



SAFE DIVE OPERATIONS PLAN

ACTIVITY HAZARD ANALYSIS

EMERGENCY MANAGEMENT

PLAN

For:

PENCO ENVIRONMENTAL
HOTEL PIERS █, █, AND █ SURVEY

American Marine Corporation
65 N Nimitz Hwy, Pier 14
Honolulu, Hawaii 96817
Phone (808) 545-5190, Fax (808) 538- 1703

Signed Zachary Dixon
Dated 8 FEB 2021



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IF FOR ANY REASON THE DIVE PLAN IS ALTERED IN MISSION, DEPTH, PERSONNEL, OR EQUIPMENT, THE DDC WILL BE CONTACTED IN ORDER TO REVIEW AND ACCEPT THE ALTERATION PRIOR TO ACTUAL OPERATION.”

A) DATE OF REVISION: 8 FEB 2021

**B) DIVING SUPERVISOR: CHRISTIAN MCGUIRE
65 N. NIMITZ HWY. PIER 14, HONOLULU,
HAWAII 96817. (808) 478-0086, (808) 545-5190**

C) NAMES AND DUTIES OF DIVE TEAM MEMBERS

DIVING SUPERVISOR –CHRISTIAN MCGUIRE

Duties:

- Responsible person in charge for operations that will affect the safety and health of dive team members.
- The full and accurate recording of all dives by each diver.
- The detailed organization and preparation of all diving operations including giving full instructions to the divers.
- Enforcement of safety procedures and company policy.
- The designated person in charge is experienced and trained in the conduct of the assigned diving operations.
- Duties include, but not limited to, a complete knowledge of tools, equipment, systems, techniques, operations and emergency procedures, which pertain to all assigned tasks and diving modes.

ALT. DIVE SUPERVISOR/DIVER/STBY-DIVER/TENDER – SEAN MCCANN

Duties:

- Perform such tasks underwater as may be required and as directed by the diving supervisor.
- Ensure diver equipment is properly maintained, complete and ready for use.
- Follow safe diving procedures and point out any questionable items to the diving supervisor and observe the rules for flying after diving.
- Responsible for reporting all symptoms of any physical problems immediately and as accurately as possible.
- Have previous experience in and be competent in the use of the kind of diving equipment and/or system or breathing mixture he will be using while diving.
- **Have had experience or training in the kind of work he is to perform underwater including but not limited to operation of specialized tools.**

DIVER/STBY-DIVER/ TENDER – KEVIN WATTS

Duties:

- Perform such tasks underwater as may be required and as directed by the diving supervisor.
- Ensure diver equipment is properly maintained, complete and ready for use.
- Follow safe diving procedures and point out any questionable items to the diving supervisor and observe the rules for flying after diving.
- Responsible for reporting all symptoms of any physical problems immediately and as accurately as possible.

- Have previous experience in and be competent in the use of the kind of diving equipment and/or system or breathing mixture he will be using while diving.
- **Have had experience or training in the kind of work he is to perform underwater including but not limited to operation of specialized tools.**

DIVER/STBY-DIVER/ TENDER – BRIAN LEONG

Duties:

- Perform such tasks underwater as may be required and as directed by the diving supervisor.
- Ensure diver equipment is properly maintained, complete and ready for use.
- Follow safe diving procedures and point out any questionable items to the diving supervisor and observe the rules for flying after diving.
- Responsible for reporting all symptoms of any physical problems immediately and as accurately as possible.
- Have previous experience in and be competent in the use of the kind of diving equipment and/or system or breathing mixture he will be using while diving.
- **Have had experience or training in the kind of work he is to perform underwater including but not limited to operation of specialized tools.**

DIVER/STBY-DIVER/ TENDER – WYATT REDONGO

Duties:

- Perform such tasks underwater as may be required and as directed by the diving supervisor.
- Ensure diver equipment is properly maintained, complete and ready for use.
- Follow safe diving procedures and point out any questionable items to the diving supervisor and observe the rules for flying after diving.
- Responsible for reporting all symptoms of any physical problems immediately and as accurately as possible.
- Have previous experience in and be competent in the use of the kind of diving equipment and/or system or breathing mixture he will be using while diving.
- **Have had experience or training in the kind of work he is to perform underwater including but not limited to operation of specialized tools.**

D) LIST OF DIVING EQUIPMENT TO BE USED

- Surface Supplied Air Diving

Minimum Personnel and Personnel Qualifications

The crew size will be (4) man dive team as outlined in Appendix “O-3” EM 385-1-1 “Manning Levels for Dive Teams”.

DIVING SUPERVISOR

DIVER

STANDBY DIVER

TENDER

- Surface Supplied. All of AMC equipment shall have the following:
Low-pressure air compressors with volume tank that meet ASME specifications and have the following:
 - ⇒ Check valve on the inlet side
 - ⇒ Pressure gauge
 - ⇒ Relief valve
 - ⇒ Drain

Intakes will be located away and upwind from areas containing exhaust fumes or other hazardous contaminants with efficient filtration system.

Diver: Trained and experienced in the following:
Air diving procedures and techniques
Emergency procedures
Diving accident treatment procedures
Proper operation and use of all diving equipment
Familiarity with the work being performed

Tender: Same qualifications as above, with lower experience level.

- Minimum Equipment (surface supplied diving)
 - 1 compressor
 - 2 umbilicals
 - 1 ladder
 - 1 250 cuft HP air cylinder with 1800-psi minimum.
 - 2 dive radios
 - 1 air manifold
 - 1 pneumo/ depth gauge
 - 4 whips (LP)
 - 2 whips (HP)
 - 1 deck first aid kit
 - 2 oxygen supply kit
 - 1 Copy of AMC Safe Practices Manual
 - 1 time keeping device
 - 1 divers log book
 - 2 sets of diver's equipment: Primary and Standby
 - Weight belt
 - Chest lift harness
 - Protective clothing
 - 1 International "alpha" dive flag
 - 1 Red/ White diver down flag
 - 1 backboard/stokes litter with floatation
 - 1 Fire Extinguisher
 - 1 ladder

PRIMARY AIR SUPPLY

L.P. air compressor output. Diesel driven, Quincy model 325 rated at 19 cfm of free air at 150 psi.

SECONDARY AIR SUPPLY

H.P. air flask charged to 2500 minimum psi. Capable of delivering 250 cuft. @ 3.0 acfm. This air supply will only be used in the event that primary air is lost. The diver will also wear an emergency bail out bottle with a minimum of 50 cubic feet and 2250 psi. This air supply will only be used in the event of an emergency. In the event the primary air is lost, the tender will switch to the secondary air supply and/or instruct the diver to go on bail-out bottle. Once the diver is shifted to the secondary air supply, the dive will be terminated until which point the primary air supply is back in service.

E) TYPE OF DIVING PLATFORM TO BE USED

Diving operations shall be conducted at shore side facilities associated with Hotel Piers █, █, and █. Staging areas for dives will be selected for ease of diver access, avoiding hazards, and ability of standby diver to access the water quickly.

This work will follow guidelines established IAW: American Marine Corporation, Safe Practices and Operating Procedures Manual. **If for any reason the dive plan is altered in mission, depth, personnel, or equipment the DDC will be contacted in order to review and accept the alteration prior to actual operation.**

F) DETAILED DESCRIPTION OF THE MISSION

The mission of this dive operation is to survey along pier side bulkheads at hotel Piers █, █, and █ in Pearl Harbor. The divers will be trying to determine structural integrity of piers and if possible sources of contamination leaks. Survey will be primarily visual. If anomalies are discovered those areas will be measured and mapped out.

G) DATE(S), TIME(S), DURATION, AND LOCATION OF OPERATION

Date: February 11 & 12 2021

Time: 0600-1800

Duration: TBD

Location: Hotel Piers [REDACTED], and [REDACTED] Pearl Harbor, Hawaii

Pearl Harbor Port Operations will be notified each day prior to and at the completion of diving operations.

prlh-navstaharbormaster@navy.mil
guenter.neidhardt@navy.mil

Pearl Harbor Port Operations

(808) 474 6262

H) DIVING MODE USED

Surface Supplied Air Diving mode will be used. The Diver's umbilical hose will be constantly tended while the diver is in the water. A stand-by diver will be fully equipped with surface supplied diving gear and will be readily available the entire time the diver is in the water. The stand-by diver's umbilical hose will be of equal or longer length than the diver's umbilical

The primary breathing air supply will be sufficient to support divers for the duration of the planned dive operation including decompression.

