SPECIAL EDITION: Navy Diving and TWA Flight 800

FACEPLATE

The Official Newsletter for the Divers and Salvors of the United States Navy
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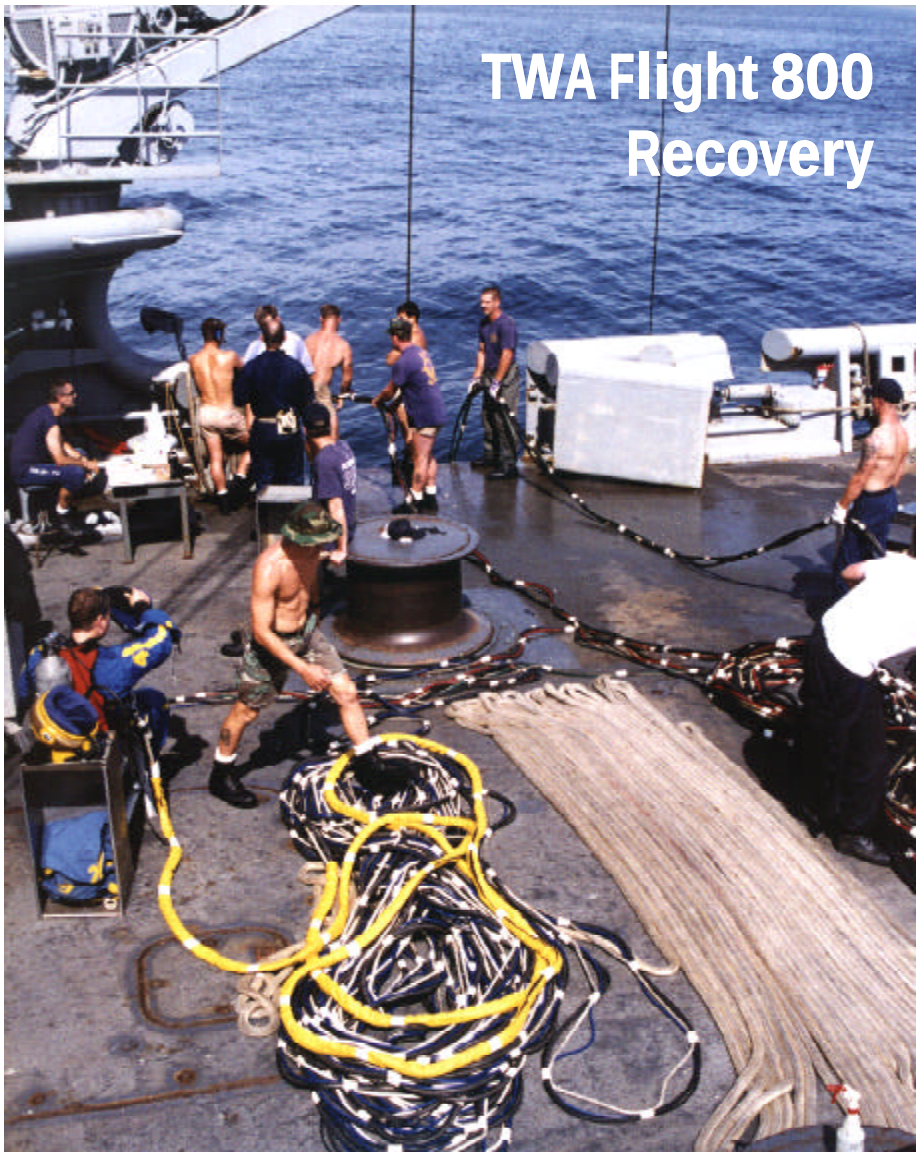

Surface-supplied diving operations on the USS* Grasp. *The* Grasp *arrived on scene 21 July, just four days after the tragedy occurred. This issue of FACEPLATE tells the story of the TWA Flight 800 search and recovery operation from the viewpoints of the divers and salvors who participated.

