT SERVICING FACILITY

Standard Servicing Interface (remote latch/unlatch): N
Remote Control Removable Quick Disconnects,
 Fill/drain/vent/pressurization: N
Fuel cell fill/drain/purge/pressurization: N
Propellant metering system: N

EVA Personnel equipment: N  EVA equipment box: N  Support Equipment: N
Portable MPAC: N  Lights: N  Bar code reader: N
Video Cameras: N  Tools manual/power: N
External ORU storage boxes: N

SC electrical/mechanical interface simulator: N
SPACE STATION DETAILED RESOURCES IDENTIFICATION

Task No: 24  Deploy OTV/Spacecraft

Subtask No: < 24.0706>  Description: <Perform POCC Launch Tests>

Activity: Issue Command and Verify OTV and S/C Ready for Launch to GEO

Personnel:

Space Station
Station Specialist(s) IVA (2)
Station Specialist(s) EVA (6)

Sub Total (2)  Total (6)

Serial Time To Complete: 60 min
Total Manhours: (8.6)

SC-POCC Support Required: (Y)

Automation Need: (Primary Key)

Automation Secondary Key(s): 

*************** Control System - Station (CS-S) ***************

OTV Control & Monitor System: Y  Tracking: Y  Data Dump: Y

EVA Monitor:
Audio: N  Video: N  Telemetry: N

OTV Hanger Remote Control:
Door(s): N  Lights: N  TV (signature data auto scan): N
FSS latch/unlatch: N  RR Umbilical control: N

Training Video System:
On-board: N  Up-link: N  MRMS teleoperation control: N

Handling and Positioning Aid (HPA) teleoperation: N

ONV Support: Y  Prop. load & drain computer system: N

ORU Bar code data base: N  Paging: Y  MPAC: N

Planning Work Station (computer): Y

************* Propellant Servicing Facility and Equipment *************

Aerobrake storage fitting: N  OTV flight support structure: N
Personnel EVA door: N  MPAC connection: N
HPA's (local & teleoperated): N  Hand & foot restraints: N
ORU storage lockers: N  Tool lockers: N

Thermal Control System: N

************** Propellant Servicing Facility **************

Standard Servicing Interface (remote latch/unlatch): N
Remote Control Removable Quick Disconnects, Fill/drain/vent/pressurization: N
Fuel cell fill/drain/purge/pressurization: N
Propellant metering system: N

EVA Personnel equipment: N  EVA equipment box: N  Support Equipment: N
Portable MPAC: N  Lights: N  Bar code reader: N
Video Cameras: N  Tools manual/power: N

External ORU storage boxes: N

SC electrical/mechanical interface simulator: N

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SPACE STATION DETAILED RESOURCES IDENTIFICATION

TASK NO: 24  DEPLOY OTV/SPACECRAFT

SUBTASK NO: <24.0850>  DESCRIPTION: <RELEASE OTV/SC FROM OMV>

ACTIVITY: RELEASE COMBINATION OTV AND SPACECRAFT IN LEO. RETURN THE OMV TO ITS PARKING HANGAR AT THE SPACE STATION.

Personnel:

SPACE STATION
STATION SPECIALIST(S) IVA (2)
STATION SPECIALIST(S) CS-G (6)
EVA (6)

Serial Time To Complete: 306 min
Total Manhours (40.0)

SC-POCC Support Required: (Y)

AUTOMATION NEED: (Primary Key)

AUTOMATION SECONDARY KEY(S)

CONTROL SYSTEM - STATION (CS-S)

OTV Control & monitor system: Y  Tracking: Y  Data Dump: Y

EVA MONITOR:
Audio: N  Video: N  Telemetry: N

OTV HANGER REMOTE CONTROL:
Door(s): N  Lights: N  TV(signature data auto scan): N
FSS latch/unlatch: N  RR Umbilical control: N

TRAINING VIDEO SYSTEM:
On-board: N  Up-link: N

OMV support: Y  Prop. load & drain computer system: N

ORU Bar code data base: N  Paging: Y  MPAC: N

Planning work station (computer): Y

Aerobrake storage fitting: N  OTV flight support structure: N

Personnel EVA door: N  MPAC connection: N

HPA's (local & teleoperated): N  Hand & foot restraints: N

ORU storage lockers: N  Tool lockers: N

Thermal control system: N

PROPELLANT SERVICING FACILITY AND EQUIPMENT

PROPELLANT SERVICING FACILITY

Standard Servicing Interface (remote latch/unlatch): N
Remote Control Removable Quick Disconnects, Fill/drain/vent/pressurization: N
Fuel cell fill/drain/purge/pressurization: N
Propellant metering system: N

EVA Personnel equipment: N  EVA equipment box: N  Support Equipment: N
Portable MPAC: N  Lights: N  Bar code reader: N
Video Cameras: N  Tools manual/power: N

External ORU storage boxes: N

SC electrical/mechanical interface simulator: N
SPACE STATION DETAILED RESOURCES IDENTIFICATION
TASK NO: 25 LAUNCH FROM LEO

SUBTASK NO: < 25.8100>
DESCRIPTION: <VERIFY NAV POSITION>

ACTIVITY: VERIFY POCC UPDATE IS RECEIVED AND NAV COMPUTER HAS UPDATED INFORMATION.

Personnel:
- SPACE STATION
  - STATION SPECIALIST(S) IVA (2)
  - STATION SPECIALIST(S) EVA (6)
- GROUND STATION
  - CS-G (8)

Sub Total: 2
Total: 8

Serial Time To Complete: 60 min
Total Manhours: 8.0

SC-POCC Support Required: (Y)

AUTOMATION NEED: (Primary Key)

AUTOMATION SECONDARY KEY(S)

*************** CONTROL SYSTEM - STATION (CS-S) **************

OTV Control & monitor system: Y
Tracking: Y
Data Dump: Y

EVA MONITOR:
- Audio: N
- Video: N
- Telemetry: N

OTV HANGER REMOTE CONTROL:
- Door(s): N
- Lights: N
- TV(signature data auto scan): N
- RR Umbilical control: N

TRAINING VIDEO SYSTEM:
- On-board: N
- Up-link: N

Handling and Positioning Aid (HPA) teleoperation: N

OMV support: N
Prop. load & drain computer system: N

ORU Bar code data base: N
Paging: Y
MPAC: N

Planning work station (computer): Y

************************** OTV HANGER**************************

Aerobrake storage fitting: N
OTV flight support structure: N

Personnel EVA door: N
MPAC connection: N

HPA's (local & teleoperated): N
Hand & foot restraints: N

ORU storage lockers: N
Tool lockers: N

Thermal control system: N

********** PROPELLANT SERVICING FACILITY AND EQUIPMENT **********

PROPELLANT SERVICING FACILITY

Standard Servicing Interface (remote latch/unlatch): N
Remote Control Removable Quick Disconnects,
Fill/drain/vent/pressurization: N
Fuel cell fill/drain/purge/pressurization: N
Propellant metering system: N

EVA Personnel equipment: N
EVA equipment box: N
Support Equipment: N

Portable MPAC: N
Lights: N
Bar code reader: N

Video Cameras: N
Tools manual/power: N

External ORU storage boxes: N

SC electrical/mechanical interface simulator: N
SPACE STATION DETAILED RESOURCES IDENTIFICATION

TASK NO: 25 LAUNCH FROM LEO

SUBTASK NO: < 25.0200> DESCRIPTION: <VERIFY PROPULSION SYSTEM>

ACTIVITY: VERIFY TANK PRESSURES ARE NORMAL-VERIFY ENGINE CONTROL

Personnel: SPACE STATION GROUND STATION
STATION SPECIALIST(S) IVA (2) CS-G (6)
STATION SPECIALIST(S) EVA (6)

Sub Total (2) Total (8)

Serial Time To Complete: 60 min Total Manhours (8.0)

SC-POCC Support Required: (Y)

AUTOMATION NEED: (Primary Key)

AUTOMATION SECONDARY KEY(S)

******************************* CONTROL SYSTEM - STATION (CS-S) *******************************

OTV Control & monitor system: Y Tracking: Y Data Dump: Y

EVA MONITOR:
Audio: N Video: N Telemetry: N

OTV HANGER REMOTE CONTROL:
Door(s): N Lights: N TV(signature data auto scan): N
FSS latch/unlatch: N RR umbilical control: N