Dive stations will have a reserve breathing air supply in-line with the primary air source. In the event of loss of primary air, the reserve supply be of sufficient capacity to recover the divers and complete decompression requirements.

Each diver will carry a reserve breathing air supply which can be turned on immediately by the diver in the event of loss of air. This reserve supply shall be of sufficient capacity to recover the diver and complete decompression requirements

I) NATURE OF WORK TO BE PERFORMED BY THE DIVERS

American Marine Corporation will provide diving operations as required for survey of pier side bulkheads. Surveys will be conducted visually. Divers will be trying to determine the structural integrity of piers. Mapping and measuring of anomalies will be done if located along pier faces. In addition divers will assist with installation of petroleum containment devices as necessary.

This dive plan will provide necessary information to meet the requirements provided by the USACE EM 385-1-1. A site-specific job hazard analysis form will be completed prior to all hazardous site conditions before diving.

Prior to the beginning of each day and each dive a pre-dive safety meeting shall take place discussing all site-specific issues. This discussion will include but not be limited to the task at hand, the equipment and personnel involved with the work. The supervisor will be responsible for the application of the site specific safety meeting, he will be responsible for implementing all programs and insuring all personnel are properly trained, properly informed and properly equipped to do their jobs safely. The supervisor will be responsible for, and held accountable for, accidents, that occur under his supervision. He will in addition instruct all employees in the proper (safe) way of performing their work and make periodic reviews to insure they continue to perform in a safe manner. He will insure all equipment and tools are maintained in good working condition, ensure that all equipment and tools are being used properly in order to prevent equipment damage and potential for accidents. Additionally he will investigate ALL accidents and prepare an accident report in the format included in this Dive Plan for all events requiring first aid or medical attention. He will be constantly aware that accident prevention is a necessary part of an efficient profitable operation. These safety meetings shall be documented as to what issues were discussed and who was in attendance.

Upon completion of the daily safety meeting the dive team shall conduct the Equipment Procedures Checklist. All equipment shall be fueled, checked and inspected to ensure operational integrity. The checklist shall be kept up to date and may be reviewed at any time by the on site safety representative. At no time shall the dive commence without thoroughly inspecting all equipment.

Special tools involved will be hand tools, and measuring devices.

The dive supervisor will also be responsible for updating the dive plan as necessary. **“If for any reason the dive plan is altered in mission, depth, personnel, or equipment, the DDC will be contacted in order to review and accept the alteration prior to actual operation”.**

J) SURFACE AND UNDERWATER CONDITIONS

The surface and underwater conditions at the site are expected to be calm to fair. The water temperature will be comfortable; the result of which will be that the divers will dress in a wet suit with overalls over the top. This will protect the diver from any scrapes and/or abrasions. The underwater current is expected to be 0-1 knot. Divers will wear weight as deemed necessary. Visibility is expected to be 2 feet to 8 feet. Underwater bottom conditions are anticipated to be hard bottom with light silt.

Any adverse weather conditions shall be dealt with on a case by case basis. The diving supervisor shall be responsible for all diving operations. The diving supervisor has the final say in a go, no-go situation with regard to diving, and personnel safety.

K) MAXIMUM SINGLE DIVE BOTTOM TIMES

NO DECOMPRESSION

The maximum depth not to exceed is:	60 fsw.
The maximum bottom time not to exceed	60 Minutes
The maximum depth not to exceed is:	55 fsw.
The maximum bottom time not to exceed	74 Minutes
The maximum depth not to exceed is:	50 fsw.
The maximum bottom time not to exceed	92 Minutes
The maximum depth not to exceed is:	45 fsw.
The maximum bottom time not to exceed	125 Minutes
The maximum depth not to exceed is:	40 fsw.
The maximum bottom time not to exceed	163 Minutes
The maximum depth not to exceed is:	35 fsw.
The maximum bottom time not to exceed	232 Minutes
The maximum depth not to exceed is:	30 fsw.
The maximum bottom time not to exceed	371 Minutes
The maximum depth not to exceed is:	25 fsw.
The maximum bottom time not to exceed	595 Minutes

All diving will stay well within the No Decompression limits as outlined by the U.S. Navy Diving Manual Table 9-7 Rev. 6 and the American Marine Corporation Safe Diving Practices Manual.

Divers will wait at least 12 hours before flying after any dive and 24 hours after multiple days of diving or repetitive dives.

L) NAMES OF EACH PERSON INVOLVED IN TOPSIDE ASSISTANCE

CHRISTIAN MCGUIRE	DIVING SUPERVISOR
SEAN MCCANN	DIVER/TENDER
KEVIN WATTS	DIVER/TENDER
BRIAN LEONG	DIVER/ TENDER
WYATT REDONGO	DIVER/ TENDER

M) NAMES OF DIRECT COMMUNICATION BETWEEN THE DIVE SITE AND THE CONTRACTOR'S PROJECT OFFICE, THE CONTRACTING OFFICER

PENCO ENVIRONMENTAL

Justin Souza, Area Manager (808) 545-5195
Shanyn Kauihou, Operations Manager (808) 545-5195
DC Carter, Response and Safety Manager (808) 545-5195

AMERICAN MARINE CORPORATION

(808) 545-5190

Michael "Mac" MacDonald (Vice President) (808) 306-8423
BLAKE EDWARDS (CONSTRUCTION MANAGER) (808) 222-2463
ZACHARY DIXON (DIVE SUPERINTENDENT) (808) 478-0086

PEARL HARBOR (PORT OPERATIONS)

(808) 473-0417

HARBOR MASTER PRLH-NAVSTAHARBORMASTER@NAVY.MIL

PEARL HARBOR CONTROL TOWER

(808) 473-1168

REGIONAL DISPATCH CENTER

(808) 474-1271

PEARL HARBOR CONTROL

(808) 474-6262

SHIPYARD SHIP SAFETY

(808) 473-8000 ext. 5002

N) PLANS SUBMITTED FOR CONTRACTOR OPERATIONS SHALL ALSO INCLUDE THE NAME OF THE CONTRACTOR (AND DIVING SUBCONTRACTOR IF APPLICABLE), CONTRACT NUMBER, AND NAMES AND CONTACT INFORMATION FOR KEY PERSONNEL;

**CONTRACTOR – Penco Pacific Environmental Corporation
65 N Nimitz Hwy Pier 14
Honolulu, HI 96817**

**DIVING CONTRACTOR – AMERICAN MARINE CORPORATION
65 N NIMITZ HWY PIER 14
HONOLULU, HI 96817**

ACTIVITY HAZARD ANALYSIS

- #1 UNDERWATER OPERATIONS**
- #2 DIVING EQUIPMENT**
- #3 PERSONNEL MONITORING**
- #4 NON ESSENTIAL PERSONNEL**
- #5 UNSAFE PERSONNEL (INJURY/ILLNESS OF MEMBER OF SURFACE CREW WHILE DIVER IS IN THE WATER)**
- #6 STATION ASSIGNMENTS**
- #7 DANGERS TO DIVER IN WATER OR OPERATIONS**
- #8 DIVER DRESS AND UNDRRESS**
- #9 ACCESS AND IN OUT OF WATER**
- #10 WATER ENTRIES AND EXIT**
- #11 DESCENT TO WORKSITE**
- #12 DESCENT TO WORKSITE**
- #13 UNABLE TO CLEAR EARS**
- #14 DIVER ASCENT**
- #15 DISORIENTATION DESCENT/ASCENT**
- #16 BLOW-UPS**
- #17 FLYING AFTER DIVING**
- #18 ADVERSE WEATHER CONDITIONS**
- #19 HIGH WINDS**
- #20 OPERATION OF H.P. COMPRESSOR**
- #21 CYLINDER VALVE FAILURE**
- #22 SLIPS, TRIPS, FALLS**

