EV TEAM PROCEDURES

Relevant to: EV Teams

NASA SUITS
2025-26 Challenge

NASA SUITS EVA Procedures

==This document **may** be updated ahead of test week in May 2026.==

Contents

Notes:

This document will likely undergo several more revisions as we do dry runs in preparation for test week. NASA SUITS aims to have each test session run for 45-minutes. This allows time on each end of the window to setup and to transition from group to group. Therefore, the PR and Spacesuit portions will each take about 25-minutes with a few cutoffs. The reasoning for the cutoffs is to prevent teams from getting stuck and allowing other functionalities to be showcased, i.e. "Something isn't working, and we are behind, so in order to see your other functionalities, let's move on."

Change Log:

1. Modify PR Team timeline to be more real-world accurate. Add verbal aspects to checklists for design evaluators to confirm procedures, add cover page. -RE
2. Separate PR and EV team procedures into separate documents. -RE

General Test Timeline

Both the rover and EV teams will begin their procedures at the same time. The following procedures are done concurrently with the PR team and their procedures but are **not** dependent on one another. Cutoff times are fluid for each station, but 50 min is hard stop.

EV	EVA ET Ideal	Time to complete
EVA Egress • Connect UIA to DCU • Start Depress • Prep O2 Tanks • End Depress, Check Switches and Disconnect	0 min	6 min
Navigate to LTV location	6 min	4 min
LTV Repair • Complete system scan and restart • Identify and repair issues with the LTV	10 min	10 min
Navigate to PR location	20 min	3 min
Ingress • Connect UIA to DCU • EMU config • Disconnect	23 min	2 min
EVA completion	25 min	N/A

Procedures

CAPCOM:
- *Reset all UIA switches to Down Position*
- *Reset all DCU switches to Back Position*
- *Reset LTV Task Board to pre-repair settings*
- *START EVA Telemetry (at EVA start time)*
- *Announce scenario start, give go to begin*

EVA

CAPCOM:
- *Monitor UIA Switches*

Connect UIA to DCU and start Depress (2 min)
1. UIA and DCU: EV1 verify umbilical connection from UIA to DCU
2. UAI: EV-1, EMU PWR – ON
3. DCU: BATT – UMB
4. UIA: DEPRESS PUMP PWR – ON

Prep O2 Tanks (3 min)
1. UIA: OXYGEN O2 VENT – OPEN
2. HMD: Wait until both Primary and Secondary OXY tanks are < 10psi
3. UIA: OXYGEN O2 VENT – CLOSE
4. DCU: OXY – PRI
5. UIA: OXYGEN EMU-1 – OPEN
6. HMD: Wait until EV1 Primary O2 tank > 3000 psi
7. UIA: OXYGEN EMU-1 – CLOSE
8. DCU: OXY – SEC
9. UIA: OXYGEN EMU-1 – OPEN
10. HMD: Wait until EV1 Secondary O2 tank > 3000 psi
11. UIA: OXYGEN EMU-1 – CLOSE
12. DCU: OXY – PRI

END Depress, Check Switches and Disconnect (3 min)
1. HMD: Wait until SUIT Pressure and O2 Pressure = 4
2. UIA: DEPRESS PUMP PWR – OFF
3. DCU: BATT – LOCAL
4. UIA: EV-1 EMU PWR - OFF
5. DCU: Verify OXY – PRI
6. DCU: Verify COMMS – A
7. DCU: Verify FAN – PRI
8. DCU: Verify PUMP – CLOSE
9. DCU: Verify CO2 – A

10. EV1 disconnect UIA and DCU umbilical
11. DCU: Verify comms are working between DCU and PR.
    a. "EV1 to PR, comm check, can you hear me?"
    b. PR respond appropriately.

Navigate to LTV location (4 min)
1. Drop pin and determine best path to reach the LTV
2. Verify the path has been generated
3. Exit airlock and begin navigation to LTV
4. Navigate to LTV   (Your team can create procedures to guide your EV in how to use the HMD.)
5. Showcase navigation interface and use of AI assistant

LTV Repair (10 min)
SEE ltv-repair-proecedures.pdf

CAPCOM:
- *Monitor LTV errors section in CAPCOM*

1. Announce arrival to LTV site over comms
    a. "Arrived at site, beginning LTV analysis."
2. Perform analysis of LTV, this is good opportunity to showcase your AI assistant by asking it to analyze
3. Upon analysis, look up the relevant repair procedures for the diagnosed errors
4. Conduct the necessary repairs on the LTV until all errors repaired
5. Perform initial startup of the LTV, report successful repair on comms.
    a. "LTV repair complete, returning to PR"

Navigate to PR Location (3 min)
1. Drop pin and determine best path to reach the PR
2. Verify the path has been generated
3. Begin navigation to the PR

EVA Ingress (2 min)
1. UIA and DCU: EV1 connect UIA and DCU umbilical (Connect UIA to DCU and start depress)
2. UIA: EV-1 EMU PWR – ON

3. DCU: BATT – UMB
4. UIA: OXYGEN O2 VENT – OPEN (Vent O2 tanks)
5. HMD: Wait until both Primary and Secondary OXY tanks are < 10psi
6. UIA: OXYGEN O2 VENT – CLOSE
7. DCU: PUMP – OPEN (Empty water tanks)
8. UIA: EV-1 WASTE WATER – OPEN
9. HMD: Wait until water EV1 Coolant tank is < 5%
10. UIA: EV-1, WASTE WATER – CLOSE
11. UIA: EV-1 EMU PWR – OFF (Disconnect UIA from DCU)
12. DCU: EV1 disconnect umbilical

CAPCOM
- *Stop EV Telemetry*
- *Prep for next team*
    - *Reset PR to home base*
    - *Reset LTV errors, and physical task board*
    - *Verify DCU and UIA are in default state*