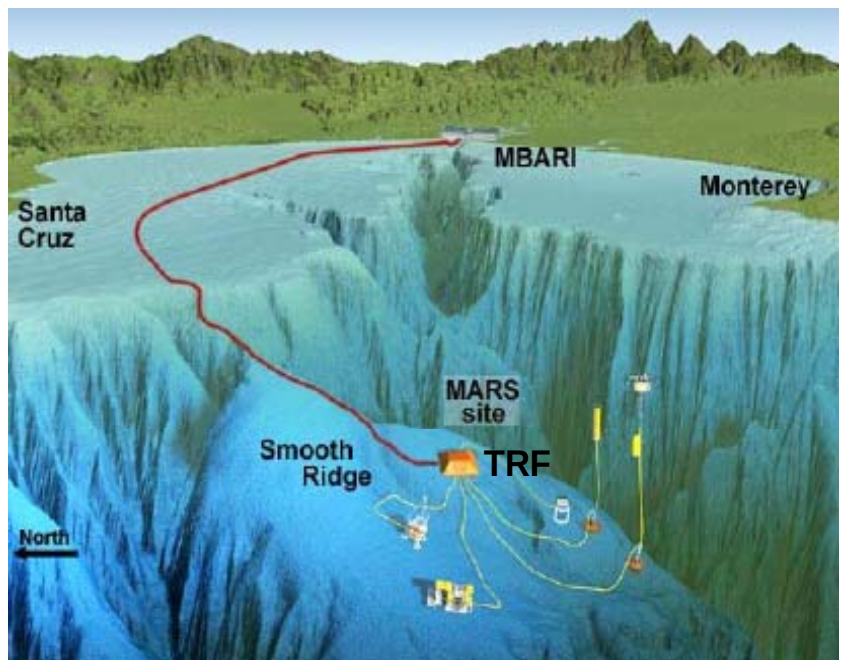


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MARS Cable System Repair



Final Report

Fall 2008

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1. PROJECT OVERVIEW

The Monterey Accelerated Research System (MARS) is a cabled observatory that allows Oceanographers to monitor and observe instruments located 23 nm (as the crow flies) from MBARI, at the edge of the Monterey Canyon. The MARS science node is housed in a Trawl Resistant Frame (TRF) and lies at the end of a 52 km fiber optic cable that connects the unit to power and computers at Monterey Bay Aquarium Institute (MBARI). Electronics within the node can route electricity and data to up to eight science experiments, each of which may incorporate multiple sensors. IT International Telecom was retained by MBARI to carry out repairs & refurbishment to their offshore Trawl Resistant Frame (TRF) and fiber optic cable attachment.

The new cable termination assembly (CTA) is shown in figure 1.



Fig. 1 – CTA, Tail & Transportation Box

2. PROJECT DESCRIPTION

2.1 Mobilization Activities

Prior to the commencement of the project, 3 IT employees visited the Institute to conduct a site visit to install a lifting bridle on the TRF using MBARI's ROV. Unfortunately the weather did not cooperate and the MBARI vessel was unable to dive her ROV. However, the visit did afford the IT personnel to make some adjustments to the bridle lifting assembly that will accommodate International Telecom's ROV. This bridle assembly will be installed onto the TRF prior to IT's arrival.

The cable ship IT Intrepid with her work class ROV conducted the repairs. The Intrepid arrived in San Francisco on Oct. 30th, 2008 and commenced mobilization for the Monterey Accelerated Research System (MARS) project.



Fig. 2 – IT Intrepid docked in San Francisco

All requisite cable and associated equipment arrived on time in San Francisco. The Intrepid's Sea Plough and scissor frame was removed and stored on the pier. The vessel was able to sail on schedule for the job site in Monterey Bay on Nov. 1st.

2.2 Operations; recovery 1st trial

The Intrepid arrived on the cable grounds, Nov. 2nd and immediately dived the ROV to locate the TRF and establish position for the lowering of the liftline.

The liftline required some modifications due to water depth (≈ 900 m) and its inability to stay stable in heavy currents. The addition of a 300 kg mushroom at the end of the 7x3 liftline coupled with 15 m of 32 mm bottom line allowed the ROV freer movement on the seabed and minimized sediment stirring.

After many hours, the connection was made to the Intrepid's liftline, and the lifting Linear Cable Engine (LCE). Unfortunately, upon completion of hook-up it was decided to buoy-off the liftline due to NW winds in excess of 25 kts and rough sea state.

On Nov. 4th with the weather moderating, the buoy mooring was recovered. Prior to commencing TRF lift, the ROV was tasked to use her fire nozzle to hose all 4 corners of the TRF's "lighting holes" to assist in breaking bottom tension prior to lift. The LCE was able to lift the TRF off the seabed with no difficulty. The actual lifting off the seabed was monitored by the ROV. Tensions were initially noted to be fluctuating between 6 to 14 tonnes on the swell during pick-up. **Note:** *The IT Intrepid was only able to record tensions on the bridge graph recorder and not electronically.* The tensions decreased as the TRF neared the surface primarily due to the recovery of the heavy 7x3 lifting line. As the 32 mm superline reached the stern roller, the line parted at an observed tension of approx. 7 t. The line has an advertised breaking strain of 27.7 t. This resulted in TRF and attached fiber optic cable (FOC) free falling the full water depth to the seabed. Also, two deckhands suffered minor injuries as a result of the line parting.