TRAINING VIDEO SYSTEM:
On-board: N Up-link: N

Handling and Positioning Aid (HPA) teleoperation: N

OMV support: N Prop. load & drain computer system: N

ORU Bar code data base: N Paging: Y MPAC: N

Planning work station (computer): Y

******************************* OTV HANGER *******************************

Aerobrake storage fitting: N OTV flight support structure: N

Personnel EVA door: N MPAC connection: N

HPA's (local & teleoperated): N Hand & foot restraints: N

ORU storage lockers: N Tool lockers: N

Thermal control system: N

************************ PROPELLANT SERVICING FACILITY AND EQUIPMENT ************************

PROPELLANT SERVICING FACILITY

Standard Servicing Interface (remote latch/unlatch): N
Remote Control Removable Quick Disconnects,
Fill/drain/vent/pressurization: N
Fuel cell fill/drain/purge/pressurization: N
Propellant metering system: N

EVA Personnel equipment: N EVA equipment box: N Support Equipment: N
Portable MPAC: N Lights: N Bar code reader: N

Video Cameras: N Tools manual/power: N

External ORU storage boxes: N

SC electrical/mechanical interface simulator: N
SPACE STATION DETAILED RESOURCES IDENTIFICATION
TASK NO: 25 LAUNCH FROM LEO

SUBTASK NO: < 25.0306> DESCRIPTION: <LAUNCH TO GEO>
ACTIVITY: ISSUE COMMAND VIA POCC/OTVCS OR SPACE STATION TO LAUNCH TO GEO

Personnel: SPACE STATION GROUND STATION
STATION SPECIALIST(S) IVA (2) CS-G (6)
STATION SPECIALIST(S) EVA (0)
Sub Total (2) Total (6)
Serial Time To Complete: 246 mln Total Manhours (32.6)

SC-POCC Support Required: (Y)
AUTOMATION NEED: (Primary Key)
AUTOMATION SECONDARY KEY(S)

*************** CONTROL SYSTEM - STATION (CS-S) ***********************
OTV Control & monitor system: Y Tracking: Y Data Dump: Y
EVA MONITOR:
Audio: N Video: N Telemetry: N
OTV HANGER REMOTE CONTROL:
Door(s): N Lights: N TV(signature data auto scan): N
FSS latch/unlatch: N RR Umbilical control: N
TRAINING VIDEO SYSTEM:
On-board: N Up-link: N
Handling and Positioning Aid (HPA) teleoperation: N
OMV support: N Prop. load & drain computer system: N
ORU Bar code data base: N Paging: Y MPAC: N
Planning work station (computer): Y

 leftover PROPELLANT SERVICING FACILITY AND EQUIPMENT **********************

Aerobrake storage fitting: N OTV flight support structure: N
Personnel EVA door: N MPAC connection: N
HPA's (local & teleoperated): N Hand & foot restraints: N
ORU storage lockers: N Tool lockers: N
Thermal control system: N

PROPELLANT SERVICING FACILITY
Standard Servicing Interface (remote latch/unlatch): N
Remote Control Removable Quick Disconnects:
Fuel cell fill/drain/purge/pressurization: N
Propellant metering system: N
EVA Personnel equipment: N EVA equipment box: N Support Equipment: N
Portable MPAC: N Lights: N Bar code reader: N
Video Cameras: N Tools manual/power: N
External ORU storage boxes: N
SC electrical/mechanical interface simulator: N

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SPACE STATION DETAILED RESOURCES IDENTIFICATION

TASK NO: 26 PERFORM MISSION

SUBTASK NO: <26.0100>

DESCRIPTION: <DEPLOY SPACECRAFT>

ACTIVITY: ISSUE COMMAND TO RELEASE THE SPACECRAFT IN GEO

Personnel:

SPACE STATION
STATION SPECIALIST(S) IVA (2)
STATION SPECIALIST(S) EVA (0)
Sub Total (2)

GROUND STATION CS-G (6)

Total (8)

Serial Time To Complete: 60 min

Total Manhours (8.0)

SC-POCC Support Required: (Y)

AUTOMATION NEED: (Primary Key)

AUTOMATION SECONDARY KEY(S)

*************** CONTROL SYSTEM - STATION (CS-S) ***************

OTV Control & monitor system: Y Tracking: N Data Dump: Y

EVA MONITOR:

Audio: N Video: N Telemetry: N

OTV HANGER REMOTE CONTROL:

Door(s): N Lights: N TV (signature data auto scan): N

FSS latch/unlatch: N RR Umbilical control: N

TRAINING VIDEO SYSTEM:

MIRMS teleoperation control: N

On-board: N Up-link: N

Handling and Positioning Aid (HPA) teleoperation: N

OMV support: N Prop. load & drain computer system: N

ORU Bar code data base: N Paging: Y MPAC: N

Planning work station (computer): Y

************* PROPELLANT SERVICING FACILITY AND EQUIPMENT *************

PROPELLANT SERVICING FACILITY

Standard Servicing Interface (remote latch/unlatch): N

Remote Control Removable Quick Disconnects, Fill/drain/vent/pressurization: N

Fuel cell fill/drain/purge/pressurization: N

Propellant metering system: N

EVA Personnel equipment: N EVA equipment box: N Support Equipment: N

Portable MPAC: N Lights: N Bar code reader: N

Video Cameras: N Tools manual/power: N

External ORU storage boxes: N

SC electrical/mechanical interface simulator: N
SPACE STATION DETAILED RESOURCES IDENTIFICATION
TASK NO: 27 ORIENT AND RTN FROM GEO TO LEO

SUBTASK NO: < 27.0160>
DESCRIPTION: <ISSUE NAV UPDATE>

ACTIVITY: POCC ISSUE NAV UPDATE—VERIFY COMPUTER RESPONDS TO NEW NAV DATA UPDATE.

Personnel: SPACE STATION GROUND STATION
STATION SPECIALIST(S) IVA (2) CS-G (6)
STATION SPECIALIST(S) EVA (6)
Sub Total (2) Total (6)

Serial Time To Complete: 60 min Total Manhours (8.6)

SC-POCC Support Required: (Y)

AUTOMATION NEED: (Primary Key)

AUTOMATION SECONDARY KEY(S)

*************** CONTROL SYSTEM - STATION (CS-S) ***********************
OTV Control & monitor system: Y Tracking: N Data Dump: Y

EVA MONITOR:
Audio: N Video: N Telemetry: N

OTV HANGER REMOTE CONTROL:
Door(s): N Lights: N TV (signature data auto scan): N
FSS latch/unlatch: N RR Umbilical control: N

TRAINING VIDEO SYSTEM:
On-board: N Up-link: N

Handling and Positioning Aid (HPA) teleoperation: N

MOE support: N Prop. load & drain computer system: N

ORU Bar code data base: N Paging: Y MPAC: N

Planning work station (computer): Y

************ PROPELLANT SERVICING FACILITY AND EQUIPMENT ***************

PROPELLANT SERVICING FACILITY

Standard Servicing Interface (remote latch/unlatch): N Remote Control Removable Quick Disconnects: N
Fill/drain/vent/pressurization: N Fuel cell fill/drain/purge/pressurization: N
Propellant metering system: N

EVA Personnel equipment: N EVA equipment box: N Support Equipment: N
Portable MPAC: N Lights: N Bar code reader: N
Video Cameras: N Tools manual/power: N
External ORU storage boxes: N

SC electrical/mechanical interface simulator: N
SPACE STATION DETAILED RESOURCES IDENTIFICATION

TASK NO: 27 ORIENT AND RTN FROM GEO TO LEO

SUBTASK NO: 27.0200> DESCRIPTION: ORIENT OTV TO DE-ORBIT

ACTIVITY: USING RCS, POSITION OTV FOR RETURN TO LEO

Personnel:

SPACE STATION
STATION SPECIALIST(S) IVA (2)
STATION SPECIALIST(S) EVA (0)
Sub Total (2)

GROUND STATION
CS-G (6)

Total (8)

Serial Time To Complete: 60 min
Total Manhours (6.8)

SC-POCC Support Required: (Y)

AUTOMATION NEED: (Primary Key)

AUTOMATION SECONDARY KEY(S)

CONTROL SYSTEM - STATION (CS-S)

OTV Control & monitor system: Y Tracking: N Data Dump: Y

EVA MONITOR:
Audio: N Video: N Telemetry: N

OTV HANGER REMOTE CONTROL:
Door(s): N Lights: N TV(signature data auto scan): N
FSS latch/unlatch: N RR Umbilical control: N

