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"News from the Front"

OPERATION DEEP BLUE
74th Engineer Dive Detachment

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CALL LNO to ARCENT
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Introduction/Background

The United States (U.S.) Army recognizes that controlling inland waterways and ports is vitally important in the contemporary military environment. For this reason, the U.S. Army established Engineer Dive units during World War II. Since then, U.S. Army Engineer Divers have served in every major U.S. conflict and fulfilled the role of providing underwater reconnaissance, demolition, and salvage for the U.S. Army.

The 74th Engineer Dive Detachment is currently deployed to Camp PATRIOT, Kuwait in support of U.S. Army Central Command (USARCENT) under the Brigade Special Troops Battalion (BTSB), as part of Area Support Group (ASG) Kuwait. The two main focuses of the 74th Engineer Dive Detachment are Anti-terrorism Force Protection (ATFP) and Vessel Husbandry. ATFP involves diving to clear vessel berthing slots of obstacles, obstructions, and potential threats. Vessel husbandry includes conducting maintenance and repairs to vessels from all the services.

U.S. Army Engineer Divers conduct two methods of diving: self-contained underwater breathing apparatus (SCUBA) and surface-supply. Scuba diving involves a diver carrying air tanks, while surface-supply diving involves a diver using a diving helmet that is supplied with breathing gas and communications through an umbilical from the shore or from a support vessel.

The three main capabilities of U.S. Army Engineer divers are:

1) Army Engineer divers are swift water diving SMEs; superior to all other services.
2) Divers have recompression chamber, which is significant capability for treating pressure related injuries.
3) First and foremost, they are engineers, and divers support all branches and are integral part of the combined arms team.

The U.S. Army Vessel (USAV) *Corinth* is a Landing Craft Utility (LCU) vessel designed for amphibious operations. The USAV Corinth is capable of transporting equipment and troops to harbors or beachheads, and has supported several training exercises for other U.S. forces in the past, including the 185th Theater Aviation Brigade (TAB) and SEAL Team 10.

OPERATION DEEP BLUE

Operation DEEP BLUE was a three-week exercise that ran 23 November through 11 December 2015, during which the 74th Engineer Dive Detachment, supported by the USAV *Corinth*, conducted deep-sea dive training in the North Arabian Gulf (NAG).

Purpose – Conduct deep-sea dive training to prepare the 74th Dive Detachment's staff sergeants to become dive supervisors, dive qualified at the command level, and prepare for the Senior Leaders Course (SLC) and Master Diver evaluations.

Key Tasks –

1) **Movement to NAG training area onboard the USAV *Corinth***
2) **Deploy surface-support dive team in 15 fathoms (90 feet) of water**
3) **Conduct deep-sea surface-support dive training**
4) **USAV *Corinth* remains on-station**
5) **Recovery of dive team**
6) **Movement back to Kuwait Naval Base (KNB)**
7) **Conduct recompression chamber training**

End-state – Staff Sergeant Engineer Divers properly trained to be dive supervisors, and prepared for SLC and Master Diver evaluations.

Each day of Operation DEEP BLUE began with the diver equivalent of a range briefing. For the training conducted on 1 December, the training planned included surface-supply diving and recompression chamber training. The surface-support dive briefing covered the roles and responsibilities of everyone involved, as well as the specific training tasks to be conducted. This included the officer-in-charge (OIC) of the dive site, the dive-bill (dive plan), the e-bill (the evacuation plan), primary dive entry and exit methods, and tasks to be conducted, and the depth and time limits for the day's instruction. The roles included the stand-by diver (in case of emergency), the tenders (who hold the umbilical air lines and manage the divers ascent and decent), the console (controls main air supply and routing to the divers), the log/communications (who records all of the details of each dive and controls the communications system to the divers), the inside tender (who goes inside recompression chamber with divers in an emergency), and the extras (available manpower).

After the initial dive briefing, the NCOIC conducts abbreviated briefings prior to each individual dive in the event there have been any changes. Everyone involved in the dive is also required to carry a dive supervisor's book. These books feature full dive tables that support multiple modes of dive operations, altitude diving, treatment for all types of pressure related injuries such as gas embolisms and decompression sickness, etc. Diving operations are extremely complex and require not only a great deal of skill on the part of the divers, but also significant proficiency in problem solving on the part of the support crew. The first training exercise conducted on 1 December was surface-support dive (SSD) scenario #10.