The Intrepid immediately dived the ROV to inspect the TRF. The TRF was found on the seabed in an inverted position with the FOC leading away from the frame. Fortunately the bridle lifting eye was lying slightly outside the perimeter of the frame, allowing a re-hookup attempt. The Intrepid proceeded towards San Francisco to acquire additional lifting hardware & wire and to have the 2 injured deckhands looked at by a Doctor.

2.3 Operations; recovery 2nd trial & splice

The Intrepid arrived back on MARS cable grounds for daylight operations, Nov. 6th. The ROV dove on the TRF and the liftline was lowered as per previous. The 32 mm was substituted with a recently purchased 1" dia steel wire rope. The ROV made the hook-up and the TRF was over-turned and smoothly recovered to the plough deck of the Intrepid.

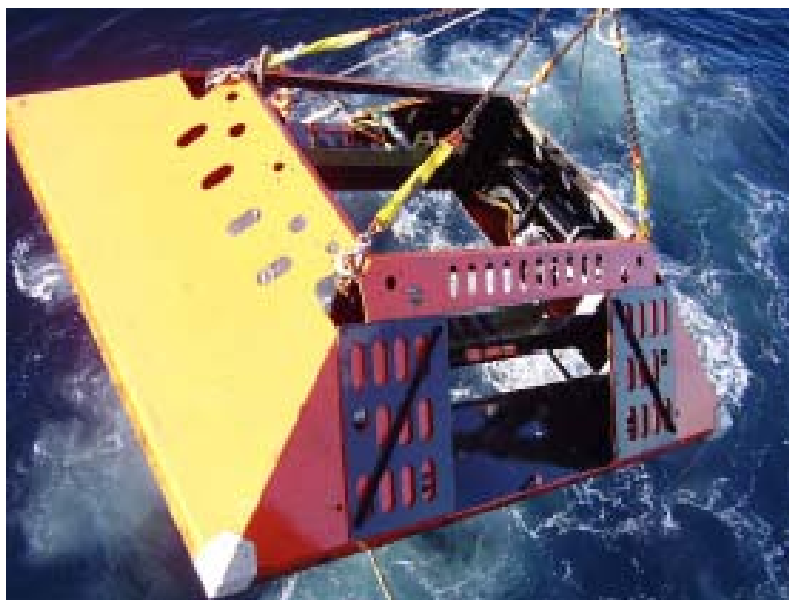


Fig. 3 – TRF Being Inboarded

The TRF was found to be undamaged, the cable leading to the beach was satisfactorily tested both optically and electrically and operations were commenced on the CTA replacement. The client requested an additional 1000 m of cable be recovered to determine its condition as a result of the TRF fall. This, as explained to the client, would result in detrenching previously plough buried cable with subsequent reburial via ROV. However it was felt by the client to be worth the effort.



Fig. 4 - On-deck remedial operations

The recovered 1000 m of cable was found to be in acceptable condition with only some minor jute damage that appeared to be resulting from original plough burial. This was subsequently repaired. The splice operations were completed and the TRF readied for redeployment.

2.4 Redeployment & burial

Redeployment was completed without incident and the TRF was replaced on the seabed within several meters of its original location.

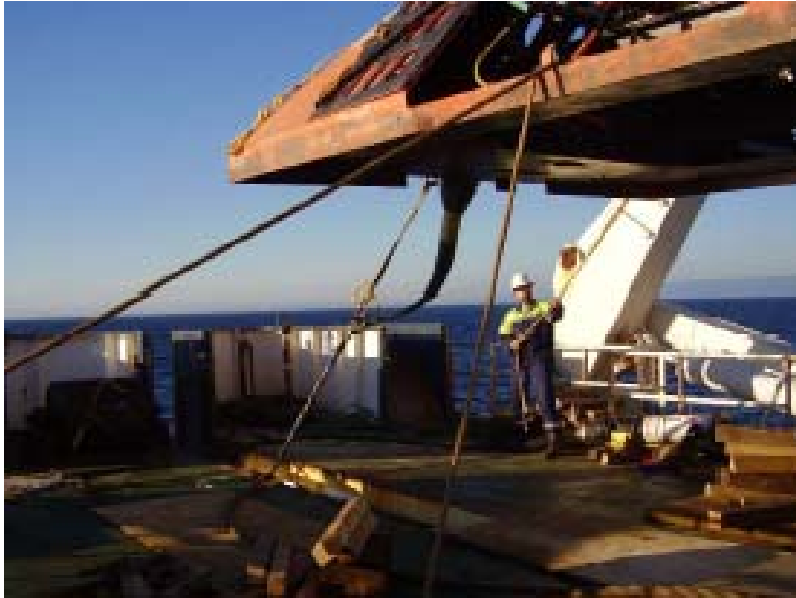


Fig. 5 – TRF being Outboarded

Post Lay Inspection & Burial (PLIB) operations commenced. The ROV burial took considerably longer than planned due to several pump failures, also the ROV's Innovatum that measures depth of burial was not functioning correctly, consequently in consultation with the client, it was agreed that the 3rd pass, instead of being an inspection pass (as per contract), would be conducted as a burial pass to achieve maximum burial. Unfortunately, prior to completing PLIB operations the 3rd ROV pump failed necessitating the Intrepid proceed to SF to acquire ROV spares. The Intrepid would utilize this time to complete demobilization thus negating any further port visits to SF upon completion of PLIB operations.

