



# PROJECT SPECIFIC CRITICAL OPERATIONS & CURTAILMENT PLAN

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Retrieval of Directional Drilling Head, located  
offshore Moss Landing CA – Monterey Bay Aquarium  
Research Institute

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## **1.0 INTRODUCTION**

The objective of this Project Specific Critical Operations & Curtailment Plan is to provide Underwater Resources Inc's (URI) employees, Environmental Drilling Inc and Monterey Bay Aquarium Research Institute (MBARI) with information pertaining to the health, safety and management aspects of work to be undertaken offshore Moss Landing CA for Environmental Crossing.

## **2.0 SCOPE OF WORK**

URI has been sub-contracted by Environmental Crossings Inc to provide dive support operations approximately 4000' (0.66 Nautical Mile) offshore from Moss Landing CA, in 50' of water.

Environmental Crossings Inc has been contracted by the MBARI to conduct directional drilling from a specific shore location, 'daylighting' through the seabed at a specific offshore location.

A summarized breakdown of URI's scope of work includes:

- a. Locate and retrieve a 40' length x 5" diameter stainless steel drilling head, weighing approximately 4,000lbs. Underwater Burning will be required to part the drilling head from the high carbon steel drilling shank. Rigging and lift bags will be necessary to surface the drilling head, which will be secured to the dive support boat and towed to shore.
- b. Installation of a hi-flex coupling (5" flange, 150lb) and fittings at the terminus of the drilling shank that extends up from the ocean floor.
- c. Other miscellaneous work as directed by the directional drilling contractor.

## **3.0 WORK SCHEDULE**

URI's project duration is anticipated to be for a period of approximately one week during the month of March 2006.

URI will provide a minimum size crew of three (3) personnel utilizing two divers and one supervisor.

Crew working hours will be regulated by Environmental Crossing and the work that they require us to do. Weather may also be a factor in the amount of hours worked per day.

## **4.0 PERSONNEL ORGANIZATIONAL STRUCTURE AND RESPONSIBILITIES**

Responsibility will be assigned and appropriate authority will be established for the purpose of enforcement and compliance with the safety policies and procedures within this document.

The following is a list of key personnel and their respective job description:

## **4.1 PROJECT MANAGER**

The project manager has immediate responsibility for the performance of all work so that all matters relating to the subcontract agreement is met. Responsibilities are as defined within URI's Injury Illness Prevention Plan, refer Appendix A for details.

The Project Manager for this project is also the Safety Director and has authority and responsibility for the administration and implementation of this document along with the IIPP.

A safe and controlled working environment will be maintained and job hazards analysis will be performed prior to commencement of work to mitigate risk to URI's employees.

The Safety Director will be responsible for immediately correcting any safety violations that may occur.

## **4.2 ON-SITE/DIVING SUPERINTENDENT**

The Diving Superintendent is the onsite representative and is directly responsible for the safe and efficient conduct of all topside and diving operations. He is to be well versed in the job objective and may act as the liaison between URI management and the client. Additional responsibilities are defined within URI's IIPP, refer Appendix A for details.

The Diving Superintendent will be assisted by the Site Safety Coordinator and if for whatever reason the designated Diving Superintendent is offsite the Assistant will assume responsibility.

## **4.3 EMPLOYEES**

Divers and tenders must have meet the standards and qualifications set forth by the company's 'Operations and Procedures Manual' and by the Association of Diving Contractors (ADC). All Divers and Tenders are to certified in CPR and First Aid Training.

Prior to commencing work all employees are to have read URI's Employee Code of Safe Practices (refer Appendix B) and this document and have signed a statement stating they have read, understand and will comply with these requirements.

## **5.0 INJURY AND ILLNESS PREVENTION PROGRAM**

The IIPP has been developed in accordance with CAL OSHA requirements to ensure that all employees of URI are informed of and follow the guidelines for injury and illness prevention. The IIPP which is attached at Appendix A contains the following subjects:

- a. Policy Statement
- b. Responsibility
- c. Compliance

- d. Communication
- e. Hazard Assessment
- f. Accident Investigation/Reporting
- g. Hazard Correction
- h. Training and Instruction
- i. Record Keeping

## **6.0 JOB HAZARD ANALYSIS**

Job specific hazard analysis has been performed to identify hazards associated with each step of the job function and to develop solutions that will either eliminate or guard against known hazards. As additional hazards become aware JHA's will be developed accordingly.

All JHA's will be discussed with the crew prior to commencement of work and at weekly safety meetings. JHA's contained at Appendix F includes:

- a. Conducting dive operations from a vessel offshore.
- b. Conducting burning operations from a vessel offshore.
- c. Conducting lift bag operations from a vessel offshore.

### **Weather Conditions:**

The project workscope will be conducted from a relatively compact dive support vessel. As such, close awareness will be given to the forecast and current conditions during the diving operations. The diver may, at any time, declare ambient underwater conditions unfit or unsafe for work. The decision to suspend general work operations will be at the discretion of the diving supervisor and vessel master. Should a workday be abbreviated by early shut-down due to a weather decision, a determination per the Beaufort Scale and Pierson-Moskowitz Spectrum tables of sea state. This assessment level will be entered into the daily log of operations for later review by others.

## **APPENDIX A INJURY ILLNESS PREVENTION PLAN**



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## INJURY AND ILLNESS PREVENTION PROGRAM

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## 1.0 POLICY STATEMENT

Underwater Resources Inc (URI) believes that everyone benefits from a safe and healthful work environment. We are committed to maintaining an injury-free and illness-free workplace, and complying with applicable laws and regulations governing workplace safety.

To achieve this goal URI has established an Injury and Illness Prevention Program (IIPP) where under all circumstances it is the intent of URI to comply with the requirements and spirit of the California Code of Regulations, Title 8. Also to provide a safe and healthful work environment allowing employees to do their job correctly and safely.

It is the responsibility of every employee to comply with and adhere to all safety rules and regulations pertinent to the work. Each employee should consider themselves a member of the SAFETY TEAM with the right to call an unsafe act or hazard to the attention of any other employee.

The objectives of the IIPP include:

- a. To provide a safety program consistent with safe and proven work practices.
- b. To reduce the number of accidents to an absolute minimum.
- c. To create an attitude of safety consciousness in general management, field supervision and employees.
- d. To provide for assignment of specific responsibilities for effective implementation and continuation of our safety program.
- e. To provide a basis for continuing safety education and training.

To accomplish the above objectives the following actions are required:

- a. Pre-planning for safety in URI operations through job hazard analyses.
- b. Provide mechanical and physical safeguards to the maximum extent possible.
- c. Conduct a program of safety inspections to the maximum extent possible.
- d. Training for all employees on good safety practices;
- e. Providing necessary personal protective equipment;
- f. Developing and enforcing safety rules and requiring that all employees cooperate with these rules as a condition of employment, and
- g. Investigating every accident promptly to find its cause and correcting the problem in order to prevent recurrence.

URI does not discriminate against job applicants or employees on the basis of sex, sexual preference, race or religion. We also will not tolerate any forms of sexual harassment.

## 2.0 RESPONSIBILITY

The Injury and Illness Prevention Program administrator is Dean Moore (Operations Manager) who has authority and responsibility for implementing and maintaining this IIP Program.

### **PROJECT MANAGER:**

The designated project manager has immediate responsibility for the performance of all work so that all matter relating to the contract agreement with the customer is met. Other responsibilities include the following, but not limited to:

- a. Overall responsible for the health and safety and safe working practises of the dive crew. This may include conducting a job hazard analysis with the site supervisor to identify hazard(s) and provide ways to minimise or reduce the hazard(s);
- b. Interface between the customer and the dive supervisor;
- c. Allocating adequate resources;
- d. Ensuring responsibility;
- e. Reviewing and evaluating results; and
- f. Providing disciplinary action.