- #23 FUELING EQUIPMENT/SPLASHING OF FUEL**
- #24 INAPPROPRIATE FUELS INTO ENGINE**
- #25 EXPLOSIONS**
- #26 SPILLAGE OF FUEL**
- #27 MOBILIZATION OF EQUIPMENT**
- #28 PINCH POINTS**
- #29 RIGGING FAILURE**
- #30 OPERATING L.P. COMPRESSORS**
- #31 CARBON MONOXIDE POISONING**
- #32 OPERATING H.P. COMPRESSOR**
- #33 CATASTROPHIC FAILURE OF H.P. BOTTLES**
- #34 CARBON MONOXIDE POISONING**
- #35 LIVEBOATING**
- #36 LIVEBOATING (BLOWN OFF STATION)**
- #37 LIVEBOATING (VESSEL LOSSES POWER)**
- #38 ALL DIVING ACTIVITIES (VENOMOUS MARINE ANIMAL BITES OR STINGS)**
- #39 AIR FAILURE**
- #40 LOST DIVER**
- #41 MECHANICAL**
- #42 LOSS OF CONSCIOUSNESS**
- #43 DROWNING**
- #44 DECOMPRESSION SICKNESS**
- #45 AIR EMBOLISM**

- #46 CURRENT**
- #47 DIVING IN CONTAMINATED WATER**
- #48 INJURIES TO DIVER**
- #49 STRANGULATION**
- #50 HYPERTHERMIA**
- #51 DIVER TRUCK BY BOAT**
- #52 LOSS OF CONSCIOUSNESS**
- #53 DIFFERENTIAL PRESSURES**
- #54 PNEUMATIC TOOLS (HAND TOOLS)**
- #55 U/W BURNING/WELDING**
- #56 PENETRATION DIVING**
- #57 DIVING IN PETROLEUM CONTAMINATED WATER**
- #58 RIGGING AND CRANE OPERATIONS DURING DIVING**

Activity Hazard Analysis (AHA)

Activity/Work Task: HOTEL PIERS SURVEY	Overall Risk Assessment Code (RAC) (Use highest code)				M	
Project Location: PEARL HARBOR	Risk Assessment Code (RAC) Matrix					
Job Number: 21-2944	Severity	Probability				
Date Prepared: 8 FEB 2021		Frequent	Likely	Occasional	Seldom	Unlikely
Prepared by (Name/Title): Zachary Dixon, Dive Superintendent	Catastrophic	E	E	H	H	M
	Critical	E	H	H	M	L
Reviewed by (Name/Title): See attached signature page	Marginal	H	M	M	L	L
	Negligible	M	L	L	L	L
Notes: (Field Notes, Review Comments, etc.)	Step 1: Review each "Hazard" with identified safety "Controls" and determine RAC (See above)					
	"Probability" is the likelihood to cause an incident, near miss, or accident and identified as: Frequent, Likely, Occasional, Seldom or Unlikely.				RAC Chart	
	"Severity" is the outcome/degree if an incident, near miss, or accident did occur and identified as: Catastrophic, Critical, Marginal, or Negligible				E = Extremely High Risk	
	Step 2: Identify the RAC (Probability/Severity) as E, H, M, or L for each "Hazard" on AHA. Annotate the overall highest RAC at the top of AHA.				H = High Risk	
		M = Moderate Risk				
		L = Low Risk				
Job Steps	Hazards	Controls			RAC	
1. Underwater Operations.	1. Diving Operations.	1. Conduct such operations in accordance with AMC Safe Practices Manual.			1. M	
2. Diving Equipment.	2. Equipment Malfunction.	2a. Ensure equipment is in good repair. 2b. Ensure proper maintenance. 2c. Have back-up equipment and spare parts inventory. 2d. Follow ADC Safe Practices Manual. 2e. Follow US Army Corps of Engineers EM 385-1-1. 2f. Perform complete checklist prior to operation of equipment.			2. L	
3. Personnel Monitoring, Personnel will be observed by the designated person in charge and/or Safety Officer.	3. Monitoring of all potential hazards.	3a. If actions are deemed unsafe the operations will be stopped and changes implemented. 3b. Any and all operations will be IAW AMC Safe Practices Manual and US Army Corps of Engineers EM 385-1-1.			3. M	
4. Non-essential personnel. Area in and adjacent to underwater operations will be kept clear of all non-essential personnel.	4. Interference with diving operations.	4a. AMC Safe Practices Manual, Operations planning. 4b. All non-essential personnel to remain clear of diving operations. 4c. Area in and adjacent to underwater operations will have limited access.			4. L	
5. Any employee not performing underwater or above operations in a safe manner will be removed from operations.	5. Injury to employee or equipment.	5a. If actions are deemed to be unsafe the operations will be stopped and changes implemented. 5b. Any and all operations will be IAW AMC Safe Practices Manual and US Army Corps of Engineers EM 385-1-1, OSHA			5. M	

Activity Hazard Analysis (AHA)

Activity/Work Task: HOTEL PIERS SURVEY	Overall Risk Assessment Code (RAC) (Use highest code)	M	
Project Location: PEARL HARBOR	Risk Assessment Code (RAC) Matrix		
Job Number: 21-2944	Severity	Probability	
Date Prepared: 8 FEB 2021		Frequent Likely Occasional Seldom Unlikely	
Prepared by (Name/Title): Zachary Dixon, Dive Superintendent	Catastrophic	E E H H M	
Reviewed by (Name/Title): See attached signature page	Critical	E H H M L	
	Marginal	H M M L L	
	Negligible	M L L L L	
Notes: (Field Notes, Review Comments, etc.)	Step 1: Review each “ Hazard ” with identified safety “ Controls ” and determine RAC (See above)		
	“ Probability ” is the likelihood to cause an incident, near miss, or accident and identified as: Frequent, Likely, Occasional, Seldom or Unlikely.	RAC Chart	
	“ Severity ” is the outcome/degree if an incident, near miss, or accident did occur and identified as: Catastrophic, Critical, Marginal, or Negligible	E = Extremely High Risk	
	Step 2: Identify the RAC (Probability/Severity) as E, H, M, or L for each “Hazard” on AHA. Annotate the overall highest RAC at the top of AHA.	H = High Risk	
		M = Moderate Risk	
		L = Low Risk	
Job Steps	Hazards	Controls	RAC
6. . Dive Personnel at assigned stations.	6. Injury/Illness of member of surface crew with diver in the water	6a. Diver will be brought to the surface following decompression obligations if any, during which time the injured or ill stricken member will be given first aid. In the event hospitalization is required, the emergency management plan will be implemented.	6. M
8. Diver Dress and Undress.			
9. Access in and out of the water.	7. Danger to diver in water or operations.	7a. Qualified person on station. 7b. AMC Operations Manual. 7c. Project Safety and Health Program. 7d. Dive Plan.	7. M
10. Water Entry and Exit.	8. Inadequate safety equipment and required diver dress.	8a. Ensure proper equipment is used correctly, gear is in good repair. 8b. Use Pre-dive checklist in accordance with AMC Safe Practices Manual.	8. L
	9. Cuts, scratches, puncture wounds.	9a. Proper gloves, wetsuits, chaffing gear.	9. L
	10. Falling down or in the water.	10a. Maintain contact with diver either by means of diver’s tether line or direct contact at all times on deck with tender. 10b. Emergency egress plan for injured diver. All entry into and out of water shall be accomplished by a means which is consistent with US Army Corps of Engineers EM 385-1-1 and/or proper OSHA approved ladders. 10c. Care taken during the process of entering and exiting the water that the diver has sufficient length of umbilical or tether line that should he fall the lines will not become taut.	10. L

Activity Hazard Analysis (AHA)

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	Critical	E	H	H	M	L
Reviewed by (Name/Title): See attached signature page	Marginal	H	M	M	L	L
	Negligible	M	L	L	L	L
Notes: (Field Notes, Review Comments, etc.)	Step 1: Review each "Hazard" with identified safety "Controls" and determine RAC (See above)					
	"Probability" is the likelihood to cause an incident, near miss, or accident and identified as: Frequent, Likely, Occasional, Seldom or Unlikely.				RAC Chart	
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		M = Moderate Risk				
		L = Low Risk				
Job Steps	Hazards	Controls			RAC	
11.12. Descent to Worksite. 13. Diver on Station. 14.15.16. Divers Ascent.	11. Entanglement. 12. Slip and fall into water cutting diver's umbilical. 13. Unable to clear ears. 14. Disorientated. 15. Life support system failure.	11a. Always have divers umbilical squared away before entering and exiting the water. 11b. Diver will notify topside that he is fouled or entangled. Stand-by diver will be alerted. Diver will then attempt to free himself until umbilical is free. If required stand-by diver will be deployed to assist. 12a. Switch to backup breathing supply. Standby diver to free umbilical and assist diver out of water. 12b. AMC Safe Practices Manual. 13. All diving personnel to be healthy without head colds, slow descent to enable diver to clear ears. If diver cannot clear, terminate dive. 14. Slow descent, diver to be familiar with worksite prior to leaving the surface. 15. Ensure proper care and maintenance of equipment. Ensure backup systems are operational. Follow all emergency procedures listed in AMC Safe Practices Manual. Use pre-dive checklist.			11. L 12. L 13. L 14. L 15. M	

