U.S. Navy Diving
- An Overview -

Typical MK 21 Surface-Supplied Dive Team consisting of a Dive Supervisor, two Divers, one Stand-by Diver, one Tender per diver, Comms/Logistics Person, Consol Operator, and extra pers as req'd.*

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Supplemental Lecture
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**Source of most Photos:*
U.S. Navy Diving Manual – rev 6

The Community of Navy Divers

- The community of **Navy Divers** includes all officer and enlisted personnel in the United States Navy who are qualified in underwater open or closed-circuit breathing apparatus, surface-supplied and saturation diving.

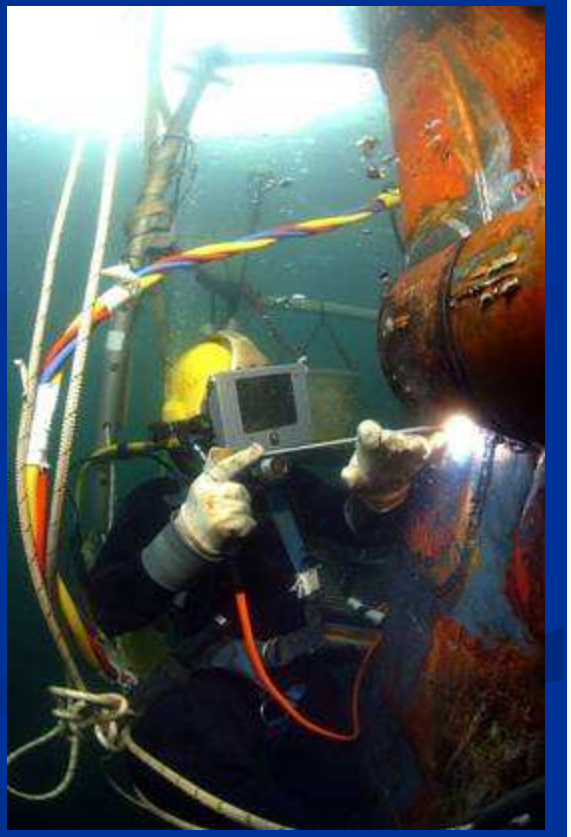
Navy Diver Rating

- In 2006, the U.S. Navy established a new Navy Diver (ND) rating, E-1 to E-9, for enlisted personnel.
- The adjacent table provides a listing of the paygrade, rating designator, and full rating name for enlisted Navy Divers:

- E1 — NDSR — Navy Diver Seaman Recruit
- E2 — NDSA — Navy Diver Seaman Apprentice
- E3 — NDSN — Navy Diver Seaman
- E4 — ND3 — Navy Diver Third Class
- E5 — ND2 — Navy Diver Second Class
- E6 — ND1 — Navy Diver First Class
- E7 — NDC — Chief Navy Diver
- E8 — NDCS — Senior Chief Navy Diver
- E9 — NDCM — Master Chief Navy Diver

Supervisor of Salvage and Diving (SUPSALV)

- **SUPSALV**, known in the Fleet as "00C", is part of the Naval Sea Systems Command and is located in the Washington Navy Yard in D.C. The OOC Web Site: http://www.supsalv.org/
- **Mission:** provide technical, operational, & emergency support to the Navy, DoD, and other Federal agencies, in the ocean engineering disciplines of marine salvage, diving, dive system certification, pollution abatement, and u/w ship husbandry.
- Functional Organization include:
  - Salvage Operations Division: handles ship salvage and towing; deep ocean search and recovery; and oil spill control and recovery operations.
  - Diving Program Division: responsible for setting diving policy, approving U.S. Navy Diving Equipment, and acquiring diver life-support equip for the Fleet.
  - Underwater Ship Husbandry Division (UWSH): develops techniques, procedures, and equipment to perform ship repairs waterborne