### **DIVING SUPERVISOR:**

Our designated Diving Supervisor is our onsite Safety Representative who is directly responsible for the safe and efficient conduct of the diving operations, including the safety and health of all diving personnel. He is to be well versed in the job objective and may act as the liaison between URI management and the client. Other responsibilities of the diving supervisor are as follows, but are not limited to:

- a. To observe and ensure that all diving and confined space operations are conducted in accordance with URI policies (as included within this manual and the company's "Operations and Procedures Manual) and applicable government regulations.
- b. All diving or confined space operations are conducted from a safe and suitable location.
- c. All systems and equipment required for safe diving or confined space operations have been delivered to the job site in accordance with the pre-dive check list, and have been properly inspected and tested to ensure that they are in operable order.
- d. Is to be present at the dive location with the qualified personnel required to safely conduct the dive and to operate all necessary equipment during the duration of the diving operation.
- e. To coordinate with the client all onsite diving or confined space operations as directed by management.
- f. To brief all dive team members prior to diving operations of the job objective, each members' specific job task, safety procedures, and any unusual hazards or conditions prevailing which may affect the safety of the operation.
- g. Divers are to report any physical problems to the supervisor prior to the dive. The supervisor has the authority to dismiss any dive team member to ensure job safety.

- h. Ensures proper documentation of the job, including "Job Load Out List", "Daily/Inspection Log" and "Daily Time Sheet" (see Appendix for "Samples"), accurately describing **ALL** details of the job, including vehicle mileage, diver depth, bottom time and a decompression profile on a DAILY basis. Each diver is to review and initial the "Daily Time Sheet" after the completion of each dive.
- i. To determine when to terminate the working interval of a dive in time for the diver to clear himself and return to the down line stage for decompression, if a diver requests, if a diver fails to respond correctly to communications from a dive team member, if or when communications are lost and cannot be quickly re-established, or if a diver begins to use his diver-carried reserve breathing gas supply.
- j. Responsible for bringing first aid supplies and emergency numbers, including the address of the nearest hospital to the job site and the nearest decompression chamber (refer to attached Diving Emergency Response List, Annex A)
- k. Notifies management as soon as possible in the event of an accident and completes the proper report, including the dive sheet and diver physical report, after the occurrence of any accident.

### **DIVERS:**

All divers must meet the standards and qualifications as set forth by the company's "Operations and Procedures Manual" and by the Association of Diving Contractors. Additionally, all divers must:

- a. Undergo annual physicals as required by the ADC, and submitting proper physician's evaluation and results in a timely manner. (See Appendix for "Sample")
- b. Ensure that all diver-worn equipment is properly maintained, complete and ready for use. As required, assist in the maintenance and repair of all diving equipment.
- c. Report any unsafe conditions, equipment, or physical problems to onsite supervisor immediately.
- d. Obey directives of the management and supervisor, unless your personal safety is jeopardized.
- e. Follow safe diving procedures as directed within and by the "Operations and Procedures Manual" and point out any questionable items to the diving supervisor.
- f. Remain at all times in the vicinity of the decompression chamber, if mobilized.
- g. Be knowledgeable of the dive operation's objectives and your specific task, in addition to any potential hazardous conditions at the job site.
- h. Properly maintain their own helmets, hats, masks, diving dress, fins, weight belt, harness and quick release, knife, and light. The company will supply batteries.

### **TENDERS:**

The tender's foremost responsibility is to the safety of his diver, and he, most often times alone, must remain physically "in touch" with the diver throughout the dive. A professional tender needs personal initiative, a positive job attitude and full attention to safety. A tender shall:

- a. Follow all procedures as directed within, by management, and by the "Operations and Procedures Manual".

- b. Perform outline maintenance of diving and diving related equipment as instructed. Repair such equipment, as he is qualified.
- c. Set up and operate all equipment as directed by the diving supervisor.
- d. Assist in topside work during diving operations as directed. Properly tend a surface diver, taking in or out such umbilical as is required, transmitting and receiving signals as required or directed, and remaining alert for any usual or potentially hazardous circumstances.
- e. Immediately report to the diving supervisor any unsafe or hazardous conditions.
- f. Carefully review the "Daily Logs" and the "Daily Time Sheets" for accuracy, and initial your approval.
- g. Assist in the mob/demobilization of job, including proper completion of the "Load Out List" and proper tool and equipment storage/replacement (which is not on the shop floor, yard, or in the car!).
- h. Be trained in cardiopulmonary resuscitation and first aid.
- i. Have access to first aid supplies and emergency phone numbers and addresses.
- j. Tenders shall maintain and carry a knife, safety glasses, ear plugs, hard-hat, and a 12" crescent wrench.

### **ROV OPERATORS/TECHNICIANS:**

The Remote Operating Vehicles' Operator (ROV) and Technician are responsible for setup, operation, tending and pulldown of the ROV at all times. A professional ROV operator and/or technician needs personal initiative, a positive job attitude and full attention to safety. An ROV operator and/or technician shall:

- a. Follow all procedures as directed within, by management, and by the "Operations and Procedures Manual".
- b. Perform outline maintenance of ROV's and ROV related equipment as instructed. Repair such equipment, as he is qualified.
- c. Set up and operate all equipment as directed by the diving supervisor.
- d. Assist in topside work during ROV operations as directed.
- e. Immediately report to the diving supervisor any unsafe or hazardous conditions.
- f. Carefully review the "Daily Logs" and the "Daily Time Sheets" for accuracy, and initial your approval.
- g. Assist in the mob/demobilization of job, including proper completion of the "Load Out List" and proper tool and equipment storage/replacement (which is not on the shop floor, yard, or in the car!).

### **3.0 COMPLIANCE**

Management is responsible for ensuring that URI's safety and health policies and procedures are clearly communicated and understood by all employees. Managers and supervisors are expected to enforce the rules fairly and uniformly.

All employees are responsible for using safe work practices, for following directives, policies and procedures, and for assisting in maintaining a safe work environment.

Our system of ensuring that all employees comply with the rules and maintain a safe work environment include:

- a. Informing employees of the provisions of our IIP Program;
- b. Evaluating the safety performance of all workers;
- c. Recognizing employees who perform safe and healthful work practices;
- d. Providing training to workers whose safety performance is deficient;
- e. Disciplining workers for failure to comply with safe and healthful work practices.

## 4.0 COMMUNICATION

URI recognizes that open, two-way communication between management and employees on health and safety issues is essential to an injury-free and productive workplace. The following system of communication is designed to facilitate a continuous flow of safety and health information in a form that is readily understandable.

- a. New employee orientation will include review of URI's Manual and a discussion of policy and procedures that the employee is expected to follow informing employees of the provisions of our IIP Program.
- b. URI will schedule employee toolbox meetings on a weekly basis where safety shall be freely and openly discussed by all present. Such meetings will be scheduled and announced to all employees so that maximum participation can occur.

A Safety Committee comprising of management personnel meet on a three monthly basis to discuss the following safety related items, but not limited to the following:

- a. Review URI's IIP Program.
- b. Review of periodic scheduled worksite inspection records.
- c. Review URI's investigation of causes of incidents resulting in injury, illness, exposure to hazardous substances;
- d. Review employee safety improvement suggestions with the intention to improvement safety and work place procedures.
- e. Verify & abatement actions by URI when requested by Cal/OSHA.
- f. Prepare minutes of its meetings and make them available to all employees, where minutes of safety meetings shall be maintained for three years.

From time to time, URI will post and/or distribute written safety notifications. Safety related memos and documents are to be read promptly. Questions about the meaning or implementation of this information should be directed to the Dive Supervisor or Safety Representative.

All employees are encouraged to inform URI's management of any matter which they perceive to be a workplace hazard or a potential workplace hazard. Employees are also encouraged to make safety and training suggestions. No employee shall be retaliated against for reporting hazards or potential hazards or for making suggestions related to safety.

All suggestions will be reviewed by the Safety Committee, who will initiate an investigation of each report of a hazard, potential hazard or safety suggestion.