On Tues. Nov. 18th, PLIB operations were completed and the Intrepid commence transit to Panama.

The complete Trip Diary is located in APPENDIX A.

3. CABLE TESTING

IT International Telecom conducted all the cable monitoring and testing during the MARS System Repair. These test results are presented in **APPENDIX B**.

APPENDIX A – Trip Diary

Thursday October 30th, 2008

IT Intrepid alongside, San Francisco (CA), Pier 80D
0742 Commence refueling V/L.
0800 Commence mobilization for MARS.
0917 Plough transferred from V/L to dock.
1030 Scissor Frame transferred from V/L to dock.
1100 MARS trucks alongside to transfer related equipment to Intrepid.
1325 Complete fueling.
1540 MARS spares cable reel secured on fore deck.

Friday October 31st, 2008

0800 MARS mobilization continuing.
1615 Off-loading spare TRF to dock due to space requirements. Load test of spare TRF indicates 3.7 t.

Saturday November 1st, 2008

0800 Deck crew securing MARS related equipment for sea.
0850 Calibration of LCE conducted.
1100 Dunnage for recovered TRF loaded on plough deck.
1330 Fire and boat drill conducted.
1430 ROV SOPEP drill conducted.
1730 Pilot and pilot trainee onboard.
1830 All clear berth 80, outbound.
2015 Pilots away.
2400 Posn Lat. 37° 20.76'N Long. 122° 43.70'W Transit to MARS cable grounds.

Sunday November 2nd, 2008

0755 V/L arrived at MARS cable grounds, Monterey Bay. V/L in DP.
0900 Pre-operation meeting conducted.
1105 Toolbox meeting prior ROV launch held.
1159 ROV unlatched, Comm. Dive #1 Posn Lat. 36°42.82'N Long. 122°11,17'W
1225 ROV on bottom. Posn 36°42,88'N Long. 122°11,17'W
1235 ROV moving towards cable + TRF.
1252 TRF sighted
1318 Counter reset with swivel hook at stern sheave.
1326 Report of smoke in ROV transformer room.
1327 T. Watson reports burnt out breaker in transformer room.
1345 Electrician & ETO inspecting area of Transformer Room to confirm the wires are in good condition.
Main breaker is damaged although might be possible to bypass it with another 220-110V transformer.
1554 ETO advises work on ROV transformer room breaker completed – Ready to test.
1617 ROV tests all okay. Resuming operation.
1630 Comm. lowering 2" Uniline lifeline. WD = 894 m Posn. Lat. 36°42,748'N Long. 122°11,204'W
1730 Uniline proving unsuitable due to it's light weight in water, commence recovery to switch out for compound 7x3.
1756 FRC away to guard boat "Donna Kathleen". Richard Jinks offsigning due to death in his family.
1830 Comm. PO 7x3 c/w beacon and swivel hook.
1950 ROV sights recovery line in close proximity to TRF, commence maneuver to grab hook.
7x3 stirring up bottom with necessary slack on seabed. Comm. recovery to attach a mushroom anchor on the end of the 7x3 with a 15 m pendent below the mushroom (leading to the swivel hook) for the ROV to make the attachment.
2215 Recovered 7x3 commencing rigging pendent. ROV to remain on seabed and await lifeline.
2400 Posn Lat. 36°42.73'N Long. 122°11.25'W Wind: Lt Airs Sea: 0.5m Swell: 2.0m