Activity Hazard Analysis (AHA)

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Project Location: PEARL HARBOR	Risk Assessment Code (RAC) Matrix						
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	Critical	E	H	H	M	L	
Reviewed by (Name/Title): See attached signature page	Marginal	H	M	M	L	L	
	Negligible	M	L	L	L	L	
Notes: (Field Notes, Review Comments, etc.)	Step 1: Review each "Hazard" with identified safety "Controls" and determine RAC (See above)						
	"Probability" is the likelihood to cause an incident, near miss, or accident and identified as: Frequent, Likely, Occasional, Seldom or Unlikely.				RAC Chart		
	"Severity" is the outcome/degree if an incident, near miss, or accident did occur and identified as: Catastrophic, Critical, Marginal, or Negligible				E = Extremely High Risk		
	Step 2: Identify the RAC (Probability/Severity) as E, H, M, or L for each "Hazard" on AHA. Annotate the overall highest RAC at the top of AHA.				H = High Risk		
				M = Moderate Risk			
				L = Low Risk			
Job Steps	Hazards	Controls				RAC	
17. Flying after Diving. 18. 19. Adverse Weather Conditions. 20. 21. Charging of HP Cylinders.	16. Blow up.	16. Schedule Ascent rates as per AMC Safe Practices Manual, Ascent is monitored by topside dive supervisor and Pneumatic gauges. Tender will also call out depths as hose brought on deck or lowered over the side.				16. L	
	17. Decompression Sickness	17a. Close monitoring of all dive times by the diving supervisor. Divers are to be observed for signs and symptoms of decompression sickness. 17b. Divers will wait at least 12 hours before flying after any dive: This interval should be extended to 24 hours following multiple days of repetitive dives.				17. M	
	18. High surf and/or strong surge.	18. Diving operations will be aborted should the sea conditions warrant. The designated person in charge will have the final say with regard to adverse weather conditions. At no time will diving operations be conducted if there is potential risk to the diver in the water.				18. L	
	19. High Wind.	19. Diving will be aborted should sea conditions warrant.				19. L	
	20. Over pressurization of cylinders.	20. Ensure consistent monitoring of HP cylinders while charging.				20. M	
	21. Cylinder valve failure.	21a. Cylinder and valves in good repair. 21b. Ensure cylinders are current with hydrostatic testing				21. L	

Activity Hazard Analysis (AHA)

Activity/Work Task: HOTEL PIERS SURVEY	Overall Risk Assessment Code (RAC) (Use highest code)	M	
Project Location: PEARL HARBOR	Risk Assessment Code (RAC) Matrix		
Job Number: 21-2944	Severity	Probability	
Date Prepared: 8 FEB 2021		Frequent Likely Occasional Seldom Unlikely	
Prepared by (Name/Title): Zachary Dixon, Dive Superintendent	Catastrophic	E E H H M	
Reviewed by (Name/Title): See attached signature page	Critical	E H H M L	
	Marginal	H M M L L	
	Negligible	M L L L L	
Notes: (Field Notes, Review Comments, etc.)	Step 1: Review each “Hazard” with identified safety “Controls” and determine RAC (See above)		
	“Probability” is the likelihood to cause an incident, near miss, or accident and identified as: Frequent, Likely, Occasional, Seldom or Unlikely.	RAC Chart	
	“Severity” is the outcome/degree if an incident, near miss, or accident did occur and identified as: Catastrophic, Critical, Marginal, or Negligible	E = Extremely High Risk	
	Step 2: Identify the RAC (Probability/Severity) as E, H, M, or L for each “Hazard” on AHA. Annotate the overall highest RAC at the top of AHA.	H = High Risk	
		M = Moderate Risk	
		L = Low Risk	
Job Steps	Hazards	Controls	RAC
22. 23. 24. 25. Fueling of Equipment.	22. Slips, trips and falls.	22. Enforce good housekeeping	22. L
26. Transporting fuel to Jobsite.	23. Splashing of fuel.	23a. Ensure fuel containers are in good repair and consistent with requirements of EM 385-1-1, and are not leaking. 23b. Use funnels when pouring or pumping fuel.	23. L
27. 28. 29. Mobilization of Equipment.	24. Inappropriate fuel into engine.	24a. Store fuel in appropriate containers. 24b. All containers as well as equipment shall be properly labeled.	24. L
	25. Explosion	25a. Do not fuel equipment while engine is running. Fill compressors prior to dive operations. Top off during diver turn around and/or breaks. 25b. No smoking within 50’ of compressors or fuel storage areas.	25. M
	26. Spillage of fuel.	26. Ensure containers meet OSHA specifications. Use funnels when pouring fuel.	26. L
	27. Equipment not lashed down.	27. Ensure all equipment is secured from shifting or falling during transportation and use.	27. L
	28. Pinch Points.	28. Personnel to stay clear of crane loads and required use of tag lines.	28. M
	29. Rigging Failure	29. Use only approved rigging equipment and proper techniques.	29. L

Activity Hazard Analysis (AHA)

Activity/Work Task: HOTEL PIERS SURVEY	Overall Risk Assessment Code (RAC) (Use highest code)	M				
Project Location: PEARL HARBOR	Risk Assessment Code (RAC) Matrix					
Job Number: 21-2944	Severity	Probability				
Date Prepared: 8 FEB 2021		Frequent	Likely	Occasional	Seldom	Unlikely
Prepared by (Name/Title): Zachary Dixon, Dive Superintendent	Catastrophic	E	E	H	H	M
	Critical	E	H	H	M	L
Reviewed by (Name/Title): See attached signature page	Marginal	H	M	M	L	L
	Negligible	M	L	L	L	L
Notes: (Field Notes, Review Comments, etc.)	Step 1: Review each "Hazard" with identified safety "Controls" and determine RAC (See above)					
	"Probability" is the likelihood to cause an incident, near miss, or accident and identified as: Frequent, Likely, Occasional, Seldom or Unlikely.				RAC Chart	
	"Severity" is the outcome/degree if an incident, near miss, or accident did occur and identified as: Catastrophic, Critical, Marginal, or Negligible				E = Extremely High Risk	
	Step 2: Identify the RAC (Probability/Severity) as E, H, M, or L for each "Hazard" on AHA. Annotate the overall highest RAC at the top of AHA.				H = High Risk	
		M = Moderate Risk				
		L = Low Risk				
Job Steps	Hazards	Controls				RAC
30. 31. Operating LP Compressors.	30. Compressor handles kick back causing, bruises, cuts, or fractures to personnel.	30. All personnel to be aware and trained in safe starting procedures and AMC Safe Practices Manual.				30. L
32. 33. 34. Operating HP Compressors.	31. Carbon Monoxide poisoning.	31a. All air compressor intakes shall be located away from/ upwind of areas containing exhaust of other contaminants. Oil-lubricated compressors containing a petroleum or potential CO-producing lubricant for the air pressurization pistons will NOT be used. 31b. Air compressor systems will be tested by means of sampling at the connection to the distribution system.				31. M
	32. Charging HP bottles with contaminated air.	32. Ensure filter elements have been changed according to manufacturer specifications. Have intake filter located upwind and clear of any contaminated air.				32. L
	33. Catastrophic failure of HP bottles.	33. Ensure all bottles are within hydrostatic testing criteria. Monitor filling of bottles during entire process.				33. L
	34. Carbon Monoxide poisoning	34. All air compressor intakes shall be located away from/ upwind of areas containing exhaust of other contaminants. Oil-lubricated compressors containing a petroleum or potential CO-producing lubricant for the air pressurization pistons will NOT be used. 31b. Air compressor systems will be tested by means of sampling at the connection to the distribution system.				34. M

Activity Hazard Analysis (AHA)