## 5.0 HAZARD ASSESSMENT

Hazard control is the heart of an effective IIPP program. URI's hazard control procedure is to identify hazards that exist or develop in the workplace, correct those hazards and initiate steps to prevent their recurrence.

### ASSESSMENT OF HAZARDS

Inspection of the workplace is our primary method to identify unsafe conditions and practices. While we encourage all employees to continuously identify and correct hazards and poor safety practices, certain situations require formal evaluation and documentation.

Along with each inspection, the Safety Representative or designee shall evaluate the severity of the hazard identified and, if it can not be abated immediately, suggest priority for corrective action. The Safety Representative or designee will conduct inspections of all work sites on a monthly basis and document the inspections in writing. Moreover, an inspection or investigation will be conducted whenever any of the following occur:

- a. New substances, processes, procedures or equipment present a safety/health hazard. Specifically, each supervisor is responsible for promptly reporting to the Safety Representative or designee whenever a new substance (e.g. chemical or solvent), new work procedure or technique or new equipment is introduced which may pose a safety risk. The supervisor shall report orally in writing when new hazards are introduced on the job.
- b. Each supervisor's report should include a Hazard Assessment and Correction Record (refer to Appendix C for details) that identifies unsafe conditions &/or work practices and provides necessary steps to mitigate any potential hazard(s). Based upon the information, the Safety Representative or designee will conduct an inspection and issue any directive that may be necessary.

The Safety Representative becomes aware of a new or previously unrecognized hazard, either independently or by receiving information from a supervisor or employee.

Occurrence of an occupational injury, occupational illness or near-miss accident that requires OSHA 200 Log reporting. All inspections and findings shall be fully documented in writing and kept on file which is managed by the Safety Representative.

### EMPLOYEE INSPECTION AND REPORTS

Employees are responsible for inspecting their work areas and machinery for unsafe and hazardous conditions. Employees should immediately correct all unsafe conditions and report them to their supervisor. If the supervisor fails to act upon a safety complaint, the employee should bring the matter to the attention of management or the Safety Representative. No employee shall be disciplined or otherwise discriminated against for reporting or correcting an unsafe condition.

## **6.0 ACCIDENT INVESTIGATION/REPORTING**

Purpose of an accident investigation is to determine the facts and circumstances surrounding an accident and to prevent recurrence, not to assign blame.

A thorough and properly completed accident investigation is necessary to obtain facts. The data contained the reports provide the means to analyze trends and identify problem areas requiring the safety awareness or increased safeguards. Analysis of the situation is aimed at determining how an accident can be prevented in the future.

### **ACCIDENTS, INJURIES AND ILLNESSES**

The occurrence of an occupational injury and/or illness that occurs in the field, yard, shop or office, precipitates immediate verbal notification to the Safety Representative or Management regardless of severity. A written report is to be made within 24 hours after any accident (refer to Appendix D 'Accident/Exposure Investigation Report' for details). The report is completed by the injured employee, witnesses, and his supervisor or the Safety Representative.

Copies of the report are to be sent to URI's insurance carrier and a copy is to be placed in the employee's personnel file. Such mishaps usually indicate an unsafe act, faulty procedure, hidden hazard, or a combination of these. Investigations of these occurrences are conducted by the

Supervisor, Safety Representative or designee. All facts and circumstances determined by the investigation shall be documented in the URI's Report of Investigation of the accident, injury, or illness.

The findings as well as resolutions will be discussed in following Safety Review Board meeting. This report will close out the accident and/or illness to the extent of making new procedure and/or changes/additions to existing as well as changes/additions to equipment and materials.

When a deficiency or opportunity for improvement is identified after an accident, corrective/preventive action is taken and is effective in preventing the recurrence of the same accident, injury, or illness. The Safety Representative and/or Supervisor can then use the known facts surrounding the accident as an example when discussing safety in weekly safety toolbox or training meetings.

A copy of the report form is available in the main office and can be provided by the Safety Representative (see Appendix D).

### **MEDICAL TREATMENT PROCEDURES**

It is the responsibility of this company to provide medical treatment for all employees who suffer injuries or illnesses while engaged in authorized work assignments for the company. In emergency cases, where the life or permanent health of the employee is endangered, the most immediate medical facility available to properly treat the employee shall be utilized. When there is doubt as to the degree of life endangerment, the situation shall be regarded as emergent until a medical assessment rules otherwise.

Cases less than emergent, company procedures as outlined herein which must be followed in obtaining, sustaining, and terminating medical treatment. Failure to comply may result in denial of medical payments and compensation or, in serious infractions, termination of employment.

### **Emergency Treatment**

Emergency treatment for a serious injury or illness on the job whether on land or on water should not be decided on a life-or-death assessment. Serious injury resulting in severe pain or significant bleeding should be regarded as emergent, as well as conditions resulting in unconsciousness, convulsions, or mental incoherence. The person with immediate supervisory responsibility over the injured employee should tend to the situation at the scene, if available, and respond accordingly to obtain necessary treatment. When in doubt as to the severity of the employee's condition, rule in favor of emergent treatment. In no case, however, should treatment be delayed due to the **unavailability** of a responsible supervisor.

### **Medical Facilities**

The company has established working arrangements with specific medical treatment facilities for handling emergent and non-emergent injuries and illnesses occurring in their immediate vicinity. It is expected that these facilities will be utilized where practical in emergency cases, and are mandatory for use in medical treatment of all other cases. Superintendents and Foreman are responsible for posting instructions relating to the facility nearest their jobsite. Lists of these facilities are obtainable from the Safety Representative.

### **Treatment Procedures**

The following procedures for obtaining clearance for medical treatment in cases other than emergency are mandatory.

- a. All work-related injuries and illnesses shall be reported immediately to the employee's immediate supervisor.
- b. First aid treatment by a trained individual from the first aid kit should only be administered in EMERGENCY CASES ONLY. Further treatment will be authorized by the supervisor so that the injured employee can proceed to the designated medical facility. No supervisor should stop further treatment beyond first aid to any employee so requesting, and should require the employee to submit to further treatment at the medical facility at any time that the adequacy of first aid treatment is uncertain.
- c. Supervisors are authorized to grant a variance in use of medical facilities where access or availability of a designated medical facility is impractical or inexpedient for the nature of the treatment required. Such variance shall be reported to the field and/or main office.
- d. Where a proper supervisor is not available to issue authorization for treatment by a medical facility, clearance to proceed shall be obtained from the field office and/or main office.

### **Progress Reporting**

The medical facility providing treatment shall be required to report the initial diagnosis of injury or illness, the nature of the treatment given and to be pursued, recommended time of non-work or restricted activity, and progress of treatment. It shall be the responsibility of the Safety Representative to insure that all pertinent information is made available and promptly submitted, along with any changes in the status of the employee, and to keep URI management fully advised in all matters pertaining to the case.

### **Medical Release**

An EMPLOYEE undergoing medical treatment is responsible for obtaining and forwarding to the Safety Representative, via the Supervisor, a medical release signed by the authorized official of the medical facility at the time of completion of treatment.

## 7.0 HAZARD CORRECTION

Unsafe or unhealthy work conditions, practices or procedures shall be corrected in a timely manner based on the severity of the hazards. Hazards shall be corrected according to the following procedures:

- a. When observed or discovered;
- b. When an imminent hazard exists which cannot be immediately abated without endangering employee(s) and/or property, we will remove all exposed workers from the area except those necessary to correct the existing condition. Workers necessary to correct the hazardous condition shall be provided with the necessary protection; and
- c. All such actions taken and dates they are completed shall be documented on the appropriate forms.

When corrective measures involving multiple steps or measure that cannot be completed promptly, an action plan should be used to facilitate hazard correction. The plan should be in writing and filed with the Safety Representative. While corrective measures are in progress, necessary precautions must be taken to protect or remove employees from exposure to the hazard.