In This Issue

SUPSALV Sends

This issue of FACEPLATE is a Special Edition devoted to the recovery operation of the victims and aircraft wreckage from TWA Flight 800. The last FACEPLATE was issued while the diving operations were ongoing and I mentioned briefly in my remarks on the diving operations being conducted off Long Island.

There are several articles in this issue from different activities involved in the diving operations including articles from our teammates from the NY State Police and the FBI. It was truly a remarkable team effort, as noted in RADM Kristensen's article, between the Navy and police divers (FBI, NY State, NY City and Suffolk county) that lasted for 3½ months of diving. The article by Sgt. Gary Barlow of the NY State Police touches on the historical connection between the Navy and the NY State Police. I am pleased that we were able to add to this proud tradition. The weather was our worst enemy, including five hurricanes. But, through a disciplined team effort, we were able to overcome all obstacles and recover 215 of the 230 victims who perished in this accident, as well as over 95 percent of the aircraft.

What was particularly noteworthy of this operation was the dedicated effort of everyone involved. A true show of professionalism and dedication by everyone, every day. There was no job too big or too small that went undone. As Assistant Director Kallstrom of the FBI said: "It is remarkable what can be accomplished when egos are not involved."

All involved want to thank the people of Long Island, who were extremely hospitable to us. The diving operations ended in early November when it was just too hard to continue due to the weather. We

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SUPSALV Sends (from page 1)

continue to recover wreckage from the crash with scallop trawlers that have been on station since the first week of November. It is impressive to note that although trawling efforts have been successful at recovering just about every little piece left, they have recovered less than two tons. This represents about 1 percent of the aircraft. There just wasn't much left of the aircraft in the ocean when the divers left the scene. We will continue to drag the bottom until we fail to recover any debris, but we have probably recovered the majority of the wreckage by trawler that we will. However, a very important piece could still be out there and we need to continue to allow the investigators to determine the cause of the crash.

We can all be proud of our Navy diving community. They performed a Herculean task with a single-minded dedication. As Chief Alexander says: "We dive exactly like we train." The results of this operation are evidence that we have trained our divers and dive supervisors correctly; they are the best in the world. As I stated last issue, the story is "… just how valuable the Navy diver (EOD and Salvage) and the ARS is to our national security."

Finally I would like to pay tribute to the victims who perished in this terrible tragedy and their loved ones. All of those involved in the recovery operation felt a great deal of dedication to the families and friends of the victims. We will always remember them, and the effort we put forth is our way of honoring those who perished in this accident.

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Articles, letters, queries and comments should be directed to the Naval Sea Systems Command, 2531 Jefferson Davis Highway, Arlington, VA 22242-5160. (Attn: FACEPLATE)

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From Commander, TWA Flight 800 Disaster Relief Task Force

On July 17, 1996, TWA Flight 800 experienced a catastrophic explosion that caused the aircraft to fall into the Atlantic Ocean off NY, with 230 passengers and crew aboard. This tragedy would start a rescue and salvage effort that is perhaps the largest the U.S. Navy and the world has seen since the crash of Space Shuttle Challenger. As OTC for the operation, I had the opportunity to work with some of the most professional and heroic men and women in the Navy. The special edition of FACEPLATE tells the story of how some of the over 1200 naval personnel and numerous federal, state, and local agencies worked together to complete this historic accomplishment.

The Navy's first presence on scene came early on July 18th, when the Supervisor of Salvage arrived within 12 hours of the crash. This was followed by the arrival of EOD, USS *Grasp* (ARS 51), USS *Oak Hill* (LSD 51), USS *Grapple* (ARS 53), and eventually, USS *Trenton* (LPD 14). In all, 45 Navy commands would provide personnel and equipment in support of the salvage operation.

To coordinate the efforts, a Disaster Relief Task Force, CTG 040.50, was formed to consolidate the salvage efforts of both the Navy and local law enforcement. With the large number of divers, including the law enforcement divers, it was paramount that the operation be conducted with the "one team" concept. "**Success Through Teamwork**" became the motto, which kept us all going through the course of the next three months.