Monday November 3rd, 2008

0030 Splice on the pennant completed.
0054 Attaching mushroom to the end of 7x3.
0058 LCE CPO pennant and 7x3 to a 700m depth.
0130 LCE continues PO as per Master order.
0210 Pennant + mushroom sighted via ROVs camera.
0218 Master link at the end of the pennant grabbed by the ROV arm.
0320 ROV with swivel hook at the bridle, trying to hook it.
0500 ROV experiencing some electrical and hydraulic problems, decision made to recover ROV.
0508 Recovering 7x3 & mushroom first. LCE CPU.
0548 Mushroom coming in.
0558 Crosby swivel hook on deck.
0614 Toolbox meeting prior ROV recovery held. Comm. recovery of dead vehicle, PU umbilical.
0700 ROV on deck. End of Dive #1. Subsea crew working on ROV.
0800 Posn Lat. 36°42.78'N Long. 122°11.17'W. Wind: Lt Airs Sea: 0.5 m Swell: 3.0 m
0920 Guard Boat "Donna Kathleen" standing by approx. 1 to 2 Nm from Intrepid.
1154 ROV repaired. Permission to launch granted.
1221 ROV unlatched, Comm. Dive # 2 Posn Lat. 36°42,574'N Long. 122°11,215'W
1239 ROV on the seabed.
1244 V/L stern over TRF.
1250 TRF sighted via ROV.
1256 LCE CPO 7x3 + 350 kg mushroom + 15 m x 32 mm Superline.
1334 Full rope paid out, 880 m.
1404 Recovery line sighted
1418 Mushroom on seabed.
1420 ROV arm grabbed swivel hook.
1447 Swivel hook connected to TRF bridle.
1502 Wx deteriorating, Guard Boat released from duty; Crew preparing to buoy off lifeline.
1518 Comm. ROV recovery.
1603 ROV on deck. End of Dive # 2 Posn 36°42,741'N Long. 122°11,204'W
1607 Commence buoying-off lifeline.
1621 LCE comm. PO of mooring. V/L moving east direction.
1718 Buoy released. Posn Lat. 36°42,730'N Long. 122°10,537'W
2400 Pos'n Lat. 36°42.77'N Long. 122°10,46'W Wind: NW 25 kts. Sea: 1.0 m Swell: 2.0 m

Tuesday November 4th, 2008

0740 Comm. moving V/L towards CB #1.
0745 One hour notice given to LCE to have machinery ready.
0750 Decision made to move to TRF location, launch ROV and jet the TRF's 4 corner lighting holes prior to lifting TRF from seabed.
0800 Posn Lat. 36°42,70'N Long. 122°10,49'W Wind: NW 18 kts Sea: 1.5 m Swell: 2.0 m
0850 V/L arrived at TRF location.
0910 Toolbox meeting prior ROV launch held.
0936 Permission to launch ROV granted.
0938 ROV unlatched, Comm. Dive #3 Posn. Lat. 36°42,70'N Long. 122°11,13'W
1008 ROV at TRF, getting ready to jet.
1029 ROV comm. jetting 1st corner.
1126 Client consulted, 4th corner hole (corner) not to be jetted due to close proximity of recovery line.
1142 Toolbox meeting prior ROV recovery held. Comm. ROV recovery.
ROV on deck, End of Dive #3. Posn Lat. 36°42,71'N Long. 122°11,15'W
1227 V/L moving towards mooring for recovery.
1316 Buoy tail hooked, connecting to LCE line. Posn Lat. 36°42,74'N Long. 122°10,48'W
1325 LCE CPU.

1330 Buoy onboard.
1337 V/L comm. moving at 1.5 km/h; LCE CPU
1418 V/L stopped; Mushroom incoming. Posn Lat. 36°42,70'N Long. 122°11,12'W
1424 Mushroom disconnected and onboard.
1426 7x3 lift line on stern sheave.
1434 Counter zeroed for lift line recovery.
1445 Preparing for ROV launch.
1503 ROV unlatched, Comm. Dive #4 Posn Lat. 36°42,74'N Long. 122°11,21'W
1520 ROV on seabed, moving towards TRF.
1528 TRF sighted via ROV.
1532 LCE CPU easy, attempting to lift TRF off bottom.
1538 TRF off bottom – Tension spike to 12t.
1540 Comm. moving V/L 000 deg. At 1.0 km/h; LCE PU.
1556 Counter reading 244 m of lift line picked up.
Captain made PA announcement for all crew to stay clear of aft deck.
1601 Comm. ROV recovery.
1603 V/L and LCE all stopped; LCE brake on.
1638 ROV on deck, End of Dive #4. Posn Lat. 36°42,94'N Long. 122°11,21'W
1637 LCE resume PU, V/L simultaneously along the route.
1708 Mushroom out of water. LCE stopped PU. Posn Lat. 36°43.16'N Long. 122°11.20'W
1709 V/L all stopped/ Deck crew disconnecting mushroom.
Superline parted, 2 crewmembers suffer minor injuries. TRF and cable free fall to seabed. Posn Lat.
1716 36°43.17'N Long. 122°11.20'W.
1723 Patients taken to Sick Bay for treatment. No need of MedEvac. Patients signs/symptoms will be
monitored for several hours.
1800 Preparing to launch ROV to inspect TRF.
1821 ROV unlatched, Comm. Dive #5. Posn Lat. 36°43.14'N Long. 122°11,17'W
1837 ROV on seabed.
ROV sighted TRF. V/L posn Lat. 36°43,14'N Long. 122°11,17'W
1848 TRF upside down with door open.
1905 TRF bridle and eye located slightly outside TRF perimeter.
1913 ROV being recovered. V/L preparing to transit to San Francisco. New hook and pennant to be
obtained, injured crewmembers to receive medical attention as a precaution.
1927 Guard boat Donna Kathleen released from duty.
1952 ROV on deck. End of Dive #5. Posn Lat. 36°43,11'N Long. 122°11,13'W
2015 V/L out of DP. Underway to San Francisco. Pilot Station for 0900 (LT), 05 November.
Posn Lat. 36°56,71'N Long. 122°30,42'W Wind: NWxN 20 kns Sea: 1.5m Swell: 2.5m
2400 Underway to San Francisco.