Navy Diving Communities

- ENLISTED DVs
  - Fleet Divers
  - Explosice Ordnance Disposal (EOD)
  - Special Warfare (SPEC WAR/SEALS)
  - Seabee Divers
  - Diving Medical Technicians (DMTs)
  - Combat Camera
- OFFICER DVs
  - EDO
  - EOD
  - SPEC WAR
  - CEC
  - DMO

Fleet Navy Divers / EDOs

- Principal Mission(s):
  - Underwater Ship Husbandry (UWSH) - the inspection, maintenance, and repair of Navy hulls and hull appendages so as to avoid dry-docking a ship.
  - Salvage & Deep Ocean Recovery – capability to recover sunken or wrecked naval craft, submersibles, downed aircraft, human remains, or critical items of equipment to help determine the cause of a mishap.
- Principal Commands
  - SIMAs - Shore Intermediate Maintenance Activities
  - Shipyards
  - MDSU – Mobile Diving Salvage Units
  - NEDU – Navy Experimental Diving Unit
  - NDSTC - Navy Diving & Salvage Training Center

Explosive Ordnance Disposal (EOD)

- **Mission:**
  - Investigate, render safe, recover or dispose of explosive ordnance including improvised, chemical, biological, and nuclear.
  - EOD divers deploy with the various Combatant Commanders, Special Operations Forces (SOF), and various warfare units within the Navy, Marine Corps, and Army.
  - Also support civilian law enforcement agencies and the Secret Service.
- **Principal Commands**
  - Explosive Ordnance Disposal (EOD) Group One, Naval Amphibious Base Coronado, California, with mobile units located in California, Washington and Hawaii.
  - Explosive Ordnance Disposal (EOD) Group Two, Naval Amphibious Base Little Creek, Virginia, with mobile units located in Virginia and Italy.

SPEC WAR

- Mission:
  - U.S. Navy's **SEAL** Teams, along with Special Warfare Combatant-craft Crewmen (SWCC), compose the Special Warfare Forces of the United States Navy, who are employed in direct action and special reconnaissance operations.
  - SEALs are also capable of undertaking unconventional warfare, foreign internal defense, hostage rescue, counter-terrorism, and other missions.

- Principal Commands
  - All Navy SEALs graduate from Basic Underwater Demolition/SEAL (BUD/S) school, located in Coronado, CA.
  - Naval Special Warfare Group One is headquartered at Naval Amphibious Base Coronado, CA, whose divers deploy as squadrons from SEAL teams 1. 3. 5 and 7.
  - Naval Special Warfare Group Two is hqr'd at the Naval Amphibious Base Little Creek, VA, whose divers deploy as squadrons from SEAL teams 2, 4, 8 and 10..
  - Naval Special Warfare Group Three consists of Seal Delivery Vehicle Teams (SDVT) 1 and 2 hqr'd in Pearl Harbor and Little Creek, respectively.

SEABEE Divers / CEC

- Mission:
  - Provide capability for construction, inspection, repair, and maintenance of harbor, waterfront & offshore systems in support of military operations.
  - Also, in time of emergency or disaster, conduct disaster control and recovery operations.
- Principal Commands
  - UCT ONE, Little Creek, VA
  - UCT TWO, Port Hueneme, CA.
  - Naval Facilities Engineering Service Center (NFESC)
    - detachments in Port Hueneme, CA, and Washington Navy Yard, D.C. – officer billets only
  - Navy System Commands, e.g., NAVSEA, NAVAIR
    - officer billets only
  - NEDU/NDSTC

UCT Video

(https://www.seabee.navy.mil/index.cfm/50063)

DMT / DMO & CCDs

- Missions:
  - *Diving Medical Technicians* (DMTs) and *Diving Medical Officers* (DMOs) are medical personnel qualified as Navy divers and specially trained in diving physiology and medicine.
  - *Combat Camera (COMCAM) Divers* are photographer's mates (PH rate) trained in diving and underwater photography.