"**Success Through Teamwork**" took on an even larger meaning than just the U.S. Navy. The U.S. Coast Guard provided outstanding support in the form of personnel, ships, boats, and several stations to assist with the recovery. The National

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The USS **Grasp** *recovery team takes a break for a group photo on the 85-foot, 30,000-pound section of the right wing.*

COMMANDER **(from page 2)**

Transportation Safety Board, FBI, FAA, ATF, NOAA, New York State Police, New York City Police, Suffolk County Police, the American Red Cross, and hundreds of other agencies and volunteers worked together to overcome the many obstacles encountered to complete this historic operation. The complete cooperation and professionalism exhibited by all the participants was the cornerstone of this operation and stands as a testament to the spirit of all Americans. As someone has said before, "If you don't care who gets the credit, it's amazing what can be accomplished."

RADM E. K. KRISTENSEN
Commander
Combat Logistics Group Two

Everyday Heroes

TWA Tragedy Brings Out the Best in Navy Salvage and Diving

On 17 July at 20:32, TWA Flight 800, a Boeing 747 en route from New York's JFK airport to Paris, disappeared from radar contact. Eyewitnesses reported two explosions and a fire on the surface of the ocean. Over the next few weeks the public was riveted to the news reports on the recovery efforts. Theories abounded on why this aircraft exploded and crashed.

The day after the crash the National Transportation Safety Board (NTSB) contacted the office of the Supervisor of Salvage (SUPSALV) and requested Navy assistance in recovering the cockpit voice recorder (CVR) and flight data recorder (FDR) and mapping the debris on the ocean bottom. Shortly after arriving on site, SUPSALV determined that the scope of the Navy involvement was quickly expanding. Navy involvement soon came to encompass recovering the victims and the entire aircraft to allow investigators to determine the cause of the crash. RADM Ed Kristensen (COMLOGGRU TWO) was assigned as the Joint Task Force Commander with SUPSALV under him directing the salvage operations.

Phase 1: Search and Survey

SUPSALV developed a three-phased approach to this problem. First was the search and mapping phase. SUPSALV

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HEROES (from page 3)

mobilized its ocean search and recovery contractor to lease a vessel (M/V *Pirouette*) with which to operate SUPSALV's side-scan sonar, towed pinger locator (to listen for the CVR and FDR pingers) and a miniature remotely operated vehicle (ROV) with video camera, sonar, and a robotic arm. *Pirouette* was on scene and searching by the night of 19 July. Also used in the search for the aircraft debris was the NOAA hydrographic ship Rude, which had side-scan sonar on board and was in the area.

The aircraft suffered an in-flight explosion that separated the front of the aircraft from the rest of the aircraft. The forward section was found about 1.5 miles from the aft section, and the entire aircraft debris was scattered on the ocean floor in an area of 4 miles by 2 miles.

Phase 2: Victim Recovery

Once the debris was found and mapped, the second phase of the operation was to recover the victims. This was done by surface-supplied diving from USS *Grasp* (ARS 51) and USS *Grapple* (ARS 53) and scuba diving conducted from small boats. The scuba diving operations were done by Navy divers (from over 20 commands) and civilian divers from the New York State Police, New York City Police, Suffolk County Police, New York City Fire Department and the FBI. All diving was directed and coordinated by the Navy. To help the divers in looking through the wreckage, SUPSALV mobilized 3 ROVs — one each on *Grasp*, *Grapple* and *Pirouette*. In all, 215 of the 230 victims were recovered, with divers recovering 109 of the victims.

Phase 3: Wreckage Recovery

The third phase of the operation was to recover the aircraft wreckage to help investigators determining the cause. This was started during the victim recovery phase as it became necessary to lift large pieces of wreckage to look under for victims. It was decided to lift the wreckage to the surface rather than lifting the wreckage and putting it back on the bottom.