SSD Scenario 10: Two repeat divers leave surface to inspect a section of pipeline for damage. They surfaced from their previous dive to 115 feet of seawater (FSW) for 55 minutes 12 hours ago. The previous dive was an in-water air/O2 dive. The pipeline at a depth of approximately 120 FSW runs along an underwater trench with a depth of 200 FSW. Divers are inspecting the anchoring system for the pipeline and stability of the foundation along the trench. The deepest depth for the dive is 177 FSW. Twenty-nine minutes into the dive, red diver will report that he has cut his leg on one of the anchor points and is bleeding profusely. If directed to apply pressure to the wound, green diver can slow the bleeding. During ascent, red diver indicates that he feels a little dizzy at approximately 40 FSW. Green diver will let topside know that the bleeding has been slowed, but red diver is still losing a little blood. If the diving supervisor elects to perform a Sur D O2 dive, ascent from 40 FSW to the surface, the undress time, and recompression to 50 FSW in the chamber are normal. Five minutes into the first 1/2 period on O2 at 50 FSW in the chamber, green diver will experience a convulsion. If the diving supervisor elects to complete an in-water air/O2 dive, the bleeding will continue and red diver will become lethargic over the communications line.

Figure 1 Assisting a Diver with His Helmet

Solution: If the diving supervisor makes attempts to stop the bleeding during the undress phase, or locks in the medic to stop bleeding in the chamber, the bleeding will be stopped. The divers should be decompressed using a 120/40 sur D O2 table/schedule. Following the convulsion at 50 FSW in the chamber, the diving supervisor should remove both divers from the O2 BIBS and wait for all symptoms to subside and for green diver to be fully relaxed and breathing normally. Both divers will ascend in the chamber to 40 FSW at 1 foot per minute (FPM). Oxygen will be resumed at the shallower depth at the point of interruption.

The 74th Engineer Dive Detachment repeated numerous scenarios like the situation presented above throughout each day of training. In order to attain the level of proficiency required to be an Army Master Diver, divers must be capable of responding to these types of complex situations. They must also be capable of reacting quickly and precisely, as the smallest detail of the scenario can affect the proper action or treatment for the divers.

Swift Water Diving

There is a considerable difference between ocean diving, where U.S. Navy divers predominately operates, and inland water diving, where U.S. Army Engineer divers predominately operates. U.S. Navy divers operate primarily in open water, are equipped with mixed gas breathing apparatuses, and can operate at much greater depths than U.S. Army divers do. U.S. Army Engineer divers have an operational limit of 190 feet, are equipped for swift water current environments, and operate primarily in rivers, lakes, swamps, tidal zones, ports, etc. Swift water diving requires items such as a specialized face mask that moves the purge button to the side, away from the direction of current, and allows for underwater communication. . River currents vary greatly from ocean currents, and Army divers are capable of operating in currents up to 6 knots. They also incorporate mountaineering skills into their training to cope with swift water currents. When operating in a river with swift currents, U.S. Army Engineer Divers are equipped to deploy a static line across the river, a static line to the diver, and a line to move the diver's attachment to the static line across the river.

Figure 2 Aiding the Dive Team Back On-Board the USAV Corinth

One of the key benefits of employing Army divers is that they are highly mobile and can easily integrate into other Army units. Since the U.S. Army's operational concept is Unified Land Operations (ULO), U.S. Army Engineer Divers focus on inland waterways and the hazards associated with operating in these environments. The normal operating environment for Army divers are rivers, lakes, and ports, and they are trained on the tactics, techniques, and procedures (TTPs) to overcome the dangers of swift water currents.

During Operation IRAQI FREEDOM, U.S. Army Engineer Divers were vital to re-opening bridges in Iraq over the Tigris and Euphrates Rivers. In 2003, as the Iraqi Army destroyed numerous bridges as they retreated. In order to rebuild the destroyed bridges, U.S. Army Engineer Divers were employed. The divers commenced their operations by removing debris on the river bed at the bridge sites. The divers also assisted in preparing the sites on the riverbed for the new bridges to be emplaced. They are also capable of providing underwater surveying, providing some repairs such as welding, etc., and can perform inspections on bridge pylons for the engineers.