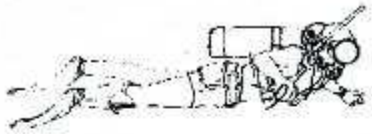
- Commands:
  - DMT's and/or DMOs are attached to most all diving commands.
  - Submarine medical officers are often Navy diver-qualified and are therefore also DMOs.
  - The U.S. Navy has 2 COMCAM units: Fleet ***Combat Camera Atlantic***, located in Norfolk, VA; and, Fleet ***Combat Camera Group Pacific***, located in San Diego, CA. COMCAM detachments are assigned to the Naval Expeditionary Combat Command among other commands.

Diving Methods and Equipment

- Diving methods are typically characterized by the diving equipment used.
- The following slides picture the equipment and outline the capabilities and logistical requirements for the various methods.

Open-Circuit SCUBA

SCUBA General Characteristics



Principle of Operation:

Self contained, open-circuit demand system

Minimum Equipment:

1. Open-circuit SCUBA with J-valve or submersible pressure gauge
2. Life preserver/buoyancy compensator
3. Weight belt (if required)
4. Dive knife
5. Face mask
6. Swim fins
7. Submersible wrist watch
8. Depth gauge

Principal Applications:

1. Shallow water search
2. Inspection
3. Light repair and recovery

Advantages:

1. Rapid deployment
2. Portability
3. Minimum support requirements
4. Excellent horizontal and vertical mobility
5. Minimum bottom disturbances

Restrictions:

Work limits:

1. Normal 130 fsw
2. Maximum 190 fsw with Commanding Officer or Officer-in-Charge's permission
3. 100 fsw using SCUBA cylinder(s) with less than 100 SCF
4. Standby diver with at least 100 SCF cylinder capacity for dives deeper than 60 fsw
5. Within no-decompression limits
6. Current - 1 knot maximum. Current greater than 1 knot, requires ORM analysis. As a minimum the divers(s) must be tended or have a witness float.

Operational Considerations:

1. Standby diver required
2. Small craft is mandatory for diver recovery during open-ocean diving, when diving off of a large platform or when the diver is untended and may be displaced from dive site, e.g., during a bottom search in a strong current or a long duration swim.
3. Moderate to good visibility preferred
4. Ability to free ascend to surface required (see paragraph 7-8.2)

Disadvantages:

1. Limited endurance (depth and durat
2. Limited physical protection
3. Influenced by current
4. Lack of voice communication (unles equipped with a through-water communications system or full face

Surface-Supplied

MK 21 MOD 1, KM-37 General Characteristics

Principle of Operation:

Surface-supplied, open-circuit system

Minimum Equipment:

1. MK 21 MOD 1, KM-37 Helmet
2. Harness
3. Weight belt (if required)
4. Dive knife
5. Swim fins or boots
6. Surface umbilical
7. EGS bottle deeper than 60 fsw

Principal Applications:

1. Search
2. Salvage
3. Inspection
4. Underwater Ships Husbandry and enclosed space diving

Advantages:

1. Unlimited by air supply
2. Head protection
3. Good horizontal mobility
4. Voice and/or line pull signal capabilities
5. Fast deployment

Disadvantages:

1. Limited mobility

Restrictions:

1. Depth limits: 190 fsw
2. Emergency air supply (EGS) required deeper than 60 fsw or diving inside a wreck or enclosed space
3. Current - Above 1.5 knots requires extra weights
4. Enclosed space diving requires an Emergency Gas Supply (EGS).

Operational Considerations:

1. Adequate air supply system required
2. Standby diver required

MK 21 MOD 1, KM-37 Helmet.