## 8.0 TRAINING AND INSTRUCTION

All permanent and intermittent employees, including managers and supervisors, shall have training and instruction on general and job-specific safety and health practices. Training and instruction can be provided through a brief on-site safety meeting. Any training and instruction shall be provided as follows:

- a. When the IIP Program is first established;
- b. To all new employees/divers, except for those who are provided training through a Cal/OSHA approved occupational safety and health training program;
- c. To all employees given new job assignments for which training has not been previously provided;
- d. Whenever new substances, processes, procedures or equipment are introduced to the workplace and represent a new hazard;
- e. Whenever the employer is made aware of a new or previously unrecognized hazard;
- f. To supervisors to familiarize them with the safety and health hazards to which workers under their immediate direction and control may be exposed; and
- g. To all employees with respect to hazards specific to each employee's job assignment.

Workplace safety and health training practices for all industries include, but are not limited to, the following:

- a. Explanation of the employer's IIP Program, emergency action plan and fire prevention plan, and measures for reporting any unsafe conditions, work practices, and injuries.
- b. Use of appropriate personal protective equipment for diving and working topside.
- c. Information about chemical hazards to which employees could be exposed and other hazard communication program information.
- d. Availability of toilet, hand-washing and drinking water facilities.
- e. Provisions for medical services and first aid including emergency procedures.
- f. Prevention of musculoskeletal disorders, including proper lifting techniques.

In addition, we train all workers about the checked applicable items found in the attached List of Training Subjects at Appendix A.

## 9.0 RECORD KEEPING

No operation can be successful without record keeping that enables the Company to learn from past experiences and make corrections for future operations. Moreover, the IIPP regulation requires records to be kept of the steps taken to establish and maintain the Company's Injury and Illness Prevention Program.

Each supervisor will maintain an updated copy of URI's IIPP. The Safety Representative will retain the following records on file for at least three (3) years:

- a. Master copy of IIPP with revisions;
- b. Documents verifying that URI's and its subcontractors have maintained on-going two-way communication with employees, e.g., staff safety meetings, tool box safety meetings, new employee safety orientation session, and employee suggestions;
- c. All records of inspections, investigations, including dates and responsible person;
- d. Corrective action with date taken; and
- e. Records of safety and health training received by employees, including identification of employee and type of training received.

## **APPENDIX A: List of Training Subjects**

## **LIST OF TRAINING SUBJECTS**

Training that takes place in URI include the following subjects:

- a. The employer's Code of Safe Practices.
- b. Confined spaces.
- c. Good housekeeping, fire prevention, safe practices for operating any construction equipment.
- d. Proper use of powered tools.
- e. Lock-out/tag-out procedures.
- f. Underwater pneumatic tools (chainsaw, drill, hull cleaner, grinders, etc.)
- g. Underwater video and still photo equipment.
- h. Fall protection.
- i. Personal protective equipment.
- j. Respiratory equipment.
- k. Hazardous chemical exposures.
- l. Hazard communication.
- m. Physical hazards, such as heat/cold stress, noise, and ionizing and non-ionizing radiation.
- n. Level I NDT Inspection
- o. Knowledge of ship nomenclature

## **APPENDIX B: Hazard Assessment Checklist**

## HAZARD ASSESSMENT CHECKLIST

Area Inspected: \_\_\_\_\_

Inspected \_\_\_\_\_ Date: \_\_\_\_\_

This form provides a list of general safety conditions that need to be monitored. A (X) mark indicates it is satisfactory.

### GENERAL WORK ENVIRONMENT

- a. Are all worksites clean and orderly? \_\_\_\_\_
- b. Are work surfaces kept dry or appropriate means taken to assure the surfaces are slip-resistant? \_\_\_\_\_
- c. Are all spilled materials or liquids cleaned up immediately? \_\_\_\_\_
- d. Is combustible scrap, debris and waste stored safely and removed from the worksite promptly? \_\_\_\_\_
- e. Are the minimum number of toilets and washing facilities provided? \_\_\_\_\_
- f. Are all toilets and washing facilities clean and sanitary? \_\_\_\_\_
- g. Are pits and floor openings covered or otherwise guarded? \_\_\_\_\_

### PERSONAL PROTECTIVE EQUIPMENT & CLOTHING

- a. Are protective goggles or face shields provided and worn where there is any danger of flying particles or corrosive materials? \_\_\_\_\_
- b. Are approved safety glasses required to be worn at all times in areas where there is a risk of eye injuries such as punctures, abrasions, contusions or burns? \_\_\_\_\_
- c. Are protective gloves, aprons, shields, or other means provided against cuts, corrosive liquids and chemicals? \_\_\_\_\_
- d. Are hard hats provided and worn where danger of falling objects exists? \_\_\_\_\_
- e. Are hard hats inspected periodically for damage to the shell and suspension system? \_\_\_\_\_
- f. Is appropriate foot protection required where there is the risk of foot injuries from hot, corrosive, poisonous substances, falling objects, crushing or penetrating actions? \_\_\_\_\_
- g. Are approved respirators provided for regular or emergency use where needed? \_\_\_\_\_
- h. Is all protective equipment maintained in a sanitary condition and ready for use? \_\_\_\_\_
- i. Do you have eye wash facilities and a quick drench shower within the work area where employees are exposed to injurious corrosive materials? \_\_\_\_\_

- j. Has the dry suit and dive helmet used for diving inside Potable Water Reservoirs been suitably cleaned and sterilized prior to use? \_\_\_\_\_
- k. Is protection against the effects of occupational noise exposure provided when sound levels exceed those of the Cal/OSHA noise standard? \_\_\_\_\_

## **HAND TOOLS & EQUIPMENT**

- a. Are all tools and equipment (both, company and employee-owned) used by employees at their workplace in good condition? \_\_\_\_\_
- b. Are broken or fractured handles on hammers, axes and similar equipment replaced promptly? \_\_\_\_\_
- c. Are worn or bent wrenches replaced regularly? \_\_\_\_\_
- d. Are employees made aware of the hazards caused by faulty or improperly used hand tools? \_\_\_\_\_
- e. Are appropriate safety glasses, face shields, and similar equipment used while using hand tools or equipment that might produce flying materials or be subject to breakage? \_\_\_\_\_
- f. Are tools stored in dry, secure location where they won't be tampered with? \_\_\_\_\_

## **PORTABLE (POWER/HYDRAULIC/PNEUMATIC OPERATED) TOOLS & EQUIPMENT**

- a. Are grinders, saws, and similar equipment provided with appropriate safety guards? \_\_\_\_\_
- b. Are power tools used with the correct shield, guard or attachment recommended by the manufacturer? \_\_\_\_\_
- c. Are rotating or moving parts of equipment guarded to prevent physical contact? \_\_\_\_\_
- d. Are effective guards in place over belts, pulleys, chains, and sprockets, on air compressors, and the like? \_\_\_\_\_
- e. Are portable fans provided with full guards or screens having openings 1/2 inch or less? \_\_\_\_\_
- f. Is hoisting equipment available and used for lifting heavy objects, and are hoist ratings and characteristics appropriate for the task? \_\_\_\_\_
- g. Are ground-fault circuit interrupters provided on all temporary electrical 15 and 20 ampere circuits, used during periods of construction? \_\_\_\_\_
- h. Are pneumatic and hydraulic hoses on power-operated tools checked regularly for deterioration or damage? \_\_\_\_\_

## **ABRASIVE WHEEL EQUIPMENT GRINDERS**

- a. Is the work rest used and kept adjusted to within 1/8 inch of the wheel? \_\_\_\_\_

- b. Is the adjustable tongue on the top side of the grinder used and kept adjusted to within 1/4 inch of the wheel? \_\_\_\_\_
- c. Do side guards cover the spindle, nut, and flange and 75 percent of the wheel diameter? \_\_\_\_\_
- d. Are bench and pedestal grinders permanently mounted? \_\_\_\_\_
- e. Are goggles or face shields always worn when grinding? \_\_\_\_\_