Wednesday November 5th 2008

0812 San Francisco Pilot and apprentice onboard.
1000 Approaching Anchorage area No. 9
1009 Stbd anchor away.
1023 Pilots away.
1042 V/L Ms. Katie alongside stbd side.
1050 Three crewmembers disembarked for medical attention. Agent assisting Intrepid acquire lifting
hardware.
1403 MCR notified of requirement for departure. 2 M/E, 1 Aux. and thrusters ordered for 1900.
1418 Launch V/L Ms. Katie alongside. 3 crewmembers back onboard and cleared to work.
1855 2 M/E, 1 Aux. And thrusters on B/C.
1930 Pilot onboard.
2002 V/L Scout alongside Intrepid, lifting hardware onboard.
2012 Comm. heaving up anchor.
2023 Anchor home. Getting underway towards MARS Cable Ground.
2146 Pilot away.

2400 Posn Lat. 37°24.38'N Long. 122°43.75'W Wind: Lt Airs Sea:0.5m Swell: 1.5m

Thursday November 6th, 2008

0530 V/L approaching TRF location.
0630 Toolbox meeting prior ROV launch held. Permission to launch ROV granted.
0637 ROV unlatched; Comm. Dive #6 Posn 36°43,16'N Long. 122°11,16'W
0713 LCE CPO 1" dia. Pennant, mushroom and 7x3 to a depth of 835 m.
0725 TRF sighted via ROV.
0754 Full rope paid out, 835 m, LCE all stopped.
0800 Posn. Lat. 36°43,16'N Long. 122°11,16'W Wind:ENE 10 kns Sea:0.5m Swell: 1.0m
Awaiting for visibility to improve/Looking for lift line. Beacon on lift line not updating regularly.
1109 Mushroom sighted on ROV cameras.
1119 ROV articulated arm gripped lift line hook.
1312 ROV hooked TRF bridle master link with swivel hook. Posn Lat. 36°43,16'N Long. 122°11,18'W
1318 ROV moving away from TRF.
LCE to PU TRF enough to lift TRF and turn it rightside up, then put TRF back on seabed. ROV to inspect.
1321 LCE CPU easy. Tension reads 2t. Counter 870 m.
1326 TRF off bottom. Tension reads 8t. Counter 842 m.
1327 LCE stop PU. Counter 841 m.
1328 LCE PO easy.
1329 LCE stop PO. TRF on bottom. Tension reads 3t. Counter 850 m.
1336 ROV inspecting TRF. TRF bridle look Okay.
1343 Comm. ROV recovery.
1401 Comm. recovery of TRF. LCE PU. Posn 36°43,17'N Long. 122°11,18'W
1425 ROV on deck, End of Dive #6.
1441 Mushroom incoming. Posn Lat. 36°43,16'N Long. 122°11,18'W
1452 Mushroom and beacon removed.
1500 A-Frame "pick up line" connected to TRF bridle.
1502 A-Frame taking weight of TRF.
1507 PA announcement made for all crew to stay clear of aft deck.
1517 TRF on deck. Posn Lat. 36°43,16'N Long. 122°11,18'W
1536 LCE PU easy. Cable bight onboard.
1630 LCE all stop. Cable stoppered.
1633 Cable in LCE wheels.
1635 LCE PU as V/L is moving.
1647 LCE stop PU. Test Room to cut cable at end of CTA tail.
1653 Cable cut, LCE resume PU. V/L moving accordingly along the route.
Slight jute damage incoming. Vessel to PU and additional 1000 m of cable to inspect for damage resulting in TRF fall.
1716 LCE and V/L stopped at 1000 m of cable picked up. Posn Lat. 36°43,71'N Long. 122°11,18'W
1825 Commence repair of jute damaged sections. Cable paid out 25 m every 30 min.
2050 Commence splicing new CTA tail.
2400 Posn Lat. 36°43.68'N Long. 122°11.19'W Wind: NW 11 kts Sea: 0.5 m Swell: 1.5 m

Friday November 7th 2008

0800 Posn Lat. 36°43,55'N Long. 122°11,19'W Wind NE 15 kns Sea 0.5 m Swell 1.5 m
Master requesting to move V/L 50 m South at 0.5 km/h and LCE to PO 50 m hourly.
1210 V/L moving 400 m south; LCE CPO
1240 V/L and LCE all stopped; only bight left in tank.
1304 Splice completed, CTA to TRF connection also completed. Posn 36°43,23'N Long. 122°11,20'W
1458 Splice box in cable highway.
1505 Cable bight moved through LCE; Applying preformed stopper.
1517 Stopper applied; Weight of cable transferred to stopper.