The main reason why the U.S. Army has its own divers is to go to the places where the U.S. Navy does not. While U.S. Navy divers concentrate on operations at sea, U.S. Army divers concentrate on operations within inland waterways. Every nation in which the U.S. Army operates will have water features with

which to contend. Within the nation of Iraq alone, there are more than 3,000 square kilometers of lakes and the lengths of the Euphrates and Tigris Rivers encompass more than 2000 kilometers of waterways, not to mention the thousands of kilometers of tributaries and aqueducts. If Blackhawk helicopter was to crash into a lake, or a tactical vehicle were to roll into the Euphrates River, U.S. Army Engineer Divers exist to support the recovery effort.

Recompression Chamber Capacity

U.S. Army Engineer Dive Detachments also offer a valuable resource as part of their organic capabilities: a portable recompression chamber. In respect to capabilities with the Recompression Chamber, U.S. Army Engineer divers are on par with other services. However, the main advantage is that Engineer Dive Detachments have this capability. A recompression chamber, also commonly known as a hyperbaric chamber, is used to treat or to prevent decompression sickness.

Figure 3 Interior of the Recompression Chamber

The recompression chamber also allows Army Engineer Dive Detachments to conduct surface decompression, rather than forcing surface-supply divers to conduct decompression stops on their way to the surface of the water. Portable recompression chambers allows Engineer Dive Detachments to reduce the risks associated with conducting lengthy decompressions underwater, where the environment may be extremely cold or present other hazardous conditions. The 74th Engineer Dive Detachment's recompression chamber capability has not only benefited their training, but has also supported other organizations in theater. The 74th Engineer Dive Detachment has provided recompression treatment to divers, aviators, and host-nation civilians. Medical units do not deploy with a recompression chamber, so they are dependent on this vital piece of equipment that U.S. Army Engineer Dive Detachments offer.

Integral Part of the Combined Arms Team

U.S. Army Engineer Divers exist to support the mission and are valuable members of the combined arms team. U.S. Army Engineer Divers support every other branch. They provide survivability, mobility, and counter-mobility. They also provide force protection. Engineer Divers can assist bridging companies, provide support to Army vessels, and conduct remains recovery in rivers and lakes. They can support stability operations for Infantry and Armor units, and provide mobile assets for medical units. Engineer Divers provide water recovery support for Field Artillery units, and support the U.S. Army Engineer mission of providing survivability, mobility, and counter-mobility.

Best Practices and Lessons Learned

1) **Integrating U.S. Army Engineer Divers in to Theater Level Planning:** U.S. Army Engineer Divers must be integrated into planning at the Army Service Component Command (ASCC) and Combined Joint Task Force (CJTF). Army planners also need to understand the capabilities of U.S. Army Engineer Divers, and the benefit of their employment in offense, defense, and stability operations. Because U.S. Army Engineer Diving capabilities are relatively unknown throughout the larger Army community, Engineer Dive Detachment commanders must develop relationships throughout their assigned area of operations (AO). Even U.S. Navy Central (USNAVCENT) has dispatched Coast Guard vessels to receive support from the 74th Engineer Dive Detachment. While scuba provides the benefit of being very mobile and quick to respond, surface-supply is required for more dangerous and cumbersome missions. Additionally, any recovery operation in water over chest deep will require an Engineer Dive Detachment. Army planners must understand the roles and capabilities of U.S. Army Engineer Divers. They must also appreciate how to employ these units for ATFP and inland underwater operations such as demolition, reconnaissance, and salvage.

2) **Reciprocal Support Relationships:** The 74th Engineer Dive Detachment has developed reciprocal relationships with the Harbor Master at Kuwait Naval Base, as well as with the majority of the U.S. Army vessel stationed there, to provide vessel husbandry. The dive detachment has benefited through vessel support for their training and ATFP missions. The 74th Engineer Dive Detachment has also focused on developing relationships with other units such as the theater aviation brigade to facilitate training for both the dive detachment and the other units involved.

3) **DEEP BLUE Exercise and SALVAGE Exercise:** An identified best practice for U.S. Army Engineer Dive Detachments deployed to USARCENT is the execution of a DEEP BLUE exercise and a SALVAGE exercise. Given the current operational tempo in the USARCENT AO, there is limited time available for dive detachments to conduct training. However, the return on investment from these two key exercises is substantial. U.S. Army Engineer Dive Detachments benefit from the training for individual divers, diving teams, and the available resources to conduct training.

Conclusion

Overall, Operation DEEP BLUE was an excellent training exercise for the 74th Engineer Dive Detachment. The 74th Dive Detachment developed their divers, prepared them for SLC and Master Diver Qualifications, and developed TTPs for conducting DEEP BLUE exercises in theater.