### **POWDER, PNEUMATIC, HYDRAULIC ACTUATED TOOLS**

- a. Are employees who operate tools trained in their use? \_\_\_\_\_
- b. Is each tool stored in its own locked container when not being used? \_\_\_\_\_
- c. Are tools left unloaded until they are actually ready to be used? \_\_\_\_\_
- d. Are tools inspected for obstructions or defects each day before use? \_\_\_\_\_
- e. Do operators have and use appropriate personal protective equipment? \_\_\_\_\_

### **LOCKOUT TAGOUT PROCEDURES**

- a. Is the locking-out of control circuits in lieu of locking-out main power disconnects prohibited? \_\_\_\_\_
- b. Are all equipment control valve handles provided with a means for locking-out? \_\_\_\_\_
- c. Does the lockout procedure require that stored energy be released or blocked before equipment is locked-out for repairs? \_\_\_\_\_
- d. Are appropriate employees provided with individually keyed personal safety locks? \_\_\_\_\_
- e. Are employees required to keep personal control of their key(s) while they have safety locks in use? \_\_\_\_\_
- f. Is it required that employees check the safety of the lock out by attempting a start up after making sure no one is exposed? \_\_\_\_\_
- g. Where the power disconnecting means for equipment does not also disconnect the electrical control circuit: \_\_\_\_\_
- h. Is means provide to assure the control circuit can also be disconnected and locked out? \_\_\_\_\_

### **WELDING, CUTTING & BRAZING**

- a. Are only authorized and trained personnel permitted to use welding, cutting or brazing equipment? \_\_\_\_\_

- b. Are compressed gas cylinders regularly examined for obvious signs of defects, deep rusting, or leakage? \_\_\_\_\_
- c. Is care used in handling and storage of cylinders, safety valves, relief valves, and the like, to prevent damage? \_\_\_\_\_
- d. Are precautions taken to prevent the mixture of air or oxygen with flammable gases, except at a burner or in a standard torch? \_\_\_\_\_
- e. Are only approved apparatus (torches, regulators, pressure-reducing valves, acetylene generators, manifolds) used? \_\_\_\_\_
- f. Are cylinders kept away from sources of heat? \_\_\_\_\_
- g. Are empty cylinders appropriately marked their valves closed and valve-protection caps on? \_\_\_\_\_
- h. Are signs reading: DANGER NO-SMOKING, MATCHES, OR OPEN LIGHTS, or the equivalent posted? \_\_\_\_\_
- i. Are cylinders, cylinder valves, couplings, regulators, hoses, and apparatus keep free of oily or greasy substances? \_\_\_\_\_
- j. Before a regulator is removed, is the valve closed and gas released form the regulator? \_\_\_\_\_
- k. Is red used to identify the acetylene (and other fuel-gas) hose, green for oxygen hose, and black for inert gas and air hose? \_\_\_\_\_
- l. Are pressure-reducing regulators used only for the gas and pressures for which they are intended? \_\_\_\_\_
- m. Is grounding of the machine frame and safety ground connections of portable machines checked periodically? \_\_\_\_\_
- n. Are electrodes removed from the holders when not in use? \_\_\_\_\_
- o. Is it required that electric power to the welder be shut off when no one is in attendance? \_\_\_\_\_
- p. Is suitable fire extinguishing equipment available for immediate use? \_\_\_\_\_
- q. Is the welder forbidden to coil or loop welding electrode cable around his body? \_\_\_\_\_
- r. Are work and electrode lead cables frequently inspected for wear and damage, and replaced when needed? \_\_\_\_\_
- s. Is it required that eye protection helmets, hand shields and goggles meet appropriate standards? \_\_\_\_\_
- t. Are employees exposed to the hazards created by welding, cutting, or bracing operations protected with personal protective equipment and clothing? \_\_\_\_\_

## **COMPRESSORS & COMPRESSED AIR**

- a. Are compressors equipped with pressure relief valves, and pressure gauges? \_\_\_\_\_
- b. Are compressor air intakes installed and equipped to ensure that only clean uncontaminated air enters the compressor? \_\_\_\_\_
- c. Are air filters installed on the compressor intake? \_\_\_\_\_
- d. Are compressors operated and lubricated in accordance with the manufacturer's recommendations? \_\_\_\_\_
- e. Are safety devices on compressed air systems checked frequently? \_\_\_\_\_
- f. Before any repair work is done on the pressure system of a compressor, is the pressure bled off and the system locked-out? \_\_\_\_\_
- g. Is the belt drive system totally enclosed to provide protection for the front, back, top, and sides? \_\_\_\_\_
- h. Air produced by compressors for breathing purposes, analyzed on a periodic basis? \_\_\_\_\_

## **COMPRESSED GAS & CYLINDERS**

- a. Are cylinders legibly marked to clearly identify the gas contained? \_\_\_\_\_
- b. Are compressed gas cylinders stored in areas which are protected from external heat sources such as flame impingement, intense radiant heat, electric arcs, or high temperature lines? \_\_\_\_\_
- c. Are cylinders located or stored in areas where they will not be damaged by passing or falling objects, or subject to tampering by unauthorized persons? \_\_\_\_\_
- d. Are cylinders stored or transported in a manner to prevent them creating a hazard by tipping, falling or rolling? \_\_\_\_\_
- e. Are cylinders containing liquefied fuel gas, stored or transported in a position so that the safety relief device is always in direct contact with the vapor space in the cylinder? \_\_\_\_\_

## **HOIST & AUXILIARY EQUIPMENT**

- a. Will each hoist automatically stop and hold any load up to 125 percent of its rated load, if its actuating force is removed? \_\_\_\_\_
- b. Is the rated load of each hoist legibly marked and visible to the operator? \_\_\_\_\_
- c. Are stops provided at the safe limits of travel for trolley hoist? \_\_\_\_\_
- d. Are the controls of hoists plainly marked to indicate the direction of travel or motion? \_\_\_\_\_
- e. Are all hoist chains or ropes of sufficient length to handle the full range of movement for the application while still maintaining two full wraps on the drum at all times? \_\_\_\_\_

- f. Is it prohibited to use chains or rope slings that are kinked or twisted? \_\_\_\_\_
- g. Is the operator instructed to avoid carrying loads over people? \_\_\_\_\_
- h. Are only employees who have been trained in the proper use of hoists allowed to operate them? \_\_\_\_\_

## **ENTERING CONFINED SPACES**

- a. Are confined spaces thoroughly emptied of any corrosive or hazardous substances, such as acids or caustics, before entry? \_\_\_\_\_
- b. Before entry, are all lines to a confined space, containing inert, toxic, flammable, or corrosive materials valved off and blanked or disconnected and separated? \_\_\_\_\_
- c. Is it required that all impellers, agitators, or other moving equipment inside confined spaces be locked-out if they present a hazard? \_\_\_\_\_
- d. Is either natural or mechanical ventilation provided prior to confined space entry? \_\_\_\_\_
- e. Before entry, are appropriate atmospheric tests performed to check for oxygen deficiency, toxic substance and explosive concentrations in the confined space before entry? \_\_\_\_\_
- f. Is adequate illumination provided for the work to be performed in the confined space? \_\_\_\_\_
- g. Is the atmosphere inside the confined space frequently tested or continuously monitor during conduct of work? \_\_\_\_\_
- h. Is there an assigned safety standby employee outside of the confined space, whose sole responsibility is to watch the work in progress, sound an alarm if necessary, and render assistance? \_\_\_\_\_
- i. Is the standby employee or other employees prohibited from entering the confined space without lifelines and respiratory equipment if there is any questions as to the cause of an emergency? \_\_\_\_\_
- j. In addition to the standby employee, is there at least one other trained rescuer in the vicinity? \_\_\_\_\_
- k. Are all rescuers appropriately trained and using approved, recently inspected equipment? \_\_\_\_\_
- l. Does all rescue equipment allow for lifting employees vertically from a top opening? \_\_\_\_\_
- m. Are there trained personnel in First Aid and CPR immediately available? \_\_\_\_\_
- n. Is there an effective communication system in place whenever respiratory equipment is used and the employee in the confined space is out of sight of the standby person? \_\_\_\_\_
- o. Is approved respiratory equipment required if the atmosphere inside the confined space cannot be made acceptable? \_\_\_\_\_