1529 Weight of cable transferred to slip line
1535 PO slip line.
1540 Applying stopper to cable.
1554 Bight over stern sheave. Posn 36°43,15'N Long. 122°11,19'W
1557 Slip line recovered, cable weight transferred to TRF.
1559 TRF off deck. Posn 36°43,12'N Long. 122°11,19'W
1625 TRF load transferred from A-Frame winch to 7x3 deployment line on LCE. A-Frame winch line released with Sea Catch. Deploying TRF.
1727 ROV unlatched, Comm. Dive #7 Posn Lat. 36°42,66'N Long. 122°11,21'W
1751 ROV on seabed.
1826 TRF touch down. Posn Lat. 36°42,61'N Long. 122°11,21'W
1829 HPR beacon deployed on shackle to slide down 7x3 deploy line.
1913 TRF picked up on ROV Sonar.
1918 ROV sighted TRF.
1923 Seabed TRF deployment investigation shows proper touch down. Client advises commence release of lifeline bridle. All 8 fibers test good (+I.R.) as confirmed from beach.
1929 First of five spring-loaded shackle released.
2151 Five of five shackles released. 7x3 clear of TRF. Posn Lat. 36°42,74'N Long. 122°11,21'W
2152 LCE PU easy, recovering 7x3 line.
2222 7x3 deployment line, bridles and hooks recovered on deck.
2238 ROV commence PLIB. Commence jetting pass #1, northbound from TRF.
2251 ROV comp low, needs oil. Comm. ROV recovery.
2317 ROV on deck, End of Dive #7.
2335 Lifting ROV to remove umbilical kink.
2344 Subsea Supervisor reports bad kink in umbilical, decision made to reterminate umbilical.
2400 Posn Lat. 36°42,75'N Long. 122°11,13'W Wind NNW 18 kns Sea 1.0 m Swell 1.5 m

Saturday November 8th, 2008

0800 Posn Lat. 36°42,75'N Long. 122°11,13'W Wind: NNW 14 kns Sea: 1.0 m Swell: 1.5 m
1417 ROV repairs completed.
1423 ROV lifted off deck to measure maximum potential tool burial depth.
1454 ROV unlatched, Comm. Dive #8 Posn Lat. 36°42,75'N Long. 122°11,14'W
1500 Donna Kathleen approaching Intrepid for crew transfer.
1507 FRC away going to Pilot ladder.
FRC away with 5 POB going to Donna Kathleen. Off signers: K. Demont, S. Demont, Client Rep.
1521 Keith Raybould.
1529 Transfer completed, FRC at the rail. ROV sighted cable.
1533 ROV acquiring cable.
1542 Commence jetting pass #1
1558 ROV at splice box. Posn Lat. 36°42,87'N Long. 122°11,21'W
2058 ROV lost pressure. Prepare for recovery of vehicle. (Approx. 1.11 km jetted so far.)
2108 Comm. ROV recovery.
2148 ROV on deck, End of Dive #8. Posn Lat. 36°43,38'N Long. 122°11,17'W
2215 Switching to DP Min. Power – Subsea Department replacing pump, estimate 12 to 14 hours repair time.
2253 Changing V/L heading to have the wind on the stern and give a lee to work on ROV.
2400 Posn Lat. 36°43,29'N Long. 122°11,03'W Wind: NW 23 kns Sea: 1.0 m Swell: 1.5 m

Sunday November 9th 2008

0800 Posn Lat. 36°43,282'N Long. 122°11,028'W Wind: NW 25 kns Sea: 2.0 m Swell: 3.0 m
1000 Subsea Dept. continues working on ROV.
1200 V/L all stopped. Returning to ROV launch position.
Subsea Supervisor reports ROV operational. V/L awaiting for weather improvement to resume PLIB operations.
1230