To recover the wreckage, the large pieces were rigged by surface-supplied divers and lifted by the 40-ton booms from the *Grasp* and *Grapple*. Mobile scuba divers located and recovered the scattered debris using portable GPS navigation and handheld sonars and a side-load warping tug from ACB 2 that had a 10-ton lift capability.

STATISTICS

Surface-supplied dives:	677
Surface-supplied hours:	856
Scuba dives:	3667
Scuba hours:	917
Total dives:	4344
Total diving hours:	1773
Navy divers:	225+
Civilian divers:	100+
ROVs used:	3
ROV dives:	290
ROV hours:	2641
Pieces of wreckage recovered:	30,000+
Vessels:	
Navy:	4
NOAA:	1
Contract:	8

All wreckage was transported to a large facility in Calverton, Long Island, where a former Grumman plant was located. The wreckage was loaded into LCM-8 boats and helicopters from the USS *Oak Hill* (LSD 51) and later the USS *Trenton* (LPD 14). *Trenton* and *Oak Hill* were also used to berth many of the divers working on *Grasp* and *Grapple*, as the work on both these ships proceeded around the clock and it was necessary that the divers be afforded a place for quality rest.

As the wreckage was raised from the ocean, each piece or group of pieces was recorded, including what it was and where it was recovered (exact latitude and longitude) on the ocean floor. This enabled, through a database management program, reconstruction of the accident to determine the sequence of the breakup of the aircraft in the air.

Complicating the wreckage recovery was the treatment of all wreckage as evidence by the FBI as the possibility of a criminal case existed. Evidentiary rules of chain of custody were used and each piece had to be accompanied from the ocean to the hangar by an FBI agent. Over 500 FBI agents served in this operation.

The recovery was extremely difficult due to the sharp metal wreckage, over 3000 miles of cable and wiring and the daunting task of recovering the numerous victims. Adding to the difficulty was the intense media and political interest. Divers and support personnel worked around the clock from 18 July until the diving operations concluded on 2 November, only stopping for weather.

After the diving operations concluded, and with over 95 percent of the aircraft recovered, the NTSB required still more of the aircraft. SUPSALV then contracted for scallop trawlers to trawl the bottom to attempt to recover debris that may have been buried under the sea floor. This effort is still ongoing as this article is being written.

A Place in History

The Navy was in the forefront of one of the largest diving and salvage operations ever conducted and helped in the recovery of the many victims. It played a major role in helping the NTSB and FBI investigate a tragedy with unprecedented national significance. ■

Make It Happen

The View from the USS Grasp

by LCDR William P. Orr

On 18 July, USS *Grasp* was one day out from completing its trans-Atlantic crossing after a five-month Mediterranean deployment. Refueling alongside USNS John Lenthall, the excitement of the ship's pending return was in the air. About halfway through the refueling the XO, LT Al Tupman, informed me that RADM Kristensen from COMLOGGRU 2 wanted me to call him. The XO also said that he had heard on the radio that a 747 had gone down just off Long Island. My first thought was my wife's statement: "A five month deployment. I'll believe it when I see it." The Admiral confirmed our suspicions that we were going to be in standby to support the recovery operation.

Next came the long 1MC announcement. Of course, you could hear the hiss coming out of the excitement balloon for return from deployment. The calls went out to the Ombudsman, Brister Thomas, and my wife. Thank God for technology. With the cellular phone and INMARSAT, we were able to change all the arrangements, and notify the families who were coming in from out of town.

The final call to go came on Sunday morning. "Await the onload of the MR-1 ROV at about midnight and then get underway. After arrival, assist the Supervisor or Salvage, Capt. McCord as necessary." Or in other words … make it happen.