- p. Before gas welding or burning is started in a confined space, are hoses checked for leaks, compressed gas bottles forbidden inside of the confined space, torches lighted only outside of the confined area and the confined area tested for an explosive atmosphere each time before a lighted torch is to be taken into the confined space? \_\_\_\_\_
- q. Whenever combustion-type equipment is used in confined space, are provisions made to ensure the exhaust gases are vented outside of the enclosure? \_\_\_\_\_
- r. Is the confined space checked for possible industrial waste, which could contain toxic properties? \_\_\_\_\_

## **ENVIRONMENTAL CONTROLS**

- a. Are employees instructed in proper first aid and other emergency procedures? \_\_\_\_\_
- b. Are hazardous substances identified which may cause harm by inhalation, ingestion, skin absorption or contact? \_\_\_\_\_
- c. Are employees aware of the hazards involved with the various chemicals they may be exposed to in their work environment, such as ammonia, chlorine, epoxies, and caustics? \_\_\_\_\_
- d. Are welders and other workers nearby provided with flash shields during welding operations? \_\_\_\_\_
- e. Is personal protective equipment provided, used and maintained wherever required? \_\_\_\_\_
- f. Are there written standard operating procedures for the selection and use of respirators where needed? \_\_\_\_\_
- g. Are restrooms and washrooms kept clean and sanitary? \_\_\_\_\_
- h. Is all water provided for drinking, washing, and cooking potable? \_\_\_\_\_
- i. Are all outlets for water not suitable for drinking clearly identified? \_\_\_\_\_
- j. Are employees' physical capacities assessed before being assigned to jobs requiring heavy work? \_\_\_\_\_
- k. Are employees instructed in the proper manner of lifting heavy objects? \_\_\_\_\_
- l. Are employees working on streets and roadways where they are exposed to the hazards of traffic, required to wear bright colored (traffic orange) warning vest? \_\_\_\_\_

## **FLAMMABLE & COMBUSTIBLE MATERIALS**

- a. Are approved containers and tanks used for the storage and handling of flammable and combustible liquids? \_\_\_\_\_
- b. Are all flammable liquids kept in closed containers when not in use (e.g. parts cleaning tanks, pans)? \_\_\_\_\_

- c. Is liquefied petroleum gas stored, handled, and used in accordance with safe practices and standards? \_\_\_\_\_
- d. Are fuel gas cylinders and oxygen cylinders separated by distance, fire resistant barriers or other means while in storage? \_\_\_\_\_
- e. Are fire extinguishers selected and provided for the types of materials in areas where they are to be used? \_\_\_\_\_
- f. Are employees trained in the use of fire extinguishers? \_\_\_\_\_
- g. Are extinguishers free from obstructions or blockage? \_\_\_\_\_
- h. Are all extinguishers serviced, maintained and tagged at intervals not to exceed one year? \_\_\_\_\_
- i. Are all extinguishers fully charged and in their designated places? \_\_\_\_\_
- j. Is a record maintained of required monthly checks of extinguishers? \_\_\_\_\_
- k. Are "NO SMOKING" signs posted where appropriate in areas where flammable or combustible materials are used or stored? \_\_\_\_\_
- l. Are "NO SMOKING" signs posted on liquefied petroleum gas tanks? \_\_\_\_\_
- m. Are "NO SMOKING" rules enforced in areas involving storage and use of flammable materials? \_\_\_\_\_
- n. Are all spills of flammable or combustible liquids cleaned up promptly? \_\_\_\_\_

## **FIRE PROTECTION**

- a. Do you have a fire prevention plan? \_\_\_\_\_
- b. Does your plan describe the type of fire protection equipment and/or systems? \_\_\_\_\_
- c. Are portable fire extinguishers provided in adequate number and type? \_\_\_\_\_
- d. Are fire extinguishers mounted in readily accessible locations? \_\_\_\_\_
- e. Are fire extinguishers recharged regularly and noted on the inspection tag? \_\_\_\_\_
- f. Are employees periodically instructed in the use of extinguishers and fire protection procedures? \_\_\_\_\_

## **HAZARDOUS SUBSTANCES COMMUNICATION**

- a. Is there a list of hazardous substances used in your workplace? \_\_\_\_\_
- b. Is there a written hazard communication program dealing with Material Safety Data Sheets (MSDS) labeling, and employee training? \_\_\_\_\_
- c. Who is responsible for MSDSs, container labeling, employee training? \_\_\_\_\_

- d. Is each container for a hazardous substance (i.e. vats, bottles, storage tanks,) labeled with product identity and a hazard warning (communication of the specific health hazards and physical hazards)? \_\_\_\_\_
- e. Is there a Material Safety Data Sheet readily available for each hazardous substance used? \_\_\_\_\_

**EMERGENCY ACTION PLAN**

- a. Are you required to have an emergency action plan? \_\_\_\_\_
- b. Have emergency escape procedures and routes been developed and communicated to all employees? \_\_\_\_\_
- c. Is the emergency action plan reviewed and revised periodically? \_\_\_\_\_
- d. Do employees know their responsibilities? \_\_\_\_\_
- e. For reporting emergencies? \_\_\_\_\_
- f. During an emergency? \_\_\_\_\_
- g. For conducting rescue and medical duties? \_\_\_\_\_

**APPENDIX C:**  
**Hazard Assessment & Correction Record**

|                                                       |                                      |
|-------------------------------------------------------|--------------------------------------|
| <b><i>HAZARD ASSESSMENT AND CORRECTION RECORD</i></b> |                                      |
| <b>Date of Inspection:</b>                            | <b>Person Conducting Inspection:</b> |
| <b>Unsafe Condition or Work Practice:</b>             |                                      |
| <b>Corrective Action Taken:</b>                       |                                      |
| <b>Date of Inspection:</b>                            | <b>Person Conducting Inspection:</b> |
| <b>Unsafe Condition or Work Practice:</b>             |                                      |
| <b>Corrective Action Taken:</b>                       |                                      |

## **APPENDIX D**

### **Accident/Exposure Investigation Report**

|                                                      |
|------------------------------------------------------|
| <b><i>ACCIDENT/EXPOSURE INVESTIGATION REPORT</i></b> |
|------------------------------------------------------|

|                                     |
|-------------------------------------|
| <b>Date &amp; Time of Accident:</b> |
|-------------------------------------|

|                  |
|------------------|
| <b>Location:</b> |
|------------------|

|                              |
|------------------------------|
| <b>Accident Description:</b> |
|------------------------------|

|                          |
|--------------------------|
| <b>Workers Involved:</b> |
|--------------------------|

|                                           |
|-------------------------------------------|
| <b>Preventive Action Recommendations:</b> |
|-------------------------------------------|

|                                  |
|----------------------------------|
| <b>Corrective Actions Taken:</b> |
|----------------------------------|

|                             |
|-----------------------------|
| <b>Manager Responsible:</b> |
|-----------------------------|

|                        |
|------------------------|
| <b>Date Completed:</b> |
|------------------------|

## **APPENDIX E**

### **Worker Training and Instruction Record**

| <p style="text-align: center;"><b>UNDERWATER RESOURCES INC<br/>WORKER TRAINING AND INSTRUCTION RECORD</b></p> |                       |                         |                 |
|---------------------------------------------------------------------------------------------------------------|-----------------------|-------------------------|-----------------|
| <b>Worker's Name</b>                                                                                          | <b>Training Dates</b> | <b>Type of Training</b> | <b>Trainers</b> |
|                                                                                                               |                       |                         |                 |
|                                                                                                               |                       |                         |                 |
|                                                                                                               |                       |                         |                 |
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|                                                                                                               |                       |                         |                 |
|                                                                                                               |                       |                         |                 |
|                                                                                                               |                       |                         |                 |

| Worker's Name | Training Dates | Type of Training | Trainers |
|---------------|----------------|------------------|----------|
|               |                |                  |          |
|               |                |                  |          |
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## **APPENDIX B**

# **DIVER EMERGENCY ACTION PROCEDURES**



Pier 26, The Embarcadero  
San Francisco, CA 94105  
Ph 415-974-5464, Fx 415-974-1749  
[www.underwater-resources.com](http://www.underwater-resources.com)

## **EMERGENCY ACTION PLAN**

(Mar 2003 Edition)

## **PREFACE**

The Emergency Action Plan has been prepared in order to establish the appropriate actions to take in the event of a diving emergency.