2400 Posn Lat. 36°43,35'N Long. 122°11,09'W Wind: NW 30 kns Sea: 2.5 m Swell: 3.0 m. Awaiting Wx. improvement.

Monday November 10th 2008

0605 Wx. conditions improving. Preparing for ROV launch.
0623 Toolbox meeting prior ROV launch held.
0634 ROV unlatched. Comm. Dive #9. Posn Lat. 36°43,345'N Long. 122°11,099'W
0657 Subsea reports low comps on ROV. Requires vehicle recovery.
0703 ROV on deck. End of Dive #9. Posn Lat. 36°43,345'N Long. 122°11,099'W
0741 ROV repairs completed. Permission to launch ROV granted.
0745 ROV unlatched. Comm. Dive #10. Posn Lat. 36°43,346'N Long. 122°11,099'W
0800 Posn Lat. 36°43,346'N Long. 122°11,099'W Wind: NNW 18 kns Sea: 1.0 m Swell: 3.0 m
V/L Point Lobos in the vicinity, preparing to install the node on TRF.
0812 ROV on seabed, moving towards cable trench.
0827 ROV on cable trench. Posn Lat. 36°43,374'N Long. 122°11,171'W
0833 ROV on cable; Comm./Continue jetting pass #1, going north direction. ROV KP 1.188
0919 Subsea Sup. reports ROV having low comps. Requires vehicle recovery. ROV KP 1.392
0955 ROV on deck. End of Dive #10.
1048 ROV ready to go back in the water. Permission to launch granted.
1053 ROV unlatched. Comm. Dive #11. Posn Lat. 36°43,459'N Long. 122°11,149'W
1114 ROV on seabed, moving towards cable trench.
1121 ROV at the trench.
1133 ROV on cable. Comm./Continue jetting pass #1, going north direction. ROV KP 1.352
1142 ROV at where they had stopped jetting last time. Cont. jetting. ROV KP 1.378
1200 Low pressure on ROV. Requires vehicle recovery. ROV KP 1.420
1203 ROV off seabed. Comm. recovery.
1234 ROV on deck. End of Dive #11.
1320 Pump on ROV needs to be changed (same pump as previous time). Estimate 10-12 hours before ROV is operational again.
1910 Reducing engines to 1 M/E + 1 Aux.
2135 ROV repairs complete. Prepare to launch.
2203 Permission granted to launch ROV. ROV off deck.
2221 ROV unlatched. Comm. Dive #12
2223 Low comp (air in line). Recovering ROV.
2236 ROV on deck. End of Dive #12.
2310 ROV ready for launch. ROV off deck.
2319 ROV unlatched. Comm. Dive #13. Posn Lat. 36°43,49'N Long. 122°11,12'W
2340 ROV on seabed, moving towards cable trench.
2343 ROV at cable, positioning for PLIB.
2400 Posn Lat. 36°43,502'N Long. 122°11,19'W Wind: N 10 kns Sea: 0.5 m Swell: 1.5 m

Tuesday November 11th 2008

0014 ROV commence/continue jetting pass #1. Posn Lat. 36°43,49'N Long. 122°11,19'W ROV KP: 1.386
0205 ROV rebooting system approx. every hour
0216 ROV resume jetting.
0221 ROV stop jetting, End of Pass #1 Posn Lat. 36°43,785'N Long. 122°11,188'W KP: 1.932. Cable enters previous plough trench. ROV turning to commence pass # 2 southwards.
0249 ROV commence jetting 2nd pass, going south direction towards TRF. Posn Lat. 36°43,780'N Long. 122°11,187'W KP: 1.924
0800 Posn Lat. 36°43,166'N Long. 122°11,190'W Wind: N 12 kns Sea: 0.5 m Swell: 1.5 m
0830 ROV stopped to align on cable + awaiting on visibility.
0845 No improvement of visibility. Flying ROV to TRF position to finish jetting 2nd pass.
0946 ROV at the TRF location, approx. 10 m north of TRF. ROV turning around to jet northwards
0949 ROV resume jetting 2nd pass, starting approx. 10 m from TRF posn, going north direction.

Lat. 36°42,757'N Long. 122°11,207'W KP: 0.019
1000 ROV at splice box. Posn Lat. 36°42,795'N Long. 122°11,206'W KP: 0.094
ROV stopped for reboot. Rebooting unsuccessful. Posn Lat. 36°42,899'N Long. 122°11,185'W
1030 KP: 0.284
1050 ROV has to be recovered.
1145 ROV on deck, End of Dive #13. Commence effecting repairs.
ROV Sup't advises that 3rd pump has been damaged and additional spares required. V/L proceeding
1445 to San Francisco to obtain ROV spares and complete demobilization.
2400 Posn Lat. 37°11,51'N Long. 122°39,16'W Wind: NWxN 10 kns Sea: Nil Swell: 2.0 m

Wednesday November 12th 2008

0703 Pilot onboard.
0800 Posn Lat. 37°47,79'N Long. 122°23,11'W Wind: WSW 5 kns Sea: nil Swell: 1.0 m
0818 Tug "Revolution San Francisco" connected to Intrepid, Stbd aft.
0844 First Line Ashore.
0848 Tug released.
0914 All fast Fwd + Aft, Pier 80D. Finished with engines + thrusters. MARS demobilization commences.
1158 A-Frame scissor assembly reinstalled. Plough back onboard.
1312 Forward cable spares reel removed.
1540 Comm. taking on FW from city supply.
1830 Partial crew change begins. Captain D. Mason relieved by Captain D. Hartley.
2400 Alongside Pier 80D, San Francisco.

Thursday November 13th, 2008

1330 Shore crane departs.
1331 Two ROV pumps arrive.
1410 California State Lands Commission Inspector P. Stephens aboard. Ballast Water Management Plan verified.
2100 3/O Gary Joyce joins the ship.
2400 Alongside Pier 80D, San Francisco.

