

DeepPIV on MiniROV Deployment #1 Checklist

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Dive Objective: First in situ deployments of DeepPIV on MiniROV aboard R/V Rachel Carson. Planning a two-dive day: first dive will involve calibrating DeepPIV (using vortex generator) and second dive will involve collecting science data (e.g., 3D reconstructions and PIV measurements of flow within larvacean houses and swimming praxiidae siphonophores; using dye injector). Science dives will be conducted at depths between 400 and 600 m at 36° 47, N, 121° 57, W (secondarily at 36° 42, N and 122° 3, W depending on target availability). Due to demobilization requirements, Rachel Carson will return one hour earlier than normally scheduled.

Deployment Date: 6/1/15

Recovery Date: _____

Person performing topside checklist: KAKANI

Pre-deployment:

- ✓ 1. Ensure that comm and power systems on MiniROV are functioning normally.
2. Align the laser and camera
 - a. Attach protective shroud to MiniROV's body
 - i. Zero digital level based on orientation of MiniROV sitting on deck
 - ii. Verify alignment of shroud using a digital level
 - iii. Record digital level reading on shroud: 0.3°
 - b. Enable Tilt and Laser controls in LabVIEW
 - c. Zero the Science Camera
 - i. Click Zero button in Tilt dialog tab
 - ii. Click Home button in Tilt dialog tab
 - iii. Record digital level reading on camera: 0.1°
 - d. Remove laser housing protective cover, and put on protective goggles
 - e. Power up the laser
 - i. Rotate the dial to 1.5 V in Laser dialog tab
 - ii. Record output of ADC: ~~1508~~ 1508
 - f. Verify that laser sheet is perpendicular to Science camera
 - i. Measure angle of laser sheet on shroud using a digital level
 - ii. Record digital level reading of laser sheet: 89.8°
 - g. Power down the laser
 - h. Replace laser housing protective cover
3. Remove protective shroud from MiniROV.
4. Secure protective shroud on deck of ship.
5. Run pre-dive test program and verify correct operation of the following systems:
 - ✓ a. MiniROV LED lights
 - ✓ b. Science camera (adjust zoom, focus, shutter speed, and IR filter settings)
 - ✓ c. AJA HD recorder (record, stop, playback)
 - ✓ d. Dye injector/vortex generator (disconnect tubing if dye injector being used, move piston, reset piston, set different increments)

- ✓(c.) Sizing lasers (measure separation at multiple distances)
6. Sync all components (including Science camera) with ship's NTP
7. Complete MiniROV dive log
8. Initialize Giancarlo's CTD/DVL logging code
 - a. Double click on launch_procMAIN_miniROV.sh
 - b. Enable LOW COST, NAV SENS, and DVL on MiniROV's window
 - c. Start all drivers (ctrl+s on "drivers")
 - d. Verify that RTI-DVL (DVL output), VN-100 (Giancarlo's sensor), and miniROV-NMEA (survey out) is functioning normally
 - e. Start all loggers (ctrl+s on "loggers")
 - f. Verify that lcm_logger is functioning normally
 - g. Start all navigation (ctrl+s on "nav"; UUV-KF not expected to work)
 - h. Start all viewers (ctrl+s on "viewer") to see DVL and dead-reckoning output
 - i. Stop logging data (ctrl+t on "viewer", "nav", and "loggers")
9. Check that all cable connectors and dummies are installed and tight.
10. Check that all dye/vortex generator tubing is installed and tight.
11. Open all dye valves and connectors.
12. Remove laser housing protective cover.
13. Check that the MiniROV tool sled is secure.
14. Check for tools left on and in MiniROV frame.
15. Remove MiniROV hold-down straps.

Deployment:

1. Start Giancarlo's CTD/DVL logging code
 - a. Start all loggers (ctrl+s on "loggers")
 - b. Verify that lcm_logger is functioning normally
 - c. Start all navigation (ctrl+s on "nav"; UUV-KF not expected to work)
 - d. Start all viewers (ctrl+s on "viewer") to see DVL and dead-reckoning output
2. Start AJA recorder
3. Deploy MiniROV, noting exact time and position of launch.
 - a. MiniROV launch time: 08:27 PDT
 - b. Latitude: 36°46.40'N deg
 - c. Longitude: 121°57.87'W deg
4. Record time it takes for MiniROV to submerge: 10 mins (08:37)

Dive 1:

1. Dive to depth of X m (200 m)
2. Turn off laser system and optimize camera focus
3. Double check video is recording
4. Turn on vortex generator
5. Holding vehicle steady use vortex generator to create known signals
6. Repeat until satisfied good video was captured then recover vehicle and switch to dye injector

Dive 2:

1. Dive to depth of X m

2. Turn on laser and adjust camera as needed
3. Seek biological targets
4. ...

Recovery:

5. Check that the laser is powered down.
6. Change the Science camera settings (focus and others) to auto and zoom to wide.
7. Stop Giancarlo's CTD/DVL logging code (ctrl+t on all options)
8. Stop recording video with Aja
9. Recover MiniROV.
10. Secure MiniROV and DeepPIV on the ship deck.
11. Record the time that MiniROV is on deck: 9:30 PDT
12. Close all dye injector/vortex generator valves.
13. Replace laser housing protective cover.