TRAINING VIDEO SYSTEM:
On-board: N Up-link: N

MRMS teleoperation control: N

Handing and Positioning Aid (HPA) teleoperation: N

ORU Bar code data base: N Paging: Y MPAC: N

Planning work station (computer): Y

******* PROPELLANT SERVICING FACILITY AND EQUIPMENT *******

PROPELLANT SERVICING FACILITY

Standard Servicing Interface (remote latch/unlatch): N
Remote Control Remateable Quick Disconnects, Fill/drain/vent/pressurization: N
Fuel cell fill/drain/purge/pressurization: N
Propellant metering system: N

EVA Personnel equipment: N EVA equipment box: N Support Equipment: N
Portable MPAC: N Lights: N Bar code reader: N
Video Cameras: N Tools manual/power: N
External ORU storage boxes: N

SC electrical/mechanical interface simulator: N
SPACE STATION DETAILED RESOURCES IDENTIFICATION
TASK NO: 27 ORIENT AND RTN FROM GEO TO LEO

SUBTASK NO: <27.0300>

DESCRIPTION: <FIRE ENGINES>

ACTIVITY: VERIFY ENGINE FIRE UNDER COMPUTER CONTROL PER FLIGHT PROCEDURES

Personnel:
- SPACE STATION
  - STATION SPECIALIST(S) IVA (2)
  - STATION SPECIALIST(S) EVA (0)
- GROUND STATION
  - CS-G (6)
Sub Total
- (2)
Total
- (6)

Serial Time To Complete:
- 60 min
Total Manhours:
- (8.8)

SC-POCC Support Required:
- (Y)

AUTOMATION NEED:
- (Primary Key)

AUTOMATION SECONDARY KEY(S):

---------- CONTROL SYSTEM - STATION (CS-S) -----------

OTV Control & monitor system:
- Y Tracking:
- N Data Dump:
- Y

EVA MONITOR:
- Audio:
- N Video:
- N Telemetry:
- N

OTV HANGER REMOTE CONTROL:
- Door(s):
- N Lights:
- N TV(signature data auto scan):
- N RR Umbilical control:
- N

TRAINING VIDEO SYSTEM:
- On-board:
- N Up-link:
- N

Handling and Positioning Aid (HPA) teleoperation:
- N

OMV support:
- N Prop. load & drain computer system:
- N
ORU Bar code data base:
- N Paging:
- Y MPAC:
- N
Planning work station (computer):
- Y
---------- OTV HANGER -----------

Aerobrake storage fitting:
- N OTV flight support structure:
- N
Personnel EVA door:
- N MPAC connection:
- N
HPA's (local & teleoperated):
- N Hand & foot restraints:
- N
ORU storage lockers:
- N Tool lockers:
- N

Thermal control system:
- N
---------- PROPELLANT SERVICING FACILITY AND EQUIPMENT -----------

PROPELLANT SERVICING FACILITY

Standard Servicing Interface (remote latch/unlatch):
- N Remote Control Removable Quick Disconnects,
- N Fill/drain/vent/pressurization:
- N Fuel cell fill/drain/purge/pressurization:
- N Propellant metering system:
- N

EVA Personnel equipment:
- N EVA equipment box:
- N Support Equipment:
- N Portable MPAC:
- N Lights:
- N Bar code reader:
- N Video Cameras:
- N Tools manual/power:
- N

External ORU storage boxes:
- N

SC electrical/mechanical interface simulator:
- N

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SPACE STATION DETAILED RESOURCES IDENTIFICATION

TASK NO: 28 SPACESTATION AND OTV RENDEZOUS

SUBTASK NO: < 28.0100>

DESCRIPTION: <POSITION OTV IN STANDOFF ORBIT>

ACTIVITY: TRANSFER OTV TO RENDEZOUS ZONE. ESTABLISH STABLE ORBIT IN STANDOFF POSITION

Personnel: SPACE STATION
STATION SPECIALIST(S) IVA (2)
STATION SPECIALIST(S) EVA (6)
Sub Total ———— (2)
GROUND STATION
CS-G (8)
Total ———— (8)
Serial Time To Complete: 240 min
Total Manhours (32.6)

SC-POCC Support Required: (Y)
AUTOMATION NEED: (Primary Key)
AUTOMATION SECONDARY KEY(S)

************************ CONTROL SYSTEM — STATION (CS—S) ************************

OTV Control & monitor system: Y Tracking: Y Data Dump: Y

EVA MONITOR:
Audio: N Video: N Telemetry: N

OTV HANGER REMOTE CONTROL:
Door(s): N Lights: N TV(signature data auto scan): N
FSS latch/unlatch: N RR Umbilical control: N

TRAINING VIDEO SYSTEM:
On-board: N Up-link: N

Handling and Positioning Aid (HPA) teleoperation: N

OMV support: N Prop. load & drain computer system: N

ORU Bar code data base: N Paging: Y MPAC: N

Planning work station (computer): Y

************************ OTV HANGER ************************

Aerobrake storage fitting: N OTV flight support structure: N
Personnel EVA door: N MPAC connection: N
HPA's (local & teleoperated): N Hand & foot restraints: N
ORU storage lockers: N Tool lockers: N

Thermal control system: N

************************ PROPELLANT SERVICING FACILITY AND EQUIPMENT ****************************

PROPELLANT SERVICING FACILITY

Standard Servicing Interface (remote latch/unlatch): N
Remote Control Removable Quick Disconnects:
Fill/drain/vent/pressurization: N
Fuel cell fill/drain/purge/pressurization: N
Propellant metering system: N

EVA Personnel equipment: N EVA equipment box: N Support Equipment: N
Portable MPAC: N Lights: N Bar code reader: N
Video Cameras: N Tools manual/power: N

External ORU storage boxes: N
SC electrical/mechanical interface simulator: N
**SPACE STATION DETAILED RESOURCES IDENTIFICATION**

**TASK NO: 29 OTV RECOVERY**

**SUBTASK NO: < 29.010>**

**DESCRIPTION:** <RETRACT EEC, VERIFY OTV SAFE >

**ACTIVITY:** ISSUE COMMANDS TO RETRACT THE EEC. SHUTDOWN/SAFE OTV FOR RECOVERY.

Personnel:

<table>
<thead>
<tr>
<th>SPACE STATION</th>
<th>GROUND STATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>STATION SPECIALIST(S) IVA (2)</td>
<td>CS-G (6)</td>
</tr>
<tr>
<td>STATION SPECIALIST(S) EVA (0)</td>
<td></td>
</tr>
<tr>
<td>Sub Total (2)</td>
<td>Total (6)</td>
</tr>
</tbody>
</table>

Serial Time To Complete: 120 min

Total Manhours (16.0)

SC-POCC Support Required: (Y)

AUTOMATION NEED: (Primary Key)

AUTOMATION SECONDARY KEY(S)

*************** CONTROL SYSTEM - STATION (CS-S) ***************

OTV Control & monitor system: Y Tracking: Y Data Dump: Y

EVA MONITOR:
   Audio: N Video: N Telemetry: N

OTV HANGER REMOTE CONTROL:
   Door(s): N Lights: N FSS latch/unlatch: N RR umbilical control: N

TRAINING VIDEO SYSTEM:
   On-board: N Up-link: N

Handling and Positioning Aid (HPA) teleoperation: N

OMV support: N Prop. load & drain computer system: N

ORU Bar code data base: N Paging: Y MPAC: N

Planning work station (computer): Y

*************** OTV HANGER ***************

Aerobrake storage fitting: N OTV flight support structure: N

Personnel EVA door: N MPAC connection: N

HPA's (local & teleoperated): N Hand & foot restraints: N

ORU storage lockers: N Tool lockers: N

Thermal control system: N

*************** PROPELLANT SERVICING FACILITY AND EQUIPMENT ***************

PROPELLANT SERVICING FACILITY

| Standard Servicing Interface (remote latch/unlatch): N |
| Remote Control Removable Quick Disconnects, fill/drain/vent/pressurization: N |
| Fuel cell fill/drain/purge/pressurization: N |
| Propellant metering system: N |
| EVA Personnel equipment: N |
| EVA equipment box: N |
| Support Equipment: N |
| Portable MPAC: N |
| Lights: N |
| Bar code reader: N |
| Video Cameras: N |
| Tools manual/power: N |
| External ORU storage boxes: N |
| SC electrical/mechanical interface simulator: N |

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SPACE STATION DETAILED RESOURCES IDENTIFICATION

TASK NO: 29  OTV RECOVERY

SUBTASK NO: < 29.0200> DESCRIPTION: <VENT OTV CRYO SYSTEM>

ACTIVITY: ISSUE COMMANDS TO CONFIGURE CRYO SYSTEM FOR VENT OPERATIONS. VENT THE OTV CRYO SYSTEM.