The actions that take place immediately following an emergency are vital to the safety of URI's employees, equipment and the general public and environment.

Current Emergency telephone numbers are enclosed within this plan and are also to be posted on URI's bulletin board and keep with the onsite Dive Supervisor.

In any emergency situation, you must immediately notify your Dive Supervisor. The situation will be assessed and appropriate action taken to stabilize the emergency. The Supervisor will notify all proper authorities and if the event involves an injury, appropriate medical attention will be arranged promptly.

Each emergency will dictate its own priorities. In general, every emergency will cause the dive to be aborted until the cause has been fully remedied.

## **DIVER RELATED EMERGENCY PROCEDURES:**

### **LOSS OF BREATHING MEDIA**

1. Re-establish breathing media supply by:
  - Activate topside secondary breathing media supply; or
  - Diver to go on bail out bottle or;
  - Put breathing media to diver's pneumo hose and have diver insert pneumo hose into helmet/mask.
2. Alert standby Diver.
3. If required, send standby Diver to Diver's assistance.

### **LOSS OF COMMUNICATIONS**

1. Attempt to establish line-pull signals.
2. Put air to Diver's pneumo.
3. Alert Standby Diver.
4. If required (unable to establish any form of communications with Diver) send Standby Diver to Diver's assistance.
5. Terminate dive.

### **FOULED OR ENTRAPPED DIVER**

1. Avoid panic and ensure Diver does not ditch equipment.
2. Diver informs topside.
3. Alert Standby Diver.
4. Diver determines extent of entrapment.
5. Diver attempts to free himself.
6. If required, send Standby Diver to Diver's assistance.
7. When diver is free, if shaken, or Standby Diver was required to go to his assistance, terminate dive.

### **INJURED DIVER IN WATER**

1. Diver informs topside and dive is aborted.
2. Alert Standby Diver.
3. Diver determines nature and extent of injury.

4. If required, send Standby Diver down to assist Diver, administer first aid, and evaluate injury. Standby Diver should remain with Diver.
5. Standby Diver assists injured Diver to surface, following proper decompression procedures, except when severity of injury indicates a greater risk than omitting decompression.
6. Request required medical assistance and emergency evacuation. Refer to the 'Diving Emergency Response List' if diving is being conducted in the San Francisco and/or Greater Bay Area. If dive site is outside these parameters call 911.
7. Request required medical assistance and emergency evacuation (if required).
8. Monitor breathing. If breathing stops overpressure diver's regulator, if possible.

#### **SEVERANCE OF DIVER'S UMBILICAL – GAS HOSE ONLY**

1. Put breathing media to Diver's pneumo hose.
2. Diver activates bail-out bottle.
3. Alert Standby Diver
4. If required, Diver inserts pneumo hose inside helmet/mask.
5. Terminate dive and follow proper decompression procedure.

#### **SEVERANCE OF COMPLETE UMBILICAL**

1. Diver activates bail-out bottle.
2. Alert Standby Diver.
3. If umbilical severed on deck and the end of the umbilical is still on deck, send Standby Diver down umbilical with new hose/bail-out bottle. Otherwise, send Standby diver down downline or bell stage cable.
4. Terminate dive and follow proper decompression procedure.

#### **FIRE IN EQUIPMENT**

1. Extinguish fire; secure equipment.
2. Determine damage and effect on Diver.
3. If required, terminate dive, commence decompression.
4. Each chamber must have a means of extinguishing a fire in the interior.

#### **EQUIPMENT FAILURE – DIVER IN WATER**

1. Evaluate effect on Diver.

2. Inform diver of problem and action planned.
3. Alert Standby Diver.
4. Alert Deck Crew.
5. Diver informs topside of his readiness.
6. Activate plan, terminate dive.

### **OXYGEN TOXICITY IN WATER**

1. Supervisor notes signs or Diver report symptoms to topside.
2. Reduce oxygen partial pressure (switch to air).
3. Continue decompression on regular table without 50/50 nitrox or oxygen in water.

### **OXYGEN TOXICITY DURING TREATMENT**

1. Diver reports to topside.
2. Instruct Diver to remove oxygen mask for 15 minutes. After all symptoms disappear, then start oxygen again. Do not count time not on oxygen, pick up decompression where oxygen stopped.
3. If oxygen toxicity symptoms occur for the 2<sup>nd</sup> time, repeat procedure 2.
4. If oxygen toxicity symptoms occur for the 3<sup>rd</sup> time, discontinue oxygen and contact the Safety Department.

### **EMERGENCY EVACUATION**

1. Notify Diver of emergency and terminate dive.
2. Decompress Diver according to proper decompression procedures. If not possible, follow omitted decompression procedures.
3. Evacuate all unnecessary personnel to safe platform.
4. Contact management and inform them of conditions as soon as possible.

## **DIVING EMERGENCY RESPONSE LIST**

Jan 2006

San Francisco Bay Area & Delta

### **LOCAL EMERGENCY (LAND)**

911

### **U.S. GUARD:**

|                            |                |
|----------------------------|----------------|
| USCG, General Information  | (510) 437-3700 |
| USCG, Emergency            | (510) 437-3701 |
| Marine VHF Radio           | Channel 16     |
| Search & Rescue            | (415) 556-2103 |
| Marine Safety/Port Captain | (510) 437-3073 |
| Notice To Mariners         | (510) 437-2976 |
| Vessel Traffic             | (415) 556-2950 |

### **DAN (Divers Alert Network) 24 Hours**

FAX (919) 493-3040

(919) 684-8111  
(919) 684-2948

### **RECOMPRESSION (HYPERBARIC) CHAMBERS:**

|                                                               |                |
|---------------------------------------------------------------|----------------|
| St. Francis Hospital, San Francisco (66', 1 Person)           | (415) 353-6700 |
| Doctor's Medical Center, San Pablo (Heliport)(66', 1 Person)  | (510) 970-5343 |
| John Muir Hospital, Walnut Creek (Heliport)(66', 1 Person)    | (925) 939-3000 |
| Travis Air Force Base, Fairfield (Heliport)(GATA, 2-3 Person) | (707) 423-3987 |
| Emergency Room (After Hours)                                  | (707) 423-3825 |
| Mercy San Juan Hospital, Sacramento (Heliport)(66', 1 Person) | (916) 537-5040 |
| Evenings & Weekends, Nursing Supervisor                       | (916) 537-5000 |
| Pacific Grove Ocean Rescue (GATA, 2 Person)                   | (831) 648-3128 |
| Run Through Community Hospital                                | (831) 625-4900 |
| 24 Hour Emergency                                             | (831) 648-3110 |

### **DIVING MEDICINE PHYSICIANS:**

|                                                   |                |
|---------------------------------------------------|----------------|
| Dr. Cianci, East Bay                              | (510) 235-3483 |
| Dr. Wyatt, Santa Barbara Medial Foundation Clinic | (805) 898-3311 |

## **APPENDIX C JOB HAZARD ANALYSIS**



Pier 26, The Embarcadero  
San Francisco, CA 94105  
www.underwater-resources.com

