

# **Diving Safety**

## **Technical Oversight**

Mike Hynes and John Davis

29 June 2012

# Diving Coordinator



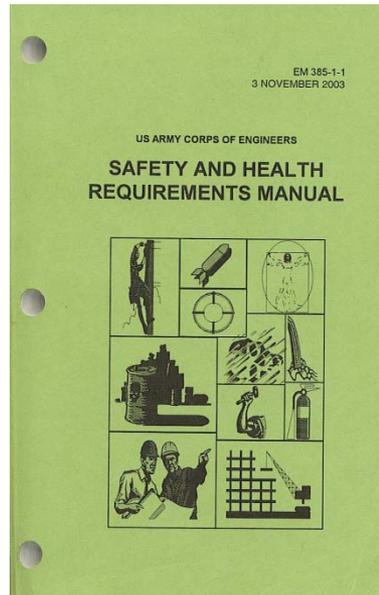
- Supervision
- Quality Control
- Quality Assurance



# Contract Requirements



- **EM 385-1-1 is applicable to contracted activities only as it is referenced in the contract document.**



## Section 30 – Diving Operations

# Quality Assurance



- **A systematic process of oversight of contract activities to assure that general, special, and technical provisions of the contract are followed.**

# Delegated Authority



- **Authority delegated to named individuals *in writing* by the COR specifying actions which can be taken by the named individual on behalf of the COR**
  - **Designated Dive Coordinator**
  - **Alternate Dive Coordinator**
  - **Diving Safety Inspectors**

# EM 385-1-1



## Section 30 Contract Diving

# 30.A General



- **Failure to comply with this section is cause for cessation of operations**
  - **Any request for variance must be put in writing and approved by HQUSACE**
- **Command may elect to implement and enforce more conservative diving requirements**
- **Diving not to be utilized if the work objective can be done by other means**

# 30.A General

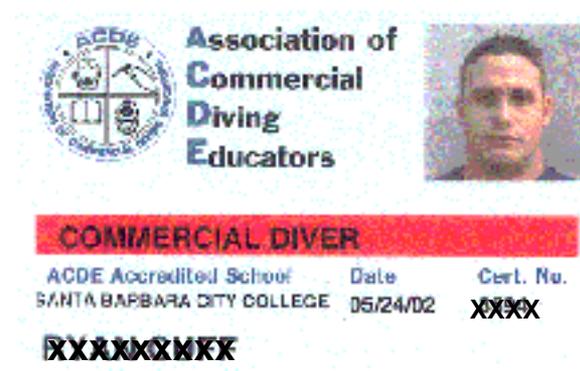


- **Surface supplied air (SSA) to be used whenever practical**
  - **SSA is required when communication is required to direct movement of cranes, etc.**
- **Live boating requires prior approval of DDC**

# 30.A General



- **Training to be documented IAW 29 CFR 1910-410**
  - **Must be from a commercial diving school, military school, or from an Assoc of Diving Contractors accredited school, or;**
  - **Meet the requirements of ANSI/ACDE-01**



# 30.A General



- **A current Assoc of Diving Contractors Commercial Diving Certification Card may be used instead of a training certificate**
- **Contractors must show evidence of experience consistent with scope of work**
  - **Minimum of 1 year experience**
  - **4 working dives with similar exposure**
  - **1 in prior 6 months**

# 30.A General



- **Dive team members to have current First Aid, CPR and Emergency O2**

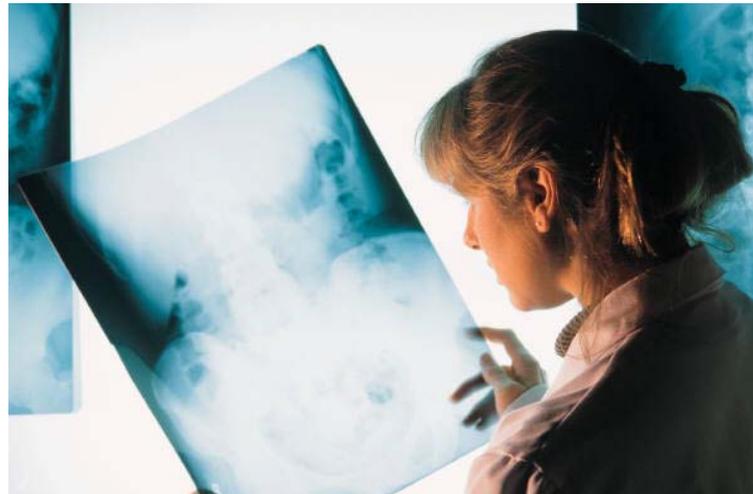


- **Contract diving operations to be inspected/monitored by USACE employees trained by USACE approved training or equivalent**

# 30.A General



- **Contractor to provide certificate signed by physician stating that divers have been examined within the previous 12 months and are fit to dive**



# 30.A General – Required Submittals



- **The following submittals must be reviewed and accepted by DDC prior to start of dive operations:**
  - **Contractor’s Safe Practices Manual**
  - **Dive Operations Plan**
  - **AHA**
  - **Emergency Management Plan**
  - **Dive Personnel Qualifications**

# Safe Practices Manual



- Safety procedures and checklists
- Assignments and responsibilities of dive team
- Equipment certifications and checklists
- Emergency procedures for fire, weather, etc.
- Requirements for inspections
- **Copy of OSHA 29 CFR 1910 Subpart T and the contractor's method of compliance**
- **US Navy air tables**
- **Sample of dive log sheets**

# Safe Practices Manual



- **Sample of repetitive dive worksheets**
- **US Navy table of no-decompression limits**
- **US Navy residual nitrogen tables**
- **Outline of medical qualifications required for divers and procedures for confirming those qualifications**
- **Outline of admin and recordkeeping procedures**