Personnel:
- SPACE STATION STATION SPECIALIST(S) IVA (2)
- GROUND STATION CS-G (6)
- STATION SPECIALIST(S) EVA (6)
- Sub Total (2)
- Total (6)

Serial Time To Complete: 240 min
Total Monhours: (32.0)

SC-POCC Support Required: (Y)
AUTOMATION NEED: (Primary Key)
AUTOMATION SECONDARY KEY(S)

*************** CONTROL SYSTEM — STATION (CS-S) ***************

OTV Control & monitor system: Y Tracking: Y Data Dump: Y

EVA MONITOR:
- Audio: N Video: N Telemetry: N

OTV HANGER REMOTE CONTROL:
- Door(s): N Lights: N TV(signature data auto scan): N
- FSS latch/unlatch: N RR Umbilical control: N

TRAINING VIDEO SYSTEM:
- On-board: N Up-link: N

Handling and Positioning Aid (HPA) teleoperation: N
OMV support: N Prop. load & drain computer system: N
ORU Bar code data base: N Paging: Y MPAC: N

Planning work station (computer): Y

*************** PROPELLANT SERVICING FACILITY AND EQUIPMENT ***************

PROPPELLANT SERVICING FACILITY

Standard Servicing Interface (remote latch/unlatch): N
Remote Control Removable Quick Disconnects: N
Fill/drain/vent/pressurization: N
Fuel cell fill/drain/purge/pressurization: N
Propellant metering system: N

EVA Personnel equipment: N EVA equipment box: N Support Equipment: N
Portable MPAC: N Lights: N Bar code reader: N
Video Cameras: N Tools manual/power: N
External ORU storage boxes: N
SC electrical/mechanical interface simulator: N
SPACE STATION DETAILED RESOURCES IDENTIFICATION
TASK NO: 29 OTV RECOVERY

SUBTASK NO: < 29.636e>
DESCRIPTION: <OTV CAPTURE>

ACTIVITY: MOVE THE OMV FROM ITS STORAGE HANGER TO THE OTV SAFETY ZONE. DOCK AND CAPTURE THE OTV. VERIFY OTV/OMV DOCK AND LATCH.

Personnel:
SPACE STATION
STATION SPECIALIST(S) IVA ( 2)
STATION SPECIALIST(S) EVA ( 6)

GROUND STATION
CS-G ( 6)

Sub Total ( 2) ( 6)
Total ( 8)

Serial Time To Complete: 60 min
Total Manhours ( 8.0)

SC-POCC Support Required: (Y)

AUTOMATION NEED: (Primary Key)

AUTOMATION SECONDARY KEY(S)

*************** CONTROL SYSTEM - STATION (CS-S) ***************

OTV Control & monitor system: Y Tracking: Y Data Dump: Y

EVA MONITOR:
Audio: N Video: N Telemetry: N

OTV HANGER REMOTE CONTROL:
Door(s): N Lights: N TV(signature data auto scan): N
FSS latch/unlatch: N RR Umbilical control: N

TRAINING VIDEO SYSTEM:
On-board: N Up-link: N

Handling and Positioning Aid (HPA) teleoperation: N

OMV support: Y Prop. load & drain computer system: N

ORU Bar code data base: N Paging: Y MPAC: N

Planning work station (computer): Y

********** OTV HANGER **********

Aerobrake storage fitting: N OTV flight support structure: N

Personnel EVA door: N MPAC connection: N

HPA's (local & teleoperated): N Hand & foot restraints: N

ORU storage lockers: N Tool lockers: N

Thermal control system: N

*************** PROPELLANT SERVICING FACILITY AND EQUIPMENT ***************

PROPELLANT SERVICING FACILITY

Standard Servicing Interface (remote latch/unlatch): N Remote Control Remateable Quick Disconnects: N
Fill/drain/vent/pressurization: N Fuel cell fill/drain/purge/pressurization: N
Propellant metering system: N

EVA Personnel equipment: N EVA equipment box: N Support Equipment: N

Portable MPAC: N Lights: N Bar code reader: N

Video Cameras: N Tools manual/power: N

External ORU storage boxes: N

SC electrical/mechanical interface simulator: N
SUBTASK NO: < 34.0150>  
DESCRIPTION: <USE MRMS TO MOVE OTV INTO HGR >

ACTIVITY: POWER DOWN THE OTV. OPEN HANGAR AND PREPARE TO MOVE THE OTV INTO THE HANGER AND POSITION FOR INSTALLATION INTO WORKSTAND.

Personnel:  
SPACE STATION STATION SPECIALIST(S) IVA (2)  
GROUND STATION CS-G (0)  
STATION SPECIALIST(S) EVA (0)  
Sub Total— (2)  
Total— (2)

Serial Time To Complete: 300 min  
Total Manhours (10.0)

SC-POCC Support Required: (N)

AUTOMATION NEED: (Primary Key)

AUTOMATION SECONDARY KEY(S)

CONTROL SYSTEM — STATION (CS-S)

OTV Control & monitor system: Y  
Tracking: Y  
Data Dump: N

EVA MONITOR:
Audio: N  
Video: N  
Telemetry: N

OTV HANGER REMOTE CONTROL:
Door(s): Y  
Lights: Y  
FSS latch/unlatch: N  
TV(signature data auto scan): Y  
RR Umbilical control: N

TRAINING VIDEO SYSTEM:
On-board: N  
Up-link: N

Handling and Positioning Aid (HPA) teleoperation: Y

OMV support: N  
Prop. load & drain computer system: N

ORU Bar code data base: N  
Paging: Y  
MPAC: N

Planning work station (computer): Y

Aerobrake storage fitting: Y  
OTV flight support structure: Y

Personnel EVA door: N  
MPAC connection: N

HPA’s (local & teleoperated): Y  
Hand & foot restraints: N

ORU storage lockers: Y  
Tool lockers: Y

Thermal control system: Y

PROPELLANT SERVICING FACILITY AND EQUIPMENT

PROPELLANT SERVICING FACILITY

Standard Servicing Interface (remote latch/unlatch): N  
Remote Control Removable Quick Disconnects,  
Fill/drain/vent/pressurization: N  
Fuel cell fill/drain/purge/pressurization: N  
Propellant metering system: N

EVA Personnel equipment: N  
EVA equipment box: N  
Support Equipment: N

Portable MPAC: N  
Lights: N  
Bar code reader: N

Video Cameras: N  
Tools manual/power: N

External ORU storage boxes: N

SC electrical/mechanical interface simulator: N
SPACE STATION DETAILED RESOURCES IDENTIFICATION
TASK NO: 34   MOVE TO PROCESSING FACILITY

SUBTASK NO: <34.0256> DESCRIPTION: REMOVE AND STORE AEROBRAKE

ACTIVITY: USING THE SPECIAL TOOL KIT, PERFORM THE EVA TO REMOVE AND STORE THE AEROBRAKE.

Personnel:  SPACE STATION       GROUND STATION
            STATION SPECIALIST(S) IVA (1)   CS-G (8)
            STATION SPECIALIST(S) EVA (2)

Sub Total (3) Total (8)

Serial Time To Complete: 720 min
Total Manhours: 36.0

SC-POCC Support Required: (N)

AUTOMATION NEED: (Primary Key)

AUTOMATION SECONDARY KEY(S)

*************** CONTROL SYSTEM - STATION (CS-S) **************

OTV Control & monitor system: N Tracking: Y Data Dump: N

EVA MONITOR:
  Audio: Y , Video: Y , Telemetry: Y

OTV HANGER REMOTE CONTROL:
  Door(s): N , Lights: Y , TV (signature data auto scan): Y , RR Umbilical control: N

TRAINING VIDEO SYSTEM:
  On-board: N , Up-link: N

Handling and Positioning Aid (HPA) teleoperation: Y

OMV support: N Prop. load & drain computer system: N

ORU Bar code data base: N Paging: Y MPAC: Y

Planning work station (computer): Y

********** OTV HANGER **********

Aerobrake storage fitting: Y OTV flight support structure: Y

Personnel EVA door: Y MPAC connection: Y

HPA's (local & teleoperated): Y Hand & foot restraints: Y

ORU storage lockers: Y Tool lockers: Y

Thermal control system: Y

********** PROPELLANT SERVICING FACILITY AND EQUIPMENT **********

PROPELLANT SERVICING FACILITY

Standard Servicing Interface (remote latch/unlatch): N
Remote Control Removable Quick Disconnects.
  Fill/drain/vent/pressurization: N
Fuel cell fill/drain/purge/pressurization: N
Propellant metering system: N