Activity/Work Task: HOTEL PIERS SURVEY	Overall Risk Assessment Code (RAC) (Use highest code)	M				
Project Location: PEARL HARBOR	Risk Assessment Code (RAC) Matrix					
Job Number: 21-2944	Severity	Probability				
Date Prepared: 8 FEB 2021		Frequent	Likely	Occasional	Seldom	Unlikely
Prepared by (Name/Title): Zachary Dixon, Dive Superintendent	Catastrophic	E	E	H	H	M
Reviewed by (Name/Title): See attached signature page	Critical	E	H	H	M	L
	Marginal	H	M	M	L	L
	Negligible	M	L	L	L	L
Notes: (Field Notes, Review Comments, etc.)	Step 1: Review each "Hazard" with identified safety "Controls" and determine RAC (See above)					
	"Probability" is the likelihood to cause an incident, near miss, or accident and identified as: Frequent, Likely, Occasional, Seldom or Unlikely.				RAC Chart	
	"Severity" is the outcome/degree if an incident, near miss, or accident did occur and identified as: Catastrophic, Critical, Marginal, or Negligible				E = Extremely High Risk	
	Step 2: Identify the RAC (Probability/Severity) as E, H, M, or L for each "Hazard" on AHA. Annotate the overall highest RAC at the top of AHA.				H = High Risk	
		M = Moderate Risk		L = Low Risk		
Job Steps	Hazards	Controls				RAC
35. 36. 37. Live Boating.	35. Diver's umbilical fouled in the boat wheel.	35. Dive Supervisor is to ensure that the diver's umbilical is tended tightly from the bow and that the diver's bubbles are clearly visible from the bow and forward of the bow.				35. M
	36. Live boating vessel is blown off station	36a. Dive Supervisor is to ensure that the boat is able to remain on station and if Captain is unable to, then live boating operations must cease. 36b. Dive Supervisor will ensure that the diver returns to the vessel immediately and that the diver's safety is maintained.				36. M
	37. Live boating vessel loses power; rendered adrift	37a. Dive Supervisor is to ensure that the live boating vessel is sufficient to handle the sea conditions. If the dive supervisor deems the sea conditions pose danger to the dive crew and operations he shall abort all diving operations. 37b. If vessel loses power or is incapacitated, dive ops will be aborted and diver will be brought to the surface.				37. M

Activity Hazard Analysis (AHA)

Activity/Work Task: HOTEL PIERS SURVEY	Overall Risk Assessment Code (RAC) (Use highest code)				L	
Project Location: PEARL HARBOR	Risk Assessment Code (RAC) Matrix					
Job Number: 21-2944	Severity	Probability				
Date Prepared: 8 FEB 2021		Frequent	Likely	Occasional	Seldom	Unlikely
Prepared by (Name/Title): Zachary Dixon, Dive Superintendent	Catastrophic	E	E	H	H	M
	Critical	E	H	H	M	L
Reviewed by (Name/Title): See attached signature page	Marginal	H	M	M	L	L
	Negligible	M	L	L	L	L
Notes: (Field Notes, Review Comments, etc.)	Step 1: Review each "Hazard" with identified safety "Controls" and determine RAC (See above)					
	"Probability" is the likelihood to cause an incident, near miss, or accident and identified as: Frequent, Likely, Occasional, Seldom or Unlikely.				RAC Chart	
	"Severity" is the outcome/degree if an incident, near miss, or accident did occur and identified as: Catastrophic, Critical, Marginal, or Negligible				E = Extremely High Risk	
	Step 2: Identify the RAC (Probability/Severity) as E, H, M, or L for each "Hazard" on AHA. Annotate the overall highest RAC at the top of AHA.				H = High Risk	
		M = Moderate Risk				
		L = Low Risk				
Job Steps	Hazards	Controls			RAC	
38. 39. 40. 41. All Diving Activities.	38. Venomous Marine Animal Bites or Stings.	38a. All divers will become familiar with venomous marine animals in the area. 38b. Divers will be reminded of dangers during daily pre-dive meetings. 38c. In case of injury action will be taken following the Emergency Management Plan.			38. L	
	39. Air Failure.	39. The secondary air will be provided by bail out bottle and topside emergency H.P. air. Should there be a failure, secondary air will be activated and the dive will be terminated immediately. The standby diver will be deployed to assist			39.L	
	40. Lost Diver.	40. Divers will be tended at all times. In the event the umbilical becomes severed the stand-by Diver will launch on the effected divers bubbles and bring him to the surface. Diver will be monitored for any decompression obligations and decompressed accordingly.			40. L	
	41. Mechanical.	41. Secure topside objects that may accidentally fall on diver(s). Handle tools and equipment carefully and insure that safe practice procedures are being complied with.			41.L	

Activity Hazard Analysis (AHA)

Activity/Work Task: HOTEL PIERS SURVEY	Overall Risk Assessment Code (RAC) (Use highest code)	M				
Project Location: PEARL HARBOR	Risk Assessment Code (RAC) Matrix					
Job Number: 21-2944	Severity	Probability				
Date Prepared: 8 FEB 2021		Frequent	Likely	Occasional	Seldom	Unlikely
Prepared by (Name/Title): Zachary Dixon, Dive Superintendent	Catastrophic	E	E	H	H	M
	Critical	E	H	H	M	L
Reviewed by (Name/Title): See attached signature page	Marginal	H	M	M	L	L
	Negligible	M	L	L	L	L
Notes: (Field Notes, Review Comments, etc.)	Step 1: Review each "Hazard" with identified safety "Controls" and determine RAC (See above)					
	"Probability" is the likelihood to cause an incident, near miss, or accident and identified as: Frequent, Likely, Occasional, Seldom or Unlikely.				RAC Chart	
	"Severity" is the outcome/degree if an incident, near miss, or accident did occur and identified as: Catastrophic, Critical, Marginal, or Negligible				E = Extremely High Risk	
	Step 2: Identify the RAC (Probability/Severity) as E, H, M, or L for each "Hazard" on AHA. Annotate the overall highest RAC at the top of AHA.				H = High Risk	
		M = Moderate Risk				
		L = Low Risk				
Job Steps	Hazards	Controls				RAC
42. 43. 44. 45. All Diving Activities.	42. Loss of Communication.	42. All communication wires and batteries will be checked daily. Communications will be checked on all helmets prior to diver entering the water. Dive operations will be terminated in a safe orderly fashion using line-pull signals if voice communications is lost.				42. M
	43. Drowning.	43. Adequate training, periodic drills in emergency procedures, utilize proper equipment and assure that equipment is in good condition. Ensure that all tenders are competent and well briefed on emergency procedures. Proper entry/exit from water. Support personnel to wear floatation vest when applicable.				43. M
	44. Decompression Sickness.	44. U S Navy Dive Manual Decompression tables will be used at all times. The bottom time and schedule selected from the appropriate table shall reflect the exact or next deeper depth and exact or longer bottom time.				44. M
	45. Air Embolisms.	45. Rate of ascent will not exceed 30FPM. A one minute vent will be conducted prior to leaving the bottom to insure breathing control. Ascents will be conducted along a weighted and depth marked down line. Divers will not hold their breath on ascent.				45. M

Activity Hazard Analysis (AHA)

Activity/Work Task: HOTEL PIERS SURVEY	Overall Risk Assessment Code (RAC) (Use highest code)				M	
Project Location: PEARL HARBOR	Risk Assessment Code (RAC) Matrix					
Job Number: 21-2944	Severity	Probability				
Date Prepared: 8 FEB 2021		Frequent	Likely	Occasional	Seldom	Unlikely
Prepared by (Name/Title): Zachary Dixon, Dive Superintendent	Catastrophic	E	E	H	H	M
	Critical	E	H	H	M	L
Reviewed by (Name/Title): See attached signature page	Marginal	H	M	M	L	L
	Negligible	M	L	L	L	L
Notes: (Field Notes, Review Comments, etc.)	Step 1: Review each "Hazard" with identified safety "Controls" and determine RAC (See above)					
	"Probability" is the likelihood to cause an incident, near miss, or accident and identified as: Frequent, Likely, Occasional, Seldom or Unlikely.				RAC Chart	
	"Severity" is the outcome/degree if an incident, near miss, or accident did occur and identified as: Catastrophic, Critical, Marginal, or Negligible				E = Extremely High Risk	
	Step 2: Identify the RAC (Probability/Severity) as E, H, M, or L for each "Hazard" on AHA. Annotate the overall highest RAC at the top of AHA.				H = High Risk	
		M = Moderate Risk				
		L = Low Risk				
Job Steps	Hazards	Controls			RAC	
46. 47. 48. 49. 50. All Diving Activities.	46. Current.	46. If current is so strong or exceeds one knot and diver cannot maintain footing the dive will be terminated.			46. M	
	47. Diving in Contaminated water	47. If diver must enter contaminated water he will wear a full drysuit and have appropriate decontamination team standing by for egress procedures.			47. L	
	48. Injury to Diver.	48. Diver will perform all safety precautions to prevent possible injuries. Comprehensive pre-dive meeting to take place prior to each dive. Emergency Management Plan will be followed.			48.M	
	49. Strangulation.	49. Do not dive with obstructive objects in mouth, such as dentures, gum or tobacco.			49.L	
	50. Hypothermia.	50. Dress appropriate for underwater temperature, ascend at first sign of discomfort.			50.L	