# Job Hazards Analysis

## Project Description/Location:

**Activity:** Conducting Water Diving Operations from Floating Equipment

**Analyzed by/date:** D. Moore, Oct 1<sup>st</sup> 04

| PRINCIPAL STEPS                                                                                                                             | POTENTIAL HAZARDS                                                                                                                                                                                                                                                                                                                                                                                                                                             | RECOMMENDED CONTROLS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|---------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Manual labor on barges to support surface supplied air diving operations.                                                                   | <ol style="list-style-type: none"><li>1. Barge movement due to large swells or wave action causing injury to personnel or damage to equipment.</li><li>2. "Man overboard" and personnel working on the water's surface or over the water</li><li>3. General diving related hazards.</li><li>4. Fire.</li><li>5. Accessing floating equipment.</li><li>6. Fouling and entanglement hazard while mooring or during movement of the floating platform.</li></ol> | <ol style="list-style-type: none"><li>1a. Work operations will be suspended during unsafe sea conditions.</li><li>1b. Provide "non-slip" surface around perimeter of floating platform</li><li>2a. All personnel are required to wear PFDs.</li><li>2b. A life buoy with throw line to be available on deck and readily accessible.</li><li>3a. Review all safety documents with dive team members during their initial project orientation and keep a copy of the document at the dive station for reference. This includes diver emergency action procedures.</li><li>4a. Fire extinguisher to be located in vicinity of operating equipment and readily accessible.</li><li>4b. Daily inspection of fuel system.</li><li>5a. Personnel to exercise adequate caution when transferring from one vessel/platform to another.</li><li>6a. Personnel and line handlers shall not wear loose clothing and shall keep arms, feet and extremities out of the "bight" and general area of mooring lines and winches.</li></ol> |
| EQUIPMENT TO BE USED                                                                                                                        | INSPECTION REQUIREMENTS                                                                                                                                                                                                                                                                                                                                                                                                                                       | TRAINING REQUIREMENTS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Barges/floating equipment<br>Diesel Driven Air Compressor<br>Dive equipment (umbilical, comms, manifold, HP air (backup)<br>Mooring winches | Daily inspection of mooring lines and cables for chaffing or signs of wear. Before each use inspect machinery, equipment and tools to ensure normal operation and that no repairs are needed. "Red tag" suspect or defective machinery, equipment or tools and notify supervisor.                                                                                                                                                                             | Divers and dive crew personnel shall have sufficient experience and safety training for type of work performed.<br>Have read, agreed to and comply with URI operations and procedures manual.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |

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# Job Hazards Analysis

**Project Description/Location:**

**Activity:** Lift Bag Operations

**Analyzed by/date:**

| PRINCIPAL STEPS                                                                                                                                                       | POTENTIAL HAZARDS                                                                                                                                                                                                                                                                                                     | RECOMMENDED CONTROLS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
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| <ol style="list-style-type: none"><li>1. Attach liftbag to object or load to be raised.</li><li>2. Inflate liftbag</li><li>3. Accompany load through ascent</li></ol> | <ol style="list-style-type: none"><li>1. Diver or his umbilical becoming entangled in lift bag rigging and subsequently being pulled to the surface in an uncontrolled ascent.</li><li>2. Equipment or tools falling back down onto diver if bag spills it's air after uncontrolled blow up to the surface.</li></ol> | <ol style="list-style-type: none"><li>1. Divers should tie off lift bag to a fixed object whenever possible prior to inflation or at the first opportunity.</li><li>2. Divers should take precautions to ensure that they and their umbilical are kept clear of the liftbag and of any lines attached to it.</li><li>3. Divers should monitor and control inflation at all times.</li><li>4. Divers should stay aware of any pneumatic tools leaking air or the divers' exhaust sending rising bubbles into the liftbag in open-bottomed liftbags and increasing buoyancy without diver realizing.</li><li>5. Topside personnel should test the exhaust valves prior to each use of the liftbag and make sure that the air-release dump is operating correctly.</li><li>6. If a lift bag leaves bottom with equipment or tools, diver should evacuate the area and guard their umbilical until the bag has been secured.</li><li>7. Before initiating fill to a liftbag rigged to a load, the diver should make sure his tool lanyards, umbilical or anything else attached to him is clear of the lifting bag rigging, and that the dump is long enough and can be reached in the event of a problem.</li></ol> |
| EQUIPMENT TO BE USED                                                                                                                                                  | INSPECTION REQUIREMENTS                                                                                                                                                                                                                                                                                               | TRAINING REQUIREMENTS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Surface-Supplied Diving Equipment<br><br>LiftBag                                                                                                                      | Check bag for air leakage, correctly operational valves, and competent rigging or attachment points.                                                                                                                                                                                                                  | Divers and dive crew personnel shall have sufficient experience and safety training for lift bag operations.<br>Have read, agreed to and comply with URI operations and procedures manual.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |

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# Job Hazards Analysis

**Project Description/Location:**

**Activity:** Underwater Burning

**Analyzed by/date:**

| PRINCIPAL STEPS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | POTENTIAL HAZARDS                                                                                                                                                                                                                                                                                                                                                                                                               | RECOMMENDED CONTROLS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
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| <ol style="list-style-type: none"> <li>1. Identify the cut location.</li> <li>2. If the piece is suspended, secure rigging to maintain control and avoid falling or dropping of the piece.</li> <li>3. Securely attach the ground clamp and route the ground lead/cable so that the load shift or rigging at cutoff doesn't tangle in lead.</li> <li>4. Position torch-head and rod to burn.</li> <li>5. Notify topside to "make it hot".</li> <li>6. Make cut</li> <li>7. Conclude cut and notify topside to "make it cold".</li> </ol> | <ol style="list-style-type: none"> <li>1. Diver touches worn area of ground cable or electrical lead and receives shock while burning.</li> <li>2. Hydrogen explosion resulting from ignition of accumulated gases while burning on inadequately ventilated pipe or similar hollow member.</li> <li>3. Oxygen leaks developing in torch-head while in use at worksite.</li> <li>4. Diver burned by blowback or slag.</li> </ol> | <ol style="list-style-type: none"> <li>1               <ol style="list-style-type: none"> <li>a. Divers should connect the ground as close to the work site as possible.</li> <li>b. Divers should position themselves comfortably so that while they work they do not touch the area between the ground and the work area.</li> <li>c. Divers should maintain awareness of possible build-up of explosive gases in a pipe or hollow member. These gases may be the result of the burning process. As a precaution, vent holes should be cut above areas to be burned. Whenever possible, divers should burn a vent hole at the highest point before making other cuts. This will allow gases to vent upward and out of the pipe or void.</li> </ol> </li> <li>2 Explosive gases can result from:               <ol style="list-style-type: none"> <li>a. Improper ventilation</li> <li>b. Petroleum products on torch or material to be burned</li> <li>c. Hydrogen &amp; oxygen collecting in debris or marine growth above cut</li> <li>d. NOTE: If a diver has any question about the possibility of a gas pocket present, the first cut should be made with a drill or mechanical device</li> <li>e. Divers and topside personnel should be aware of problems associated with leaking torch head or other parts of torch head assembly. If, while burning, the diver finds that the torch head is leaking, he should suspend the operation until the leak is repaired.</li> </ol> </li> <li>3.               <ol style="list-style-type: none"> <li>a. Divers should wear leather or thick protective glove on the rod hand to prevent slag burns or burns from flash back.</li> </ol> </li> <li>4. of               <ol style="list-style-type: none"> <li>a. Never use a 'spider' or manifold to connect more than one bottle or flask gas with more than 40% oxygen content. – an explosion may result.</li> </ol> </li> </ol> |
| <b>Surface-Supplied Diving Equipment</b><br><br><b>Underwater Burning Gear</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Daily inspection of burning equipment and welding machine.<br>"Red tag" suspect or defective machinery, equipment or tools and notify supervisor.                                                                                                                                                                                                                                                                               | Divers and dive crew personnel shall have sufficient experience and safety training for underwater burning.<br>Have read, agreed to and comply with URI operations and procedures manual.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |

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