# Dive Operations Plan



- **Name of contractor/subcontractor**
- **Contract number**
- **Date of dive plan submission**
- **Name of dive supervisor preparing plan**
- **Names and duties of dive team members**
- **List of dive equipment to be used**
- **Types of diving platform to be used**
- **Detailed description of the mission**
- **Dates, times, duration and location of operation**

# Dive Operations Plan



- **Diving mode used – SSA, SCUBA, and description of backup**
- **Nature of work to be performed and tools used**
- **Surface and underwater conditions**
- **Maximum single dive bottom time for planned depth**
- **Names of personnel involved in topside support, i.e., crane operator, etc.**
- **Means of communication used**

# Dive Operations Plan



- **NOTE:** The Dive Operations Plan will include the following statement: “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.”

# Activity Hazard Analysis



- Identification of task or activity:
- List of hazards anticipated or possible with the task
- Means of mitigating each hazard listed
- Assignment of Risk Assessment Code

Activity Hazard Analysis (AHA)						
Activity/Work Task:	Overall Risk Assessment Code (RAC) (Use highest code)					
Project Location:	Risk Assessment Code (RAC) Matrix					
Contract Number:	Severity	Probability				
Date Prepared:		Frequent	Likely	Occasional	Seldom	Unlikely
Prepared by (Name/Title):	Catastrophic	E	H	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.)		<p>Step 1: Review each "Hazard" with identified safety "Controls" and determine RAC (See above)</p> <p>"Probability" is the likelihood to cause an incident, near miss, or accident and identified as: Frequent, Likely, Occasional, Seldom or Unlikely.</p> <p>"Severity" is the outcome/degree if an incident, near miss, or accident did occur and identified as: Catastrophic, Critical, Marginal, or Negligible.</p> <p>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.</p>				
		RAC Chart				
		E = Extremely High Risk				
		H = High Risk				
		M = Moderate Risk				
		L = Low Risk				
Job Steps	Hazards	Controls			RAC	
Equipment to be Used	Training Requirements/Competent or Qualified Personnel name(s)	Inspection Requirements				
The AHA shall be reviewed and modified as necessary to address changing site conditions, operations, or change of competent/qualified person's						
EM 385 2008 EDITION						

# Emergency Management Plan



- **Location and phone number of nearest operational recompression chamber**
- **Location and phone numbers of hospital**
- **Location and phone number of USCG Rescue Coordination Center (if appropriate)**
- **Description of emergency victim transport plan**
- **Procedure and means of activating emergency services**
- **Procedures to deal with entrapped or fouled diver**

# Emergency Management Plan



- **Actions taken upon loss of vital support equipment**
- **Actions taken upon loss of gas supply**
- **Action taken upon loss of communication**
- **Lost diver plan**
- **Injured diver plan**
- **Fire**
- **Diver blow-up or rapid ascent**
- **Diver loss of consciousness**
- **Injury/illness of surface crew with diver in water**

# 30.A General



- **Pre-dive conference with all personnel involved**
- **Post-dive debriefing - AAR**

# Dive Log



- **Dive log is required for each diver / each dive**
  - **Full name**
  - **Date and location of dive**
  - **Maximum depth and bottom time**
  - **Surface interval**
  - **Breathing mode used**
  - **Dive group classification**
  - **Water and air temps**
  - **Decompression stops**
  - **Date and time of last dive**
- **Copies of dive log submitted to DDC after completion**

# Pre-Dive Checklist



- **Pre-dive checks are performed prior to each dive**
  - **Breathing gas supply**
  - **Equipment function**
  - **Safety equipment on site**
  - **Lockout-tagout procedures followed**
  - **Crane signals reviewed**
  - **Welding cutting prodecures**
  - **Blasting procedures**
  - **Pre dive briefing**

# Manning Levels



## SCUBA Untethered, 0 TO 100 FT

Supervisor	1
Divers (In visual contact	2
Stand-by diver *	1

---

TOTAL TEAM 4

\* The stand-by diver must be sufficiently free of residual nitrogen to allow for 25 minutes of bottom time at the working depth without exceeding no decompression limits



# Manning Levels



SCUBA, tethered with communication, 0 TO 100 FT

Supervisor	1
Diver (in water)	1
Tender	1
Stand-by diver *	1

---

TOTAL TEAM 4

\* The stand-by diver must be sufficiently free of residual nitrogen to allow for 25 minutes of bottom time at the working depth without exceeding no decompression

# Manning Levels



Surface Supplied Air, 0 TO 100 FT

Supervisor	1
Diver (in water)	1
Tender	1
Stand-by diver *	1
<hr/>	
TOTAL TEAM	4



# Manning Levels



## Surface Supplied Air, 101 TO 199 FT

Supervisor	1
Communications /Console Operator	1
Diver (in water)	1
Tender	1
Stand-by diver *	1
Stand-by diver tender	1
<hr/>	
TOTAL TEAM	6

# Manning Levels



## Surface Supplied Mixed Gas

Supervisor	1
Diver (in water)	1
Tender	2
Stand-by diver *	1
Life Support Technician	1
<hr/>	
TOTAL TEAM	6

# Scientific Snorkeling



- **Snorkeling is considered diving and requires approval of DDC**
- **Used only for environmental assessment. Not used for structural inspections**
- **Snorkeling to be QA'd by diving inspectors**
- **Not allowed in water greater than 5 ft in depth**
- **Snorkelers and observers / assistants to be certified divers**
- **An observer / assistant to accompany each snorkeler within 50 ft. Equipped with PFD, throw bag, etc.**

# Questions??