Activity Hazard Analysis (AHA)

Activity/Work Task: HOTEL PIERS SURVEY		Overall Risk Assessment Code (RAC) (Use highest code)				M	
Project Location: PEARL HARBOR		Risk Assessment Code (RAC) Matrix					
Job Number: 21-2944		Severity	Probability				
Date Prepared: 8 FEB 2021			Frequent	Likely	Occasional	Seldom	Unlikely
Prepared by (Name/Title): Zachary Dixon, Dive Superintendent		Catastrophic	E	E	H	H	M
Reviewed by (Name/Title): See attached signature page		Critical	E	H	H	M	L
		Marginal	H	M	M	L	L
Notes: (Field Notes, Review Comments, etc.)		Negligible	M	L	L	L	L
		Step 1: Review each "Hazard" with identified safety "Controls" and determine RAC (See above)					
		"Probability" is the likelihood to cause an incident, near miss, or accident and identified as: Frequent, Likely, Occasional, Seldom or Unlikely.				RAC Chart	
		"Severity" is the outcome/degree if an incident, near miss, or accident did occur and identified as: Catastrophic, Critical, Marginal, or Negligible				E = Extremely High Risk	
		Step 2: Identify the RAC (Probability/Severity) as E, H, M, or L for each "Hazard" on AHA. Annotate the overall highest RAC at the top of AHA.				H = High Risk	
						M = Moderate Risk	
						L = Low Risk	
Job Steps	Hazards	Controls				RAC	
51. All Diving Activities	51. Diver struck by boat.	51a. Dive flags will be posted around dive site prior to entering the water. All topside personnel will watch for boat traffic to prevent any craft from entering the dive area. Small work skiff operators will not be permitted to operate without prior coordinating with the dive supervisor. 51b. Dive flags will be placed on the dive boat at a height to make visible to vessel traffic				51. M	
52. Loss of consciousness.	52. Drowning.	52. In the event diver losses consciousness on bottom, action will be taken according to the Emergency Management Plan. The stand-by diver will be deployed. EMS will be called. Stand-by will bring stricken diver to the surface at 30 fpm and holding the divers head and neck to ensure positive airway. Stand-by will assist connecting divers harness to emergency man-lift. Diver will be lifted out of water and recovered to staging area. Tenders will assist removing divers gear and recovering stand-by diver. The diver will then be treated with appropriate first aid until EMS arrives.				52. M	

Activity Hazard Analysis (AHA)

Activity/Work Task: HOTEL PIERS SURVEY	Overall Risk Assessment Code (RAC) (Use highest code)	M				
Project Location: PEARL HARBOR	Risk Assessment Code (RAC) Matrix					
Job Number: 21-2944	Severity	Probability				
Date Prepared: 8 FEB 2021		Frequent	Likely	Occasional	Seldom	Unlikely
Prepared by (Name/Title): Zachary Dixon, Dive Superintendent	Catastrophic	E	E	H	H	M
Reviewed by (Name/Title):	Critical	E	H	H	M	L
	Marginal	H	M	M	L	L
	Negligible	M	L	L	L	L
Notes: (Field Notes, Review Comments, etc.)	Step 1: Review each "Hazard" with identified safety "Controls" and determine RAC (See above)					
	"Probability" is the likelihood to cause an incident, near miss, or accident and identified as: Frequent, Likely, Occasional, Seldom or Unlikely.				RAC Chart	
	"Severity" is the outcome/degree if an incident, near miss, or accident did occur and identified as: Catastrophic, Critical, Marginal, or Negligible				E = Extremely High Risk	
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Job Steps	Hazards	Controls				RAC
53. Diving Operations	53. Differential Pressure.	53. Differential Pressure is not anticipated however any potential situation will be analyzed and neutralized before the diver works in that area. Lockout/ tagout procedures will be used to secure pumps and/ or equipment which could create a differential pressure situation.				53.M
54. Diving Operations, (Hand Tools)	54. loss of tools, air whip being disconnected and striking diver	54. Verify that all tools have proper lanyards, and lower to the diver upon his request. All air tools and hoses shall be in good working order. QD couplings will be fitted with break-away lanyards and the air to tool to be shut off immediately if air hose failure occurs.				54.M
55. Diving Operations, U/W cutting and welding.	55. Electrocutation / Explosion.	55. The importance of safety must be constantly emphasized in U/W cutting and welding, the life and safety of the diver is always dependent on the strict observance of safety regulations IAW AMC Safe Practices Manual. 55a. Standard D.C. welding power sources capable furnishing a minimum of 300 amperes is satisfactory for U/W applications. 55b. A positive operating/disconnecting knife switch must be used in the electrical connection.				55.M
		55c. The tender shall not operate the switch, or open, or close the				

<p>55. Diving Operations, U/W cutting and welding Continued.</p>	<p>55. Electrocution / Explosion Continued.</p>	<p>circuit, unless specifically directed by the diver, or the diving supervisor, and when so directed, they shall confirm each change to the diver.</p> <p>55d. Always provide for adequate ventilation (venting) of the area behind and above the cut to provide the escape of gases generated during cutting. U/W cutting operations can lead to the build-up of potentially hazardous explosive gas mixtures that may be ignited by a spark from the ignited cutting rod.</p> <p>55e. Always know what is behind the material being cut.</p> <p>55f. Always keep oil and grease away from oxygen cylinders, valves, regulators, hoses and fittings.</p> <p>55g. Never use alternating current (AC) for any U/W operation.</p> <p>55h. Always ensure only direct current (DC) from a known power source goes into the water.</p> <p>55i. Never touch live electrical parts. Always ensure the electrical power is off when changing cutting or welding electrodes to reduce the risk of shock or electrically caused damage to the diver's life support equipment.</p> <p>55j. Always wear adequate protective clothing. The diver must be equipped with diving dress in good condition.</p> <p>55k. Never use this equipment without proper eye protection. Always use an approved welding lens with a shade appropriate for the conditions of the water.</p> <p>55l. Always wear rubber electrical insulating gloves when using this equipment.</p>	
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Activity Hazard Analysis (AHA)

Activity/Work Task: HOTEL PIERS SURVEY	Overall Risk Assessment Code (RAC) (Use highest code)				M	
Project Location: PEARL HARBOR	Risk Assessment Code (RAC) Matrix					
Job Number: 21-2944	Severity	Probability				
Date Prepared: 8 FEB 2021		Frequent	Likely	Occasional	Seldom	Unlikely
Prepared by (Name/Title): Zachary Dixon, Dive Superintendent	Catastrophic	E	E	H	H	M
	Critical	E	H	H	M	L
Reviewed by (Name/Title): See attached signature page	Marginal	H	M	M	L	L
	Negligible	M	L	L	L	L
Notes: (Field Notes, Review Comments, etc.)	Step 1: Review each "Hazard" with identified safety "Controls" and determine RAC (See above)					
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					M = Moderate Risk	
					L = Low Risk	
Job Steps	Hazards	Controls			RAC	
56. Penetration Diving	56a. Diver Entrapment 56b. Loss of Surface Supplied Air 56c. Differential Pressure	<p>56. The importance of safety must be constantly emphasized in penetration diving, the life and safety of the diver is always dependent on the strict observance of safety regulations IAW AMC Safe Practices Manual, USACE EM 385 1-1 and the International Consensus Standards For Commercial Diving and Underwater Operations. Prior to diving emergency Man-lift will be assembled and ready.</p> <p>56a. Only done in surface supplied mode. The diver will be constantly tended at the entrance with stand-by diver ready to deploy at a moments notice. There will be constant communication to the surface. If at anytime communication is lost the diver/tender will use line pull signals and the dive will be terminated.</p> <p>56b. The divers air pressure will be constantly monitored by the diving supervisor. In the event there is a failure of the primary air source the diving supervisor will shift to the secondary air supply. In addition the diver will wear a back-up/bail-out bottle at all times. In the event there is an air loss and emergency procedures are implemented the dive will be aborted.</p> <p>56c. All Situations will analyzed for potential differential pressures prior to beginning a task. Lockout/ tagout procedures will be followed prior to diving</p>			56. M	