EVA Personnel equipment: Y EVA equipment box: Y Support Equipment: N
Portable MPAC: N Lights: N Bar code reader: N
Video Cameras: N Tools manual/power: N

External ORU storage boxes: N

SC electrical/mechanical interface simulator: N
SPACE STATION DETAILED RESOURCES IDENTIFICATION
TASK NO: 34 MOVE TO PROCESSING FACILITY

SUBTASK NO: <34.0306> DESCRIPTION: <INSTALL OTV IN WORKSTAND>

ACTIVITY: INSTALL/SECURE OTV IN THE OTV WORKSTAND

Personnel: SPACE STATION
STATION SPECIALIST(S) IVA (2) 6.034366666666666
STATION SPECIALIST(S) EVA (6)
Sub Total (2) Total (2)

Serial Time To Complete: 240 min Total Manhours (8.0)

SC-POCC Support Required: (N)

AUTOMATION NEED: (Primary Key)

AUTOMATION SECONDARY KEY(S)

*************** CONTROL SYSTEM - STATION (CS-S) ***************

OTV Control & monitor system: N Tracking: N Data Dump: N

EVA MONITOR:
Audio: N Video: N Telemetry: N

OTV HANGER REMOTE CONTROL:
Door(s): N Lights: Y TV(signature data auto scan): Y
FSS latch/unlatch: Y RR Umbilical control: Y

TRAINING VIDEO SYSTEM:
On-board: N Up-link: N

Handling and Positioning Aid (HPA) teleoperation: Y

OMV support: N Prop. load & drain computer system: N

ORU Bar code data base: N Paging: Y MPAC: N

Planning work station (computer): Y

************ PROPELLANT SERVICING FACILITY AND EQUIPMENT ************

PROPELLANT SERVICING FACILITY

Standard Servicing Interface (remote latch/unlatch): N
Remote Control Removable Quick Disconnects, Fill/drain/vent/pressurization: N
Fuel cell fill/drain/purge/pressurization: N Propellant metering system: N

EVA Personnel equipment: N EVA equipment box: N Support Equipment: N
Portable MPAC: N Lights: N Bar code reader: N
Video Cameras: N Tools manual/power: N
External ORU storage boxes: N
SC electrical/mechanical interface simulator: N
SPACE STATION DETAILED RESOURCES IDENTIFICATION
Task No: 34 MOVE TO PROCESSING FACILITY

Subtask No: < 34.0408>
Description: <REMOVE BATTERIES AND ORDNANCE>

Activity: REMOVE BATTERY ACCESS PANELS AND REMOVE BATTERIES. REMOVE ALL UNUSED ORDNANCE

Personnel:
SPACE STATION
STATION SPECIALIST(S) IVA (2)
STATION SPECIALIST(S) EVA (0)

GROUND STATION
CS-G (0)

Sub Total: (2)
Total: (2)

Serial Time To Complete: 180 min
Total Manhours: (8.0)

SC-POCC Support Required: (N)

Automation Need: (Primary Key)

Automation Secondary Key(s)

----------------- CONTROL SYSTEM - STATION (CS-S) -----------------
OTV Control & monitor system: N Tracking: N Data Dump: N

EVA Monitor:
Audio: N Video: N Telemetry: N

OTV Hanger Remote Control:
Door(s): N Lights: Y FSS latch/unlatch: N

Training Video System:
On-board: N Up-link: N

Handling and Positioning Aid (HPA) teleoperation: N

OMV Support: N Prop. Load & drain computer system: N

ORU Bar code data base: N Paging: Y MPAC: N

Planning work station (computer): Y

----------------- PROPELLANT SERVICING FACILITY AND EQUIPMENT -----------------

Proellant Servicing Facility

Standard Servicing Interface (remote latch/unlatch): N Remote Control Removable Quick Disconnects: N
Fuel cell fill/drain/purge/pressurization: N

EVA Personnel equipment: N EVA equipment box: N Support Equipment: N
Portable MPAC: N Lights: N Bar code reader: N
Video Cameras: N Tools manual/power: N
External ORU storage boxes: N

SC electrical/mechanical interface simulator: N

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SPACE STATION DETAILED RESOURCES IDENTIFICATION

TASK NO: 34  MOVE TO PROCESSING FACILITY

SUBTASK NO: < 34.0556>  DESCRIPTION: <CONNECT UMBILICALS>

ACTIVITY: MATE ALL UMBILICAL CONNECTIONS IN PREPARATION FOR OTV PROCESSING

Personnel:  
SPACE STATION  
STATION SPECIALIST(S) IVA (2)  
STATION SPECIALIST(S) EVA (8)  

GROUND STATION  
CS-G (0)  

Sub Total = (2)  
Total = (0)

Serial Time To Complete: 300 min  
Total Manhours: 16.6

SC-POCC Support Required: (N)

AUTOMATION NEED: (Primary Key)

AUTOMATION SECONDARY KEY(S)  

*************** CONTROL SYSTEM - STATION (CS-S) ***************

OTV Control & monitor system: N  
Tracking: N  
Data Dump: N

EVA MONITOR:  
Audio: N  
Video: N  
Telemetry: N

OTV HANGER REMOTE CONTROL:  
Door(s): N  
Lights: Y  
FSS latch/unlatch: Y  
TV(signature data auto scan): Y  
RR Umbilical control: N

TRAINING VIDEO SYSTEM:  
On-board: N  
Up-link: N

Handling and Positioning Aid (HPA) teleoperation: Y

OMV support: N  
Prop. load & drain computer system: N

ORU Bar code data base: N  
Paging: Y  
MPAC: N

Planning work station (computer): Y

*************** PROPELLANT SERVICING FACILITY AND EQUIPMENT ***************

PROPELLANT SERVICING FACILITY

Standard Servicing Interface (remote latch/unlatch): N  
Remote Control Removable Quick Disconnects,  
Fill/drain/vent/pressurization: N  
Fuel cell fill/drain/purge/pressurization: N  
Propellant metering system: N

EVA Personnel equipment: N  
EVA equipment box: N  
Support Equipment: N

Portable MPAC: N  
Lights: N  
Bar code reader: N

Video Cameras: N  
Tools manual/power: N

External ORU storage boxes: N

SC electrical/mechanical interface simulator: N
SPACE STATION DETAILED RESOURCES IDENTIFICATION
TASK NO: 35 CONDUCT PLANNED MAINTENANCE

SUBTASK NO: < 35.0100> DESCRIPTION: <REFURBISH AEROBRAKE SYSTEM >

ACTIVITY: PERFORM MAINTENANCE AND REFURBISHMENT OF THE AEROBRAKE SYSTEM

Personnel: SPACE STATION STATION SPECIALIST(S) IVA (2) Station SPECIALIST(S) EVA (6)
Sub Total: (2) Total: (2)
Serial Time To Complete: 686 min Total Manhours: (28.8)

SC-POCC Support Required: (N)

AUTOMATION NEED: (Primary Key)

AUTOMATION SECONDARY KEY(S)

---------------------- CONTROL SYSTEM - STATION (CS-S) ----------------------

OTV Control & monitor system: N Tracking: N Data Dump: N

EVA MONITOR:
Audio: N Video: N Telemetry: N

OTV HANGER REMOTE CONTROL:
Door(s): N Lights: Y TV (signature data auto scan): Y
FSS latch/unlatch: Y RR Umbilical control: Y

TRAINING VIDEO SYSTEM:
On-board: N Up-link: N

Handling and Positioning Aid (HPA) teleoperation: Y

OMV support: N Prop. load & drain computer system: N

Planning work station (computer): Y MPAC: N

--------------------- OTV HANGER ---------------------

Aerobrake storage fitting: N OTV flight support structure: N
Personnel EVA door: N MPAC connection: N
HPA's (local & teleoperated): N Hand & foot restraints: N
ORU storage lockers: N Tool lockers: N

Thermal control system: N

******** PROPELLANT SERVICING FACILITY AND EQUIPMENT ********

PROPELLANT SERVICING FACILITY

Standard Servicing Interface (remote latch/unlatch): N
Remote Control Removable Quick Disconnects: N
Fill/drain/vent/pressurization: N
Fuel cell fill/drain/purge/pressurization: N
Propellant metering system: N

EVA Personnel equipment: N EVA equipment box: N Support Equipment: N
Portable MPAC: N Lights: N Bar code reader: N
Video Cameras: N Tools manual/power: N

External ORU storage boxes: N

SC electrical/mechanical interface simulator: N
SPACE STATION DETAILED RESOURCES IDENTIFICATION