***Preparing to launch the next set of surface-supplied divers from the USS* Grasp.**

The engineers, led by Ensign Avram and ENCS (SW) Cummings, started their engines and off we went at 0200 Monday morning. All day Monday, still with little knowledge of the crash scene, the first Lieutenant, LTJG Block, with his team led by BMC (SW/MDC) Dennis and BMC (SW) Hall, commenced the rigging for a multiple-point moor.

When we arrived at midnight on Monday, side-scan sonar operations were still in progress. Our scuba divers started assisting the mobile scuba teams, which had been diving since shortly after the crash. The first plot of data was delivered Tuesday afternoon. The XO and the navigation team, led by QM1 (SW) Hunt, proposed the multiple-moor location. The three-point unit was laid and the ship was in harness by Thursday afternoon. MR-1 was launched and our first topside look of the devastation came into view.

Late Thursday, with adrenaline running wide open, the dive teams led by LTJG Block, Master Diver Dennis, and Master Diver Perna started the 24-hour surface-supplied diving operations. *Grasp* had been augmented by divers from various ships and units along the East coast including MDSU Two, USS *L.Y. Spear*, USS *Emory S. Land*, SIMA Norfolk, and NMRI. From the first dive, the teams organized right into a groove. Quickly, the victims were being recovered and sent to shore. Every waking hour of the arduous operation was spent hoping, and praying, that under that next piece of wreckage might be the next and eventually the last victim. Unfortunately, in this tragedy, hope of finding all the victims slowly faded. But keeping the adrenaline flowing was the poster-board size card sent by the families of the victims thanking the ship for its support. And amazingly, during the second surface-supplied dive, the flight recorders were located and recovered by EN3 Irish and ENC (SW/DV) Oelhafen.

What are sometimes considered routine evolutions became key to maintaining crew morale. A meal on the messdecks, for example, or a burger cooked by MSSN Detskoe at a forecastle

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GRASP (from page 5)

picnic made all the difference. Extra support was gratefully received from USS *Oak Hill*, who provided the divers and others some quiet time, off station, to rest and relax. Many shifts in the moor were conducted with QM2 Carpenter at the WRN-6 GPS and BM2 (SW) Straw at the forecastle. The engineers kept the compressors pumping and lights on for the entire evolution. During a casualty to the aft boom slewing motor, the electricians made quick work in its repair. Even FN Iule as sounding and security played a key role.

The only good thing that comes out of a tragedy like the TWA Flight 800 recovery is watching how two salvage ships, the Navy, and numerous other local, state and federal organizations, as well as the nation, can pull together. From the first word that we were going, assistance came out of the woodwork. The same teamwork prevailed when we got to the operations area. Bagels were sent by one of the FBI Special Agents. Through the American Red Cross, we received care packages from all over, including some from the citizens of Long Island.

Shortly after our arrival on scene we were glad to see USS *Grapple* coming over the horizon to join in the recovery operation. There were, of course, some mixed emotions when we left "our spot" in Debris Field 1 for *Grapple* to continue the recovery effort.

Throughout *Grasp*'s participation in the operation, whether it was one of *Grasp*'s 537 dives, a precision shift in the moor by the BMs and QMs to recover a victim, or recovering the 30,000-lb. right wing, it was completely rewarding to watch the entire crew and the whole recovery team in East Moriches, New York, "make it happen." ■

LCDR William P. Orr is Commanding Officer of the USS Grasp.

EODMU Six Answers the Call

By LT Eric Wick

The compound of Explosive Ordnance Disposal Mobile Unit Six was alive with activity on the morning of 18 July. The previous night TWA Flight 800 had exploded over the Atlantic Ocean. As a result, EODMU Six was on standby to aid in the recovery. "We haven't got the word to go yet," briefed the Commanding Officer, CDR Darrel Sink, "but we need to be ready if it comes." The potential mission was not a complete surprise. Some divers had come to work with bags packed, in anticipation of immediate deployment. Gear was checked and loaded. Teams were briefed using the limited information available. EODMU Six was ready to deploy.

