

Proto Rover Deployment #20 Dive Plan
v 1.0.0 29Sep09
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Dive Objective: Attach Rover to MARS port. Test fixes to problems seen during 1st MARS deployment including camera strobe not flashing, port sediment switch not activating, stbd optode not returning data, and stbd rack motor controller issuing bad responses.

Deployment Date: 10 OCT 09

Recovery Date: 18 DEC 09

Person performing topside checklist: PRM

Pre-deployment:

1. Install Rover battery shorting plug and deck comms cable. ✓
2. Establish reliable comms with Rover through deck comms cable. ✓
3. Run syntax check on mission code. ✓
4. Run predive test program and verify correct operation of the following systems:
 - a. Relay boards activate all relays ✓
 - b. Valve Pumps run ✓
 - c. Current Meter returns data ✓
 - d. Rack motors lower chambers, limit switches stop motors, and racks return home ✓
 - e. Propulsion Motor controllers communicate ✓
 - f. Stir Motors rotate ✓
 - g. Optodes return data ✓
 - h. Cleaning Pumps run ✓
 - i. Chamber Cameras return images ✓
 - j. Transit Camera returns images ✓
 - k. Camera Strobe flashes ✓
 - l. Fluor Camera returns images (bring fluor target) ✓
5. Prime Valve Pump hosing with water on both stbd and port. ✓
6. Power on the Acoustic Modem and wait for it to chirp. If no chirp is heard after ten seconds, cycle the power until the chirp is heard. ✓
7. Check all flotation mechanically secure. ✓
8. Check that Current Meter is secure and compass arrow is pointed directly forward. ✓
9. Check and record propulsion motor and rack comp oil levels.
 - a. Port propulsion comp level: 4.9
 - b. Stbd propulsion comp level: 4.75
 - c. Port rack comp level: 5
 - d. Stbd rack comp level: 5.25
10. Inspect all comp oil hoses and fitting for damage and leaks. ✓
11. Check that Drop Weight is installed properly and free to drop. ✓
12. Remove Drop Weight safety bars. ✓
13. Activate Argos beacon on Rover, verifying operation with VHF receiver. ✓

14. Activate Strobe and VHF Beacon on Rover, noting Beacon channel number and verifying operation with VHF receiver.
 - a. Beacon channel number: 159.480
- ✓ 15. Note HomerPro channel number.
 - a. HomerPro channel number: 26
- ✓ 16. Issue software command to start Rover programmed behavior, noting the exact time.
 - a. Rover start time: 0926 PDT 1146 START
- ✓ 17. Unplug Rover deck comms cable and install dummy plug in its place.
- 18. Check all cable connectors and dummies installed and tight.
- 19. Check for tools left on and in Rover frame.
- ✓ 20. Remove Rover hold-down straps.

Deployment:

- ✓ 21. Deploy Rover and Recovery Buoy, noting exact time of launch.
 - a. Rover launch time: 0930 PDT
- ✓ 22. Track Rover descent with HomerPro and note estimated time of landing.
 - a. Rover landing time: 0957 PDT

On Bottom:

- ✓ 23. Check Rover comp levels on bottom with ROV cameras.
 - a. Port propulsion comp level: 4.5
 - b. Stbd propulsion comp level: 4.5
 - c. Port rack comp level: 5.1
 - d. Stbd rack comp level: 5.2
- ✓ 24. Record depth and location of Rover
 - a. Depth: 880 m
 - b. Latitude: 1136 42.7681 deg
 - c. Longitude: 1122 11.2288 deg
- 25. Estimate speed and direction of bottom currents as seen by ROV
 - a. Current speed: _____ cm/sec
 - b. Current direction: _____ magnetic

26. Observe

- a. Launch phase (no activity for 140 min from launch)
- b. Rover moving 3 m to new site, taking 3 transit images
- c. Rover waiting for sediment to settle (3 min) 30 secs
- d. Blue light on and fluorescence image capture (~15 sec)
- e. Camera Light activation during frame capture (~30 sec)
- f. Valves opening (~15 sec)
- g. Chamber insertion and Sediment Switch activation (~1 min)
- h. Valves closing (~5 sec)
- i. Camera Light activation during frame capture (~30 sec)
- j. Stir Motor rotation and optode reading (~? min) 45 secs
- k. Valve opening (~15 sec)
- l. Chamber cleaning and removal (~1 min)

Dec 18
 port rack 4
 port mtr 2874
 Stbd mtr > 4
 Stbd rack 5

- m. Returning to step 'b' for a total of 2 cycles, then starting "backup" mission plan to be cancelled after plugin to MARS.

Left Dock Recovery:

0702

In station
0905

Dive

1000

27. Acoustic Modem comms

- Lower topside Acoustic Modem Transducer to working depth after notifying bridge.
- Open terminal session on laptop and capture to a file.
- Establish comms between Rover and ship with Acoustic Modem.
- When ready to recover Rover, issue burn wire command, 'AT\$N0,107', noting exact time
 - Burn wire command issued: 1311 PDT
- Observe Rover drop weight release, noting exact time
 - Drop weight released: 1323:55 PDT

290m
travelled
Heading
310°

28. Locate Rover on surface, noting exact time.

- Surface time: 1415 PDT

ascend rate
min 850 - 5

29. Recover Recovery Buoy.

30. Attach Rover lift line to ship's crane.

31. Recover Rover, noting time Rover is on deck.

- Recovery time: 1437 PDT

32. Secure Rover with hold-down straps.

33. Turn off Rover Strobe and VHF Beacon.

34. Turn off Acoustic Modem.

35. Turn off Argos Beacon.

36. Connect deck comms cable and retrieve mission data.

37. Remove Rover battery shorting plug to disconnect battery and install dummy plug.

38. Remove deck comms cable and install dummy plug.