TASK NO: 35  CONDUCT PLANNED MAINTENANCE

SUBTASK NO: < 35.0200>

DESCRIPTION: <REMOVE ENGINE PUMPS AND STORE >

ACTIVITY: REMOVE THE ENGINE/PUMP USING THE SPECIAL TOOL KIT AND ROUTE TO STORAGE AREA FOR RETURN TO EARTH FOR REPAIR AND REFURBISHMENT

Personnel: SPACE STATION
            STATION SPECIALIST(S) IVA (2)
            STATION SPECIALIST(S) EVA (0)
            Sub Total (2)

GROUND STATION
            CS-G (0)
            Total (0)

Serial Time To Complete: 360 min
Total Manhours (12.0)

SC-POCC Support Required: (N)

AUTOMATION NEED: (Primary Key)

AUTOMATION SECONDARY KEY(S)

*************** CONTROL SYSTEM - STATION (CS-S) ***************

OTV Control & monitor system: N  Tracking: N  Data Dump: N

EVA MONITOR:
            Audio: N  Video: N  Telemetry: N

OTV HANGER REMOTE CONTROL:
            Door(s): Y  Lights: Y
            FSS latch/unlatch: Y  TV(signature data auto scan): Y
            RR Umbilical control: Y

TRAINING VIDEO SYSTEM:
            On-board: N  Up-link: N
            MRMS teleoperation control: Y

Handling and Positioning Aid (HPA) teleoperation: Y

OMV support: N  Prop. load & drain computer system: N

ORU Bar code data base: N  Paging: Y  MPAC: N

Planning work station (computer): Y

*************** OTV HANGER ***************

Aerobrake storage fitting: N  OTV flight support structure: N

Personnel EVA door: N  MPAC connection: N

HPA's (local & teleoperated): N  Hand & foot restraints: N

ORU storage lockers: N  Tool lockers: N

Thermal control system: N

*************** PROPELLANT SERVICING FACILITY AND EQUIPMENT ***************

PROPELLANT SERVICING FACILITY

Standard Servicing Interface (remote latch/unlatch): N
Remote Control Removable Quick Disconnects,
Fill/drain/vent/pressurization: N
Fuel cell fill/drain/purge/pressurization: N
Propellant metering system: N

EVA Personnel equipment: N  Support Equipment box: N  EVA equipment box: N  Support Equipment: N

Portable MPAC: N  Lights: N  Bar code reader: N

Video Cameras: N  Tools manual/power: N

External ORU storage boxes: N

SC electrical/mechanical interface simulator: N
SPACE STATION DETAILED RESOURCES IDENTIFICATION
TASK NO: 35 CONDUCT PLANNED MAINTENANCE

SUBTASK NO: < 35.63ee> DESCRIPTION: <REINSTALL ENGINES/PUMPS >

ACTIVITY: REINSTALL AND RETEST ENGINE/PUMPS

Personnel:
SPACE STATION
STATION SPECIALIST(S) IVA (2)
STATION SPECIALIST(S) EVA (0)
Sub Total (2)

GROUND STATION
CS-G (0)
Total (0)

Serial Time To Complete: 360 min
Total Manhours (12.0)

SC-POCC Support Required: (N)

AUTOMATION NEED: (Primary Key)

AUTOMATION SECONDARY KEY(S)

*************** CONTROL SYSTEM - STATION (CS-S) ***************

OTV Control & monitor system: N Tracking: N Data Dump: N

EVA MONITOR:
Audio: N Video: N Telemetry: N

OTV HANGER REMOTE CONTROL:
Door(s): Y Lights: Y FSS latch/unlatch: Y
TV(signature data auto scan): Y RR Umbilical control: Y

TRAINING VIDEO SYSTEM:
On-board: N Up-link: N

Handling and Positioning Aid (HPA) teleoperation: Y

OMV support: N Prop. load & drain computer system: N

Planning work station (computer): Y

********** PROPELLANT SERVICING FACILITY AND EQUIPMENT **********

PROPELLANT SERVICING FACILITY

Standard Servicing Interface (remote latch/unlatch): N
Remote Control Removable Quick Disconnects:
Fuel cell fill/drain/purge/pressurization: N
Propellant metering system: N

EVA Personnel equipment: N EVA equipment box: N Support Equipment: N
Portable MPAC: N Lights: N Bar code reader: N
Video Cameras: N Tools manual/power: N

External ORU storage boxes: N

SC electrical/mechanical interface simulator: N
SPACE STATION DETAILED RESOURCES IDENTIFICATION
TASK NO: 36 CONDUCT UNPLANNED MAINTENANCE

SUBTASK NO: < 36.0100>

ACTIVITY: AS REQUIRED

DESCRIPTION: <CONDUCT UNPLANNED MAINTENANCE>

Personnel: SPACE STATION SPECIALIST(S) IVA (6) GROUND STATION CS-G (6)
STATION SPECIALIST(S) EVA (6) Sub Total: (6)

Serial Time To Complete: 0 min Total Manhours: (0.0)

SC-POCC Support Required: (N)

AUTOMATION NEED: (Primary Key)

AUTOMATION SECONDARY KEY(S):


*************** CONTROL SYSTEM - STATION (CS-S) ***************

OTV Control & monitor system: N Tracking: N Data Dump: N

EVA MONITOR:
Audio: N, Video: N, Telemetry: N

OTV HANGER REMOTE CONTROL:
Door(s): N, Lights: N TV(signature data auto scan): N
FSS latch/unlatch: N RR Umbilical control: N

TRAINING VIDEO SYSTEM:
On-board: N, Up-link: N

Handling and Positioning Aid (HPA) teleoperation: N

OMV support: N Prop. load & drain computer system: N

ORU Bar code data base: N Paging: N MPAC: N

Planning work station (computer): Y

*********** OTV HANGER ***********

Aerobrake storage fitting: N OTV flight support structure: N
Personnel EVA door: N MPAC connection: N
HPA's (local & teleoperated): N Hand & foot restraints: N
ORU storage lockers: N Tool lockers: N

Thermal control system: N

********** PROPELLANT SERVICING FACILITY AND EQUIPMENT **********

PROPELLANT SERVICING FACILITY

Standard Servicing Interface (remote latch/unlatch): N
Remote Control Remotable Quick Disconnects, Fill/drain/vent/pressurization: N
Fuel cell fill/drain/purge/pressurization: N Propellant metering system: N

EVA Personnel equipment: N EVA equipment box: N Support Equipment: N
Portable MPAC: N Lights: N Bar code reader: N
Video Cameras: N Tools manual/power: N

External ORU storage boxes: N

SC electrical/mechanical interface simulator: N
SPACE STATION DETAILED RESOURCES IDENTIFICATION

TASK NO: 37  INSTALL MODIFICATIONS

SUBTASK NO: < 37.0106> DESCRIPTION: INSTALL MODIFICATIONS

ACTIVITY: AS REQUIRED

Personnel: SPACE STATION
STATION SPECIALIST(S) IVA (0) GROUND STATION
STATION SPECIALIST(S) EVA (0)

Personnel EVA (6)
STATION SPECIALIST(S) EVA (6)

Serial Time To Complete: 0 min Total Manhours (0.0)

SC-POCC Support Required: (N)

AUTOMATION NEED: (Primary Key)

AUTOMATION SECONDARY KEY(S)

*************** CONTROL SYSTEM - STATION (CS-S) ***********************

OTV Control & monitor system: N Tracking: N Data Dump: N

EVA MONITOR:
Audio: N Video: N Telemetry: N

OTV HANGER REMOTE CONTROL:
Door(s): N Lights: Y FSS latch/unlatch: Y TV(signature data auto scan): Y

TRAINING VIDEO SYSTEM:
On-board: N Up-link: N RR Umbilical control: N

Handling and Positioning Aid (HPA) teleoperation: N

OMV support: N Prop. load & drain computer system: N

ORU Bar code data base: N Paging: N MPAC: N

Planning work station (computer): Y

*************** OTV HANGER ***********************

Aerobrake storage fitting: N OTV flight support structure: N

Personnel EVA door: N MPAC connection: N

HPA's (local & teleoperated): N Hand & foot restraints: N

ORU storage lockers: N Tool lockers: N

Thermal control system: N

********** PROPELLANT SERVICING FACILITY AND EQUIPMENT *************

PROPELLANT SERVICING FACILITY

Standard Servicing Interface (remote latch/unlatch): N Remote Control Removable Quick Disconnects: N
Fuel cell fill/drain/vent/pressurization: N

EVA Personnel equipment: N EVA equipment box: N Support Equipment: N
Portable MPAC: N Lights: N Bar code reader: N
Video Cameras: N Tools manual/power: N
External ORU storage boxes: N
SC electrical/mechanical interface simulator: N

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SPACE STATION DETAILED RESOURCES IDENTIFICATION

TASK NO: 38  RETEST VERIFICATION

SUBTASK NO: < 38.0100>  DESCRIPTION: <APPLY POWER TO OTV >

ACTIVITY: APPLY POWER TO OTV-VERIFY POWER PROFILE TO INSURE MOD PACKAGE POWER REQUIREMENTS.