Finally, the order to deploy came. On 19 July, the first detachment was on the road. Equipped with scuba, MK 16 rebreathers, AN/PQS-2A handheld sonar, and a Fly Away Diver Locker (FADL), they would be the first six of 28 divers from Mobile Unit Six to participate in the recovery.

By the time the second team arrived on scene, the command post, a small Coast Guard station, was a veritable ant hill of activity. Press trailers filled a football-field-sized parking lot outside a guarded perimeter. An equal number of trailers was within the compound, housing teams from the NTSB, FBI, ATF, and various local law enforcement agencies. The Red Cross had set up a relief tent. Even a helicopter landing pad had been added to the station. One salvage ship was already anchored over the wreckage, and another was on the way. This was no small operation!

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LCDR J. Rowland Huss conducts the morning briefing for the Mobile Dive Teams.

This tail section was one of the largest single pieces salvaged by the Mobile Dive Teams.

One consistency of the operation was the local hospitality and support. Throughout the area, the doors of the community were opened. Divers found it difficult to walk the street without a kind word or a handshake from a stranger.

Towards the end of the operation, weather became the most significant adversary. Though diving had been canceled due to weather intermittently throughout the course of the operation, the late September and October weather was almost continuously foul. Heavy current and surge was moving pieces of wreckage on the bottom, or burying it in place. By this time the press was reporting 90 percent of the wreckage recovered, and rumors of completion began to gain credibility.

The final dives were made on 2 November, 108 days after the first Navy personnel arrived at the scene. After recovering over 98 percent of the aircraft, the weather and scarcity of debris led planners to release divers and continue the recovery effort using trawlers to drag the bottom. EODMU Six contributed a total of 28 divers who made 912 dives. Not since the Gulf War had the mobile unit deployed so many of its members in response to a national crisis. ■

LT Eric Wick graduated from Basic Dive Officer and Mixed Gas Dive School in July 1992 and was assigned as MPA aboard USS Sunbird (ASR 15). After decommissioning Sunbird, he was assigned to USS Beaufort (ATS 2). He attended EOD school and is currently assigned as OIC of EODMU Six Det Six.

EODMU SIX (from page 6)

The first order of business was clear: recover victims. Each day diver teams were given target positions from side-scan sonar or laser line scan. Divers would then search each mark using handheld sonar. Because of the depth (120 feet), bottom time was at a premium. Scuba divers would typically be deployed solo, tended to the surface using a witness float. This tactic, which is common among mine-countermeasure teams, maximized the number of targets a team was able to prosecute daily. Victims recovered were turned over to the police. Any wreckage found was marked and thoroughly examined for part numbers. Experts used this information to determine a profile of the debris field.

While the search for victims remained a priority throughout the operation, divers were later tasked with recovering wreckage. The Mobile Dive Teams, as the Navy and police scuba divers were called, were mainly employed in the less-concentrated areas of the debris field. Small pieces were brought directly to the surface by divers, while larger pieces were rigged and salvaged using a large, flat-bottomed barge, equipped with an A-frame.

As the days turned to weeks, divers quickly found that the only predictable aspect of the diving was its unpredictability. Calm and sunny days would be followed by horrendous, undivable weather. Currents seemed to race one day, and then be unnoticeable for a week. Some days were spent without locating wreckage at all, while the next day multiple divers would be spent clearing a single 20-yard circle on the sea floor. Though the visibility was typically 10 to 15 feet, some days it was next to nothing. Even the sharks, which later came to visit, came only for a 2-week period, not to be seen again.

USS *Grapple*: Ready to Serve

by Ensign George A. Renteria and BM1(DV) Austin D. Fall

Deep Drone 7200 returns to the USS* Grapple *due to extremely heavy seas. Deep Drone was used to help* Grapple*'s divers locate victims and wreckage. (Navy photograph by Photographer's Mate Airman Charles L. Withrow.)

On July 28, 1996, USS *Grapple* (ARS 53) took in all lines to get underway for what became the U.S. Navy's largest and