Mixed Gas

Underwater Breathing Apparatus, MK16 Mod 0

MK 16 MOD 0 UBA General Characteristics

Principle of Operation:

Self-contained closed-circuit constant ppO_2 system

Minimum Equipment:

1. An approved Life Preserver or Buoyancy Compensator (BC). When using an approved BC, a Full Face Mask is required.
2. Dive knife
3. Swim fins
4. Face mask or full face mask (FFM)
5. Weight belt (as required)
6. Dive watch or Dive Timer/Depth Gauge (DT/DG) (as required)
7. Depth gauge or DT/DG (as required)

Advantages:

1. Minimal surface bubbles
2. Optimum efficiency of gas supply
3. Portability
4. Excellent mobility
5. Communications (when used with an approved FFM)
6. Modularized assembly
7. Low acoustic signature

Principal Applications:

1. Special warfare
2. Search and inspection
3. Light repair and recovery

Restrictions:

Working limit 150 feet, air diluent; 200 fsw, HeO_2 diluent

Operational Considerations:

1. Dive team
2. Safety boat(s) required
3. MK 16 MOD 0 decompression schedule must be used (unless using NDC, CSMD procedure 110 fsw and shallower, or air decompression procedures 70 fsw and shallower)

Disadvantages:

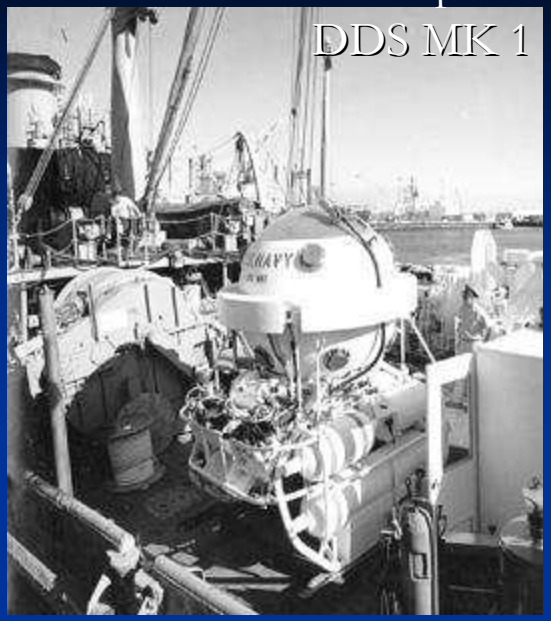
1. Extended decompression requirement for long bottom times or deep dives.
2. Limited physical and thermal protection
3. No voice communications (unless FFM used)
4. Extensive predive/postdive procedures

Saturation
Dive Systems

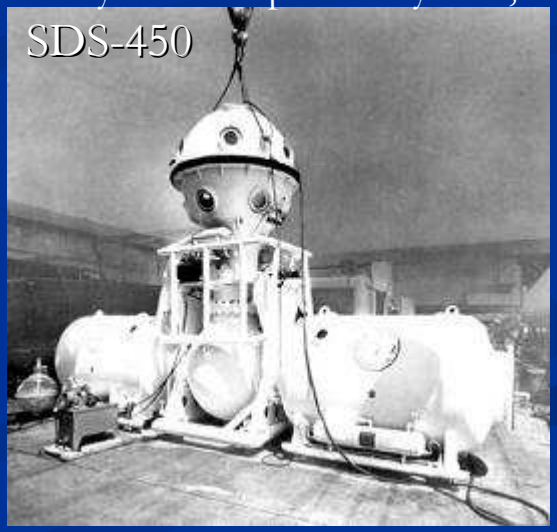
Sealab II

MK 21 MOD 0 Helmet with Hot Water Suit, Hot Water Shroud, and Come-Home Btl.

Personnel Transfer Capsule DDS MK 1



Navy's 1st Deep Dive System, SDS-450



Atmospheric Dive Systems (ADS)

- The Navy also has 4 ADS units as part of its Submarine Rescue Diving and Recompression System.
- An ADS is essentially a suit of armor that can maintain one atmosphere of pressure to a depth of 2300 feet.
- The ADS suit, although cumbersome, eliminates most of the physiological dangers associated with deep diving; i.e., there is no need for special gas mixtures nor decompression, and no danger of decompression sickness or nitrogen narcosis. The diver needn't even know how to swim!
- The ADS is designed for deployment to a rescue site on various military and commercial aircraft.

QUESTIONS?

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