Friday November 14th, 2008

0900 Client Rep. Mike Wilson departs V/L.
0930 Cable testing equipment offloaded on shipping truck to Hawaii.
2303 2 M/E, 1 Aux. + 2 thrusters online.
2312 Pilot onboard.
2400 Posn Lat. 37°45,7'N Long. 122°22,4'W Wind: Lt Airs Sea: Nil Swell: 1.5 m

Saturday November 15th, 2008

0138 Pilot away.
0721 Approaching MARS Cable Ground, reducing V/L speed.
0756 V/L at ROV Launch Position. Posn Lat. 36°42,9'N Long. 122°11,2'W
0800 Posn Lat. 36°42,87'N Long. 122°11,23'W Wind: ExN 22 kns Sea: 1.5 m Swell: 2.5 m
0850 Toolbox meeting prior ROV launch completed.
0900 Permission to launch ROV granted. Comm. launching.
0905 ROV unlatched. Comm. Dive #14 Posn Lat. 36°42,87'N Long. 122°11,23'W
0925 ROV on seabed.
0927 ROV at the trench.
0951 ROV comm./cont. jetting pass #2 northwards. Pos'n Lat. 36°42,88'N Long. 122°11,19'W
ROV all stopped, loss of hydraulic pressure/pump failure. Posn Lat. 36°42.95'N Long. 122°11,19'W
1019 Commence ROV recovery.
1025 Toolbox meeting prior ROV recovery completed. Comm. ROV recovery.

1103 ROV on deck. End of Dive #14. Subsea team working on ROV.
2400 Posn Lat. 36°42,93'N Long. 122°11,16'W Wind: NE 5 kns Sea: 0.2 m Swell: 1.5 m. Repairs to ROV ongoing.

Sunday November 16th, 2008

0800 Posn Lat. 36°42,93'N Long. 122°11,17'W Wind: E 16 kns Sea: 0.8 m Swell: 1.5 m. Subsea Tech's attempting to get the computer to bypass the hydraulic pump.
1239 Repairs to ROV completed.
1312 Permission to launch ROV granted. ROV off deck.
1316 ROV unlatched. Comm. Dive #15. Posn Lat. 36°42,92'N Long. 122°11,21'W
1337 ROV on seabed. Moving towards cable.
1344 ROV at the cable trench. Posn Lat. 36°42,94'N Long. 122°11,19'W
1347 ROV comm./cont. jetting pass #2. Posn Lat. 36°42,94'N Long. 122°11,19'W KP 0.384
1424 ROV rebooted, resume jetting.
1444 ROV stop jetting. Pass #2 completed. Posn Lat. 36°43,08'N Long. 122°11,19'W KP 0.646
1449 Comm. ROV recovery. ROV off seabed.
ROV on deck. End of Dive #15. Posn Lat. 36°43,07'N Long. 122°11,17'W. Subsea team installing tool extension to achieve max burial on final pass. Max tool extension now reaches +70 cm. *Original contract (MOP) called for 2 burial passes + 1 survey pass. ROV Innovatum not operating, consequently client agrees to make the 3rd pass a burial pass to achieve max burial.*
1520 ROV unlatched. Comm. Dive #16. Posn Lat. 36°42,71'N Long. 122°11,24'W
1756 ROV on seabed, moving towards cable.
1814 ROV commence jetting pass #3 northwards. Posn Lat. 36°42,76'N Long. 122°11,20'W. KP 0.026
1826 WD: 888 m
1942 ROV hydraulic pump failure, stop jetting. Posn Lat. 36°43,12'N Long. 122°11,18'W KP 0.696.
Commence vehicle recovery to effect repairs.
2025 ROV on deck. End of Dive #16. Commence effecting repairs.
2400 Posn Lat. 36°43,09'N Long. 122°11,20'W Wind: Lt Airs Sea: nil Swell: 1.0 m

Monday November 17th, 2008

0800 Posn Lat. 36°43,10' Long. 122°11,20'W Wind: ENE 15 kts Sea: 0.5 m Swell: 1.0 m. Modifying ROV to operate with Main Hyd. pump. bypassing Aux Hyd. Pump
2100 Complete ROV modification and testing
2400 Posn Lat. 36°43,10'N Long. 122°11,20'W Wind: NW 13 kts Sea: nil Swell: 1.0 m
Awaiting daylight to attempt ROV dive.

Tuesday November 18th 2008

0800 Preparing ROV for launch
0829 ROV in the water
0830 Pos'n Lat. 36°43,09' Long. 122°11,14'W. KP 0.652. WD 855m. Commence Dive #17
0846 ROV on seabed, moving towards trench
0855 Pos'n Lat. 36°43,11' Long. 122°11,19'W. KP: 0.683. WD 856m. ROV resumes jetting pass #3 northwards.
1355 Pos'n Lat. 36°43,79' Long. 122°11,20'W. KP: 1.938. WD 806m. Completed jetting pass #3.
Pos'n Lat. 36°42,75' Long. 122°11,21'W. KP 0.026. WD 890m. Commence pass 4, visual inspection
1543 pass.
Pos'n Lat. 36°43,79' Long. 122°11,19'W. KP 1.942. WD 805m. Complete pass 4, inspection results
1717 inconclusive due to cable being buried in trench.
1727 Pos'n Lat. 36°43,79' Long. 122°11,19'W KP 1.930 WD 805m ROV being recovered.
1755 ROV on deck Dive # 17 completed. Operation completed, vessel enroute to Panama.