Personnel:

SPACE STATION
STATION SPECIALIST(S) IVA (2) GROUND STATION
STATION SPECIALIST(S) EVA (6)

Sub Total——(2)  Total——(8)

Serial Time To Complete: 60 min Total Manhour(s) (8.8)

SC-POCC Support Required: (Y)

AUTOMATION NEED: (Primary Key)

AUTOMATION SECONDARY KEY(S)

****************************** CONTROL SYSTEM - STATION (CS-S) ******************************

OTV Control & monitor system: N Tracking: N Data Dump: N

EVA MONITOR:
   Audio: N Video: N Telemetry: N

OTV HANGER REMOTE CONTROL:
   Door(s): N Lights: Y
   FSS latch/unlatch: Y
   TV(signature data auto scan): Y
   RR Umbilical control: N

TRAINING VIDEO SYSTEM:
   On-board: N Up-link: N
   MRWS teleoperation control: Y

Handling and Positioning Aid (HPA) teleoperation: N

OMV support: N
   Prop. load & drain computer system: N

ORU Bar code data base: N
   Paging: Y MPAC: N

Planning work station (computer): Y

****************************** OTV HANGER ****************************

Aerobrake storage fitting: N

Personnel EVA door: N

HPA's (local & teleoperated): N

ORU storage lockers: N

Thermal control system: N

************************ PROPELLANT SERVICING FACILITY AND EQUIPMENT ****************************

PROPELLANT SERVICING FACILITY

Standard Servicing Interface (remote latch/unlatch): N
Remote Control Removable Quick Disconnects:
   Fill/drain/vent/pressurization: N
Fuel cell fill/drain/purge/pressurization: N
Propellant metering system: N

EVA Personnel equipment: N
   EVA equipment box: N
   Support Equipment: N

Portable MPAC: N
   Lights: N
   Bar code reader: N

Video Cameras: N
   Tools manual/power: N

External ORU storage boxes: N

SC electrical/mechanical interface simulator: N
SPACE STATION DETAILED RESOURCES IDENTIFICATION

TASK NO: 38  RETEST VERIFICATION

SUBTASK NO: <38.0200>  DESCRIPTION: <PERFORM OTV HEALTH CHECKS>

ACTIVITY: PERFORM OTV RETEST/REVERIFICATION TO VERIFY HEALTH AND STATUS OF OTV

Personnel:
SPACE STATION
STATION SPECIALIST(S) IVA (2)
STATION SPECIALIST(S) EVA (6)

GROUND STATION
CS-G (6)

Sub Total (2) (6)

Serial Time To Complete: 60 min
Total Manhours (8)

SC-POCC Support Required: (Y)

AUTOMATION NEED: (Primary Key)

AUTOMATION SECONDARY KEY(S)

************************ CONTROL SYSTEM - STATION (CS-S) ************************

OTV Control & monitor system: N  Tracking: N  Data Dump: Y

EVA MONITOR:
Audio: N  Video: N  Telemetry: N

OTV HANGER REMOTE CONTROL:
Door(s): N  Lights: Y  TV(au sig data aut scan): Y
FSS latch/unlatch: Y  RR Umbilical control: N

TRAINING VIDEO SYSTEM:
On-board: N  Up-link: N

Handling and Positioning Aid (HPA) teleoperation: N

OMV support: N  Prop. load & drain computer system: N

ORU Bar code data base: N  Paging: Y  MPAC: N

Planning work station (computer): Y

************************ OTV HANGER ************************

Aerobrake storage fitting: N  OTV flight support structure: N

Personnel EVA door: N  MPAC connection: N

HPA's (local & teledepated): N  Hand & foot restraints: N

ORU storage lockers: N  Tool lockers: N

Thermal control system: N

******** PROPPELLANT SERVICING FACILITY AND EQUIPMENT ********

PROPPELLANT SERVICING FACILITY

Standard Servicing Interface (remote latch/unlatch): N
Remote Control Removable Quick Disconnects:
  Fill/drain/vent/pressurization: N
Fuel cell fill/drain/purge/pressurization: N
Propellant metering system: N

EVA Personnel equipment: N  EVA equipment box: N  Support Equipment: N

Portable MPAC: N  Lights: N  Bar code reader: N

Video Cameras: N  Tools manual/power: N

External ORU storage boxes: N

SC electrical/mechanical interface simulator: N

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**SPACE STATION DETAILED RESOURCES IDENTIFICATION**

**TASK NO: 38 RETEST VERIFICATION**

**SUBTASK NO: < 38.6366> DESCRIPTION: <REMOCE POWER FROM OTV >**

**ACTIVITY: REMOVE POWER FROM THE OTV**

<table>
<thead>
<tr>
<th>Personnel: SPACE STATION</th>
<th>GROUND STATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>STATION SPECIALIST(S) EVA</td>
<td>CS-G (6)</td>
</tr>
<tr>
<td>STATION SPECIALIST(S) EVA</td>
<td>(6)</td>
</tr>
<tr>
<td><strong>Sub Total</strong></td>
<td><strong>Total</strong></td>
</tr>
<tr>
<td>(2)</td>
<td>(6)</td>
</tr>
</tbody>
</table>

**Serial Time To Complete:** 60 min  
**Total Manhours:** 8.6

**SC-POCC Support Required:** (Y)

**AUTOMATION NEED:** (Primary Key)

**AUTOMATION SECONDARY KEY(S):**

<table>
<thead>
<tr>
<th>CONTROL SYSTEM — STATION (CS-S)</th>
</tr>
</thead>
<tbody>
<tr>
<td>OTV Control &amp; monitor system: Y</td>
</tr>
<tr>
<td>Tracking: N</td>
</tr>
<tr>
<td>Data Dump: Y</td>
</tr>
</tbody>
</table>

**EVA MONITOR:**
- Audio: N
- Video: N
- Telemetry: N

**OTV HANGER REMOTE CONTROL:**
- Door(s): N
- Lights: Y
- TV (signature data auto scan): Y
- RR Umbilical control: N

**TRAINING VIDEO SYSTEM:**
- On-board: N
- Up-link: Y

**Handling and Positioning Aid (HPA) teleoperation:** N

**OMV support:** N  
**Prop. load & drain computer system:** N

**ORU Bar code data base:** N  
**Paging:** Y  
**MPAC:** N

**Planning work station (computer):** Y

**OTV HANGER**

| Aerobrake storage fitting: N |
| OTV flight support structure: N |
| Personnal EVA door: N |
| MPAC connection: N |
| HPA's (local & teleoperated): N |
| Hand & foot restraints: N |
| ORU storage lockers: N |
| Tool lockers: N |

**Thermal control system:** N

**PROPPELLANT SERVICING FACILITY AND EQUIPMENT**

**PROPELLANT SERVICING FACILITY**

| Standard Servicing Interface (remote latch/unlatch): N |
| Remote Control Removable Quick Disconnects: N |
| Fuel cell fill/drain/purge/pressurization: N |
| Propellant metering system: N |

**EVA Personnel equipment:** N  
**EVA equipment box:** N  
**Support Equipment:** N

**Portable MPAC:** N  
**Lights:** N  
**Bar code reader:** N

**Video Cameras:** N  
**Tools manual/power:** N

**External ORU storage boxes:** N

**SC electrical/mechanical interface simulator:** N
SPACE STATION DETAILED RESOURCES IDENTIFICATION

TASK NO: 39 OTV STORAGE AND RETURN TO FLOW

SUBTASK NO: < 39.0100> DESCRIPTION: <COVER OTV>

ACTIVITY: PLACE PROTECTIVE COVERS ON OTV

Personnel: SPACE STATION GROUND STATION
STATION SPECIALIST(S) IVA (1) CS-G (0)
STATION SPECIALIST(S) EVA (2)
Sub Total (3)
Serial Time To Complete: 60 min Total Manhours (3.8)
SC-POCC Support Required: (N)
AUTOMATION NEED: (Primary Key)
AUTOMATION SECONDARY KEY(S)

