

DIVE PLAN AND EMERGENCY PLAN

May 29 – June 17, 2007
Scripps Oceanographic Institute
R/V New Horizon

Chief Scientist:
Dr. Brad Seibel, University of Rhode Island

Lead Institution Diving Control Board:
University of Rhode Island

Diver Information:

Dr. Steve Haddock (dive supervisor)	Monterey Bay Aquarium Research Institute
Dr. Brad Seibel (lead diver),	URI
Dr. Rui Rosa	URI
Lloyd Trueblood	URI
Leanne Birden	URI
Amy Maas	URI
Alison Sweeney	Duke University
Leg 1: Chad Widmer	Monterey Aquarium
Leg 1: Crissy Huffard	Monterey Bay Aquarium Research Institute
Leg 2: Dan Sweezey	Monterey Bay Aquarium Research Institute

R/V New Horizon Schedule:

Depart San Diego: 5/29
Arrive/Depart Guaymas: 5/29
Guaymas Port Stop: 6/4
Depart Guaymas: 6/12
Arrive San Diego: 6/17

Science Activities:

The primary purpose of the cruise is the capture of squid for respirometry experiments on board the New Horizon. Additional objectives include tagging and tracking squid, midwater trawling for zooplankton blue water scuba diving for the collection of zooplankton and filming squid behavior.

Area of Operations: Guayman Basin, Gulf of California.
Diving operations are scheduled from May 29 – June 11, 2007

Dive Plan:

Dives will be conducted from Scripps research vessel New Horizon using blue-water guidelines. One dive per day is anticipated, nights dives will be conducted as scheduling permits and conditional upon a review of potential threat from marine animals, specifically Humboldt squid, *Dosidicus gigas*. The ship's Zodiac will be used as the dive boat and will maintain radio contact with New Horizon. The Zodiac operator is responsible for the safe operation of the boat and assisting divers into and out of the water.

A diver recall signal will be discussed and agreed upon before all dives. Diving operations will be limited to wind speeds less than 20 knots, at the discretion of the Captain of the New Horizon, the diving supervisor and/or sea state. Divers will clip into the down-line and remain attached until the dive is completed and they re-enter the Zodiac. There will be a maximum of five divers on the trapeze (including the safety diver), the deepest part of the dive will be at the beginning and divers will make a minimum 5-minute safety stop at 15 feet. All dives will be no-decompression dives. Divers will terminate the dive and begin to surface when tank pressure reaches 1000 psig, all divers will have at a minimum 500 psig at the end of the dive. The divers will use Grade E air and plan all dives using air tables. All divers will monitor depth and time with dive computers and in addition, divers will monitor their status with US Navy dive tables. Emergency oxygen will be available on board the Zodiac and New Horizon.

NOTE: Due to the unknown risks posed by diving with the Humboldt squid, the diving officers from the participating institutions, the Chief Scientist and diving supervisor discussed and agreed on a number of special precautions for the blue water night dives. These precautions are listed below. It was also established that dive operations would begin conservatively and progress based on the collective good judgment of the scientists and Captain of the vessel.

- 1) Weather conditions for night dive operations: wind speeds 15kts or less, with appropriate sea conditions.
- 2) Only those divers fully qualified in blue water night diving will participate (no trainees).
- 3) All divers will carry back-up dive lights.
- 4) A larger float on the down line to counter a squid pulling down the trapeze. The Zodiac could provide the same function if the boat's painter was shortened.
- 5) The Zodiac will provide underwater lighting to the dive site/down line.
- 6) No chumming, fishing or discharge of ship's garbage within two miles of the dive site, and/or within four hours of dive operations, taking into account wind and currents conditions.
- 7) Initial night dive operations will start out conservatively, two science divers and one safety diver at a depth of 40 feet.
- 8) Maximum number of science divers is limited to three.
- 9) The safety diver should have a powerful light.
- 10) Maximum depth of safety limited 50 feet.
- 11) Science divers to shorten tethers to 15 feet or less, depending upon the circumstances.
- 12) Science divers should keep a close watch on the safety diver (review line pulls, etc).
- 13) There should be no diver contact with squid, and divers should discourage the squid for contacting them, e.g., remove their tentacles if touched.
- 14) The dive should be aborted at the first sign of aggression with an agreed upon abort plan: divers facing outward and remain attached to the trapeze, surfacing together, the safety diver controls ascent.
- 15) Review abort plan with Zodiac, and the Zodiac should have experienced diver on board to assist.
- 16) All divers will carry underwater strobes, safety buoy/sausage and whistles.

Equipment Needed from Scripps: (1) One Zodiac or RHIB (preferable), New Horizon will provide an operator, outboard engine and fuel. (2) Two hand-held VHF radios for communication between New Horizon and Zodiac. (3) Medical oxygen (490 CU FT) to be kept on board New Horizon with delivery system and a DAN oxygen kit on board Zodiac. (4) An adequate number of dive cylinders and compressor for recharging cylinders.

Equipment needed from Monterey Bay Aquarium Research Institute: One blue water rig with buoyed down line and tethers.

Equipment needed from URI: Dive lights.

Anticipated Hazards:

Shipping traffic;

Adverse weather conditions and/or currents.

Humboldt squid, active in shallow water at night (safety review pending)

Emergency Procedures:

Prior to diving operations, the ship's Captain, the Chief Scientist and the Diving Supervisor will meet to discuss emergency diving procedures. Each diver and boat operator will be familiar with these procedures.

EMERGENCY ASSISTANCE
R/V New Horizon

Emergency Telephone Numbers

USCG District 11 Sector San Diego, CA
Operations Unit Controller
619.278.7031

Divers Alert Network (DAN)
919.684.8111

IDENTIFY AS A SCUBA DIVING EMERGENCY

In the event of an EMERGENCY the New Horizon will contact DAN and USCG San Diego to:

- (a) Evaluate medical problem;
- (b) Decide on transportation to medical facility either land, sea or air.

Medical Recompression Facilities:

University Hospital – UCSD
200 West Arbor Drive
San Diego, CA 92103
Chamber tel: 619.543.5222
Hospital tel: 619.543.6222
Hospital fax: 619.543.6986

Buceo Medico Mexicano
Hotel Plaza Glorias, Marina Blvd. Col. Centro, Local E-16
Cabo San Lucas, MX 23410
Chamber tel: 52-624-143-36-66
Hospital tel: 52-624-143-77-77

Possible chambers at the Naval Hospital of Ensenada
Possible chamber in San Carlos (Guaymas)
Possible chamber in Los Mochis (Sinaloa)
DAN could not confirm contact information on above facilities.
Dr. Sanchez will help coordinate locations if need arises.
Dr. E. Cuauhtemoc Sanchez
Servicio de Medicina Hiperbarica
Hospital Aangeles del Pedregal
Camino Santa Teres 1055
10700 Mexico, D.F., Mexico
tel: 011-52-55-5568-8092
cell: 011-52-55-1078-4165
home: 011-52-55-5446-0617
fax: 011-52-55-5568-8092

Grossmont Hospital
555 Grossman Center Drive
San Diego, CA 91942
Chamber tel: 619.644.4160
Hospital tel: 619.465.0711
Hospital fax: 619.644.4380

USC Catalina Marine Science Center
PO Box 5069 Big Fisherman's Cove
Avalon, CA 90704
Chamber tel: 310.510.4023
24 hr tel: 310.510.1053/323.869.0574 MAC
Sheriff's Baywatch Dispatch: 310.510.0174
Fax #: 310.510.1364

Tucson Medical Center
5301 East Grand Road
Box 42195
Tucson, Arizona
520-324-5263