Activity Hazard Analysis (AHA)

Activity/Work Task: HOTEL PIERS SURVEY	Overall Risk Assessment Code (RAC) (Use highest code)				M	
Project Location: PEARL HARBOR	Risk Assessment Code (RAC) Matrix					
Job Number: 21-2944	Severity	Probability				
Date Prepared: 8 FEB 2021		Frequent	Likely	Occasional	Seldom	Unlikely
Prepared by (Name/Title): Zachary Dixon, Dive Superintendent	Catastrophic	E	E	H	H	M
	Critical	E	H	H	M	L
Reviewed by (Name/Title): See attached signature page	Marginal	H	M	M	L	L
	Negligible	M	L	L	L	L
Notes: (Field Notes, Review Comments, etc.)	Step 1: Review each "Hazard" with identified safety "Controls" and determine RAC (See above)					
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					L = Low Risk	
Job Steps	Hazards	Controls			RAC	
57. Diving in Petroleum Contaminated water	<p>57. Petroleum products can cause chronic And acute reaction to skin, eyes, and other Sensitive areas of the body</p> <p>Chemical skin burns may occur from contact with petroleum products</p> <p>Spreading contamination topside when Diver returns to surface</p> <p>Spreading contamination at dive station And job site</p>	<p>Divers will be dressed appropriately in oil resistant gloves, Protective outer layer, and enclosed diving helmets.</p> <p>Tenders will be dressed appropriately in oil resistant gloves and protective other layer clothes.</p> <p>If large quantities of petroleum products are found to exist and the potential for contact with the diver exists then appropriate dry suits, fully enclosed diving helmets, and chemically resistant gloves shall be used.</p> <p>Appropriate decontamination procedures will be followed for diver egress.</p> <p>Appropriate number of decontamination team members will be present as necessary.</p> <p>Divers and gear will be decontaminated prior to reentering the water.</p>			57. M	

Activity Hazard Analysis (AHA)

Activity/Work Task: HOTEL PIERS SURVEY	Overall Risk Assessment Code (RAC) (Use highest code)	M				
Project Location: PEARL HARBOR	Risk Assessment Code (RAC) Matrix					
Job Number: 21-2944	Severity	Probability				
Date Prepared: 8 FEB 2021		Frequent	Likely	Occasional	Seldom	Unlikely
Prepared by (Name/Title): Zachary Dixon, Dive Superintendent	Catastrophic	E	E	H	H	M
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Reviewed by (Name/Title): See attached signature page	Marginal	H	M	M	L	L
	Negligible	M	L	L	L	L
Notes: (Field Notes, Review Comments, etc.)	Step 1: Review each "Hazard" with identified safety "Controls" and determine RAC (See above)					
	"Probability" is the likelihood to cause an incident, near miss, or accident and identified as: Frequent, Likely, Occasional, Seldom or Unlikely.				RAC Chart	
	"Severity" is the outcome/degree if an incident, near miss, or accident did occur and identified as: Catastrophic, Critical, Marginal, or Negligible				E = Extremely High Risk	
	Step 2: Identify the RAC (Probability/Severity) as E, H, M, or L for each "Hazard" on AHA. Annotate the overall highest RAC at the top of AHA.				H = High Risk	
		M = Moderate Risk		L = Low Risk		
Job Steps	Hazards	Controls				RAC
58. Rigging and Crane Operations during diving	58a. Diver struck by rigging or load 58b. Diver fouled in rigging 58c. Pinch/ crush injury	58a. All lifting operations involving diving will be planned prior to beginning diving. Dive supervisor will have direct communication with the crane operator and the diver at all times. Diver will be directed out of the way prior to the crane actively moving. The crane operator will not move the crane until instructed that the diver is clear and ready. 58b. Prior to lifting a load the tender will make sure umbilical is clear to the surface. The diver will check that umbilical is not fouled 58c. Diver will keep clear of rigging and load during lifting operations. Diver and umbilical will be kept clear of suspended loads.				58. M

Equipment to be used	Training Requirements	Inspection Requirements
<p>Surface supplied diving equipment Reserve Air Supply L.P. Dive Compressors</p> <p>Ladder Dive Platform Standard Surface Supplied Helmet</p> <p>Personal Protective Equipment: Work boots, hard hat, gloves, Hearing protection, high visibility Clothing, protective clothing, Floatation vest.</p> <p>HP Cylinders HP Compressors Fuel Containers Fuel Funnels AMC Flat Bed Truck</p> <p>Rigging</p> <p>First Aid Kit Emergency Oxygen Kit</p>	<p>US Army Corps of Engineers EM 385-1-1 As per US Army Corps of Engineers, and ADI Safe Practices Manual.</p> <p>OSHA Approved US Army Corps EM 385 1-1 ADCI Safe Practices</p> <p>AMC Employee Handbook. EM 385 1-1</p> <p>US Army Corps of Engineers and EM385-1-1 US Army Corps of Engineers and EM385-1-1 EM385-1-1</p> <p>Safe Rigging Training</p> <p>ADCI Safe Practices.</p>	<p>The Diving Supervisor will be in charge and shall be trained or experienced in the task and responsible for the safety of the crew. All personnel will be informed of the requirements set forth by US Army Corps of Engineers EM 385-1-1</p> <p>Pre dive checklist will be used daily prior to diving.</p> <p>Pre-operation/Pre-task safety training prior to beginning work activities.</p> <p>PPE inspected daily prior to use.</p> <p>Equipment inspected prior to use and throughout shift as necessary.</p>

APPROVAL SIGNATURE PAGE

AHA for: SALT WATER SCREEN HOUSE B149A REPAIRS

Prepared By: Zachary Dixon

Print Name/Designation/Date:
Signature:

Zachary Dixon
Diving Superintendent, 19 Jan 2021

Site Safety & Health Officer:

Print Name/Designation/Date:
Signature:

Government Representative:

Print Name/Designation/Date:
Signature:

Project Superintendent:

Print Name/Designation/Date:
Signature:

AHA discussed with work crew at Preparatory Meeting Held On:					
Print	Sign	Print	Sign	Print	Sign

Print	Sign	Print	Sign	Print	Sign

EMERGENCY MANAGEMENT PLAN

A) NEAREST OPERATIONAL RECOMPRESSION CHAMBER:

Facility: University Health Partners of Hawaii (808) 587-3425
Hyperbaric Treatment Center
Kuakini Medical Center HPM Tower, Ground Floor
347 N Kuakini St
Honolulu, HI 96817

Divers Alert Network (919) 684-8111
Duke University Medical Center
Durham, NC

B) NEAREST HOSPITAL AND PHONE NUMBERS

Hospital: Pali Momi Medical Center (808) 486-6000
98-1079 Moanalua Rd.
Aiea, HI 96701

Primary Number for Emergencies - 911

Pearl Harbor Ambulance (808) 471-7116
Pearl Harbor Fire and Police (808) 471-7117

C) LOCATION OF NEAREST USCG RESCUE COORDINATION CENTER

U.S. Coast Guard (USCG) Rescue Center
400 Sand Island Pkwy
Honolulu, H I 96819
(808) 842-2640

Search and Rescue Emergencies: (808) 541-2450
Joint Rescue Center: (808) 541-2500

Air transportation arrangements	Coast Guard	1 (800) 552-6458
	Coast Guard	(808) 541-2450
Air rescue	Cellular	*USCG
Air rescue	VHF	Channel 16

Hawaii Life Flight (808) 201 2911
AMR Air Hawaii (800) 424 7060

D) NAMES OF DIRECTLY INVOLVED PERSONNEL

Ford Silva, Penco Site Supervisor	(808) 545 5195
DC Carter, Response and Safety Manager	(808) 545 5195
Zachary Dixon, AMC Diving Superintendent	(808) 478-0086
Christian McGuire, Dive Supervisor	(808) 545 5190
Triton Marine Project Superintendent	(808) 488-0854

E) COMMUNICATIONS

Prior to beginning diving each day the diving supervisor will contact the following:

AMC Dive Superintendent	(808) 478-0086
Penco Site Supervisor	(808) 545-5195
Pearl Harbor Port Operations	(808) 474-6262

Prior to the first day of diving operations, the Dive Superintendent will contact the Honolulu Fire Department at (808) 689-6111 and the Hyperbaric Treatment Facility at (808) 587-3425 to ensure that those organizations are aware of scheduled activities and are capable of providing emergency support services

F) DESCRIPTION OF AN EMERGENCY VICTIM TRANSPORT PLAN

In the event of an injury, management will be coordinated by the Diving Supervisor. Immediate first aid will be administered, during which time if an ambulance is required 911 will be contacted. The injured person will be transported to the nearest shore side facility. The location will be coordinated with the emergency management services to ensure the fastest possible treatment for the injured person. If need be the injured person will be immobilized and transported in a stokes litter man basket.

In the event the injury is diving related the stricken diver will be treated immediately with 100% oxygen on scene, 911 will be contacted and an ambulance dispatched. The diver will be transported to the nearest shore side facility. The location will be coordinated with the emergency management personnel to ensure the fastest possible treatment. The diver will be transported to the nearest recompression chamber.

G) PROCEDURES AND PHONE NUMBERS OR OTHER MEANS OF COMMUNICATIONS TO ACTIVATE EMERGENCY SERVICES AT THE FACILITY WHERE THE WORK IS BEING PERFORMED

The Diving supervisor shall have a mobile phone with the phone numbers for Ambulance, Pearl Harbor Port Ops, Divers Alert Network, Hyperbaric facility, and Project manager. In the event of incident the diving supervisor will contact the appropriate groups and began the emergency management. The diving supervisor will also have a VHF radio.

H) PROCEDURES TO DEAL WITH ENTRAPPED OR FOULED DIVER INCLUDING FOULED UMBILICAL (SUCTION AND ENTANGLEMENT/DEBRIS)

Diver will notify topside that he is fouled; if communications are lost the diver will give the proper line pull signals. Determine the extent of entrapment. Diver will attempt to free himself, if required stand-by diver will be deployed to assist the fouled diver. When diver is free, if shaken the diver will be brought to the surface. Terminate dive, and commence decompression if required.

I) ACTIONS UPON LOSS OF VITAL SUPPORT EQUIPMENT

In the event vital support equipment is lost, topside will shift to secondary air supply and the stand-by diver will be alerted. The diver will be brought to the surface, the dive terminated, and the diver brought up on deck. Investigate problem and determine repairs.

J) ACTIONS UPON LOSS OF AIR SUPPLY

Shift to secondary air supply. The diver will be notified to prepare to activate his emergency gas supply in his bail-out. The stand-by diver will be alerted. Put air to diver's pneumo hose. The diver will ensure air bubbles exiting from pneumo hose before inserting into neck dam if required. Terminate dive, commence decompression if required, and bring the diver up on surface. Diving will not begin again until the primary air supply is restored.

K) ACTIONS UPON LOSS OF COMMUNICATIONS

In the event communications is lost, attempt line pull signals (see Table 10.4.1). Notify the stand-by diver. Put air to the diver's pneumo hose (SSA mode). If line pull signals are established, signal 4 pulls and terminate the dive. If no answer deploy stand-by to investigate, bring diver to the surface at a rate of 30 fpm taking consideration for any decompression obligations.

L) LOST DIVER PLAN

Surface Supplied diving mode prevents the possibility of a lost diver. In the event the diver becomes lost, the tender will come up tight on the dive umbilical and the diver can follow it back to the surface. In addition all topside personnel will watch for the diver's bubbles. If necessary the Stand-by diver will be deployed with the stricken diver's umbilical in hand until which time he finds the lost diver. Both divers will then be brought to the surface.

M) INJURED DIVER PLAN

Diver will inform topside. Stand-by diver will be notified. Determine nature and extent of injury. If required diver will provide “self-aid”. If required, deploy stand-by diver to assist, administer first aid and evaluate injury. Stand-by diver will remain with diver. Begin decompression if required (Do not omit decompression except when severity of injury indicates a greater risk than omitting decompression). Request required medical assistance and emergency evacuation (if required). Conduct field neurological exam and relay dive profile to EMS personnel.

N) ACTIONS UPON DISCOVERY OF FIRE

In the event of fire, isolate any oxygen and secure electronic equipment connected with affected equipment. Extinguish fire and secure equipment. Determine damage and effect on the diver. If required terminate dive and commence decompression if applicable. Notify local fire department, call 911.

O) DIVER BLOW UP/RAPID ASCENT TO SURFACE

Diver will exhale forcibly all the way to the surface. Tender will take up slack in diver’s umbilical, (if applicable). Remove the diver from the water. If decompression was omitted, treat for omitted decompression in accordance with section 9-12.10 AMC Diving Safe Practices Manual

P) DIVER RECOVERY RESCUE PROCEDURES

In the event the diver becomes unconscious on the bottom or requires rescue the stand-by diver will be deployed. The Diving Supervisor will notify emergency medical services. Stand-by diver will follow the stricken diver’s umbilical hand over hand until he reaches the diver. At that point the stand-by diver will bring the stricken diver to the surface while the tenders haul them up at a rate of 30fpm. The stand-by diver will hold the stricken divers head and neck in position to ensure a positive open airway. The best locations for recovery will be thru the manhole entrances from which the diver entered the water. The emergency Man-Lift will be positioned over man-hole entrance. The standby diver will assist attaching emergency man-lift to the diver. The diver will be recovered to the deck. The tender will remove the divers gear and if necessary position the diver in a safe place to begin first aid/CPR as required. The best location to conduct first aid will be on the grating of the Salt Water Screen House. The diving supervisor and 2nd tender will recover the standby diver; once the standby diver is undressed both he and the diving supervisor will assist as necessary. A complete neurological exam will be performed, if practical, in accordance with chapter 14.10 of the Safe Practices Manual. Stricken diver will be transported to nearest shore side facility to meet EMS personnel.

Q) INJURY/ILLNESS OF MEMBER OF SURFACE CREW WITH DIVER IN THE WATER

If for any reason one of the members of the surface crew is injured (other than minor cut or scrape) the dive will be terminated immediately. Once the diver is on deck immediate first aid will be administered to the stricken individual. During termination of dive other topside personnel may render assistance to the injured person.

R) EMERGENCY EVACUATION PLAN

If the order is given for an emergency evacuation the dive will be terminated immediately. The diving supervisor will contact the diver through the radio and the diver will be brought to the surface and undressed. The dive team will then move to evacuate the area. If diving from a boat or barge, the crew will depart the area by boat and proceed out of the area or to the nearest shore side facility depending on the emergency. If diving from the pier, the dive team will evacuate the area by foot or vehicle, whichever method is best for the emergency. If the diver has omitted decompression in order to evacuate, an ambulance will be contacted to transport the diver to nearest hyperbaric facility.

S) EMERGENCY EQUIPMENT

The Following Emergency Equipment will be at the Dive Station:

1 ea. Cellular telephone

1 ea. VHF radio

1 ea. Medical Trauma Kit

**1 ea. Bag Type Resuscitator with Oxygen bottle cylinder and standard O2 regulator
0-25 lpm, capable of delivering 15 lpm for 30 minutes.**

1 ea. Stokes litter with Flotation, restraining straps, and lifting rigging

1 ea. Diving Supervisor and/or DMT specialized in and able to provide basic life support and pre-hospital emergency medical care for diving diseases and injuries.

T) INCIDENT REPORTING

All injuries and incidents will be reported to immediate supervisors. Injury reports and witness statements (Appendices, Section M) will be completed as soon as possible so events remain fresh in memories.

Dive supervisor will notify AMC Dive Superintendent and Penco Environmental Site Supervisor of any incident or injury as soon as possible.