*************** CONTROL SYSTEM - STATION (CS-S) ***************

OTV Control & monitor system: Y Tracking: N Data Dump: Y
EVA MONITOR:
Audio: Y ,Video: Y ,Telemetry: Y

OTV HANGER REMOTE CONTROL:
Door(s): N ,Lights: Y TV(signature data auto scan): Y
FSS latch/unlatch: Y RR Umbilical control: Y

TRAINING VIDEO SYSTEM:
On-board: N ,Up-link: N

Handling and Positioning Aid (HPA) teleoperation: Y
OMV support: N Prop. load & drain computer system: N
ORU Bar code data base: N Paging: Y MPAC: N
Planning work station (computer): Y

*************** PROPELLANT SERVICING FACILITY AND EQUIPMENT ***************

PROPELLANT SERVICING FACILITY

Standard Servicing Interface (remote latch/unlatch): N
Remote Control Removable Quick Disconnects:
Fill/drain/vent/pressurization: N
Fuel cell fill/drain/purge/pressurization: N
Propellant metering system: N

EVA Personnel equipment: Y EVA equipment box: Y Support Equipment: N
Portable MPAC: N Lights: N Bar code reader: N
Video Cameras: N Tools manual/power: N
External ORU storage boxes: N
SC electrical/mechanical interface simulator: N
SPACE STATION DETAILED RESOURCES IDENTIFICATION
TASK NO: 39 OTV STORAGE AND RETURN TO FLOW

SUBTASK NO: < 39.02e0> DESCRIPTION: <SEAL/MONITOR OTV>

ACTIVITY: INSTALL SEALS ON OTV AND MONITOR FOR PROPER TEMP AND HUMIDITY

Personnel: SPACE STATION
STATION SPECIALIST(S) IVA (1)
STATION SPECIALIST(S) EVA (2)
Sub Total—— 3 ——— Total—— 3

Serial Time To Complete: 60 min Total Manhours ( 3.0)

SC-POCC Support Required: (N)

AUTOMATION NEED: (Primary Key)

AUTOMATION SECONDARY KEY(S)

%%%%%%%%%%%%%%%% CONTROL SYSTEM — STATION (CS—S) %%%%%%%%%%%%%%%%%

OTV Control & Monitor system: Y Tracking: N Data Dump: Y
EVA Monitor:
Audio: Y Video: Y Telemetry: Y

OTV Hanger Remote Control:
Door(s): N Lights: Y
FSS latch/unlatch: Y TV(signature data auto scan): Y

Training Video System:
On-board: N Up-link: N

Handling and Positioning Aid (HPA) teleoperation: Y

OMV support: N Prop. load & drain computer system: N
ORU Bar code data base: N Paging: N MPAC: N
Planning work station (computer): Y

%%%%%%%%%%%%%%%% OTV HANGER %%%%%%%%%%%%%%%%%

Aerobrake storage fitting: N OTV flight support structure: N
Personnel EVA door: Y MPAC connection: N
HPA's (local & teleoperated): N Hand & foot restraints: Y
ORU storage lockers: N Tool lockers: N

Thermal control system: N

%%%%%%%%%%%%%%%% PROPELLANT SERVICING FACILITY AND EQUIPMENT %%%%%%%%%%%%%%%%%

PROPELLANT SERVICING FACILITY

Standard Servicing Interface (remote latch/unlatch): N
Remote Control Removable Quick Disconnects,
Fill/drain/vent/pressurization: N
Fuel cell fill/drain/purge/pressurization: N
Propellant metering system: N

EVA Personnel equipment: Y EVA equipment box: Y Support Equipment: N
Portable MPAC: N Lights: N Bar code reader: N
Video Cameras: N Tools manual/power: N
External ORU storage boxes: N
SC electrical/mechanical interface simulator: N
SUBTASK NO: < 39.6308> DESCRIPTION: <REMOVE SEAL>

ACTIVITY: REMOVE SEALS INSTALLED ON OTV

Personnel: SPACE STATION
STATION SPECIALIST(S) IVA (1)
STATION SPECIALIST(S) EVA (2)
Sub Total: (3)

Personnel: GROUND STATION
CS-G (0)
Sub Total: (0)
Total: (3)

Serial Time To Complete: 60 min Total Manhours: (3.6)

SC-POCC Support Required: (N)
AUTOMATION NEED: (Primary Key)
AUTOMATION SECONDARY KEY(S)

*************** CONTROL SYSTEM - STATION (CS-S) ***************

OTV Control & monitor system: N Tracking: N Data Dump: N

EVA MONITOR:
Audio: Y Video: Y Telemetry: Y

OTV HANGER REMOTE CONTROL:
Door(s): N Lights: Y TV(signature data auto scan): N
FSS latch/un latch: N RR Umbilical control: N

TRAINING VIDEO SYSTEM:
On-board: N Up-link: N

Handling and Positioning Aid (HPA) teleoperation: N

OMV support: N Prop. load & drain computer system: N

ORU Bar code data base: N Paging: N MPAC: N

Planning work station (computer): Y

*************** OTV HANGER ***************

Aerobrake storage fitting: N OTV flight support structure: N
Personnel EVA door: Y MPAC connection: N
HPA's (local & teleoperated): N Hand & foot restraints: N
ORU storage lockers: N Tool lockers: N

Thermal control system: N

******** PROPELLANT SERVICING FACILITY AND EQUIPMENT ********

PROPELLANT SERVICING FACILITY

Standard Servicing Interface (remote latch/unlatch): N
Remote Control Removable Quick Disconnects, Fill/drain/vent/pressurization: N
Fuel cell fill/drain/purge/pressurization: N
Propellant metering system: N

EVA Personnel equipment: Y EVA equipment box: Y Support Equipment: N
Portable MPAC: N Lights: N Bar code reader: N
Video Cameras: N Tools manual/power: N

External ORU storage boxes: N

SC electrical/mechanical interface simulator: N

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**SPACE STATION DETAILED RESOURCES IDENTIFICATION**

**TASK NO:** 39 OTV STORAGE AND RETURN TO FLOW

**DESCRIPTION:** <REMOVE COVERS/RTN OTV TO FLOW>

**ACTIVITY:** REMOVE COVERS AND RETURN OTV TO PROCESSING FLOW

<table>
<thead>
<tr>
<th>Personnel: SPACE STATION</th>
<th>GROUND STATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>STATION SPECIALIST(S) IVA</td>
<td>CS-G</td>
</tr>
<tr>
<td>(1)</td>
<td>(0)</td>
</tr>
<tr>
<td>STATION SPECIALIST(S) EVA</td>
<td></td>
</tr>
<tr>
<td>(2)</td>
<td></td>
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<tr>
<td><strong>Sub Total</strong></td>
<td>(3)</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>(3)</td>
</tr>
</tbody>
</table>

**Serial Time To Complete:** 60 min

**Total Manhours:** (3.6)

**SC-POCC Support Required:** (N)

**AUTOMATION NEED:** (Primary Key)

**AUTOMATION SECONDARY KEY(S):**

--------------------------- CONTROL SYSTEM - STATION (CS-S) ---------------------------

**OTV Control & monitor system:** N  
**Tracking:** N  
**Data Dump:** N

**EVA MONITOR:**
- Audio: Y  
- Video: Y  
- Telemetry: Y

**OTV HANGER REMOTE CONTROL:**
- Door(s): N  
- Lights: Y  
- TV (signature data auto scan): N  
- RR Umbilical control: N

**TRAINING VIDEO SYSTEM:**
- On-board: N  
- Up-link: N

**Handling and Positioning Aid (HPA) teleoperation:** N

**OMV support:** N  
**Prop. load & drain computer system:** N

**ORU Bar code data base:** N  
**Paging:** N  
**MPAC:** N

**Planning work station (computer):** Y

--------------------------- PROPELLANT SERVICING FACILITY AND EQUIPMENT ---------------------------

**PROPELLANT SERVICING FACILITY**

**Standard Servicing Interface (remote latch/unlatch):** N  
**Remote Control Remateable Quick Disconnects:** N  
**Fuel cell fill/drain/vent/pressurization:** N  
**Propellant metering system:** N

**EVA Personnel equipment:** Y  
**Support Equipment box:** Y  
**EVA equipment box:** Y  
**Support Equipment:** N

**Portable MPAC:** N  
**Lights:** N  
**Bar code reader:** N

**Video Cameras:** N  
**Tools manual/power:** N

**External ORU storage boxes:** N

**SC electrical/mechanical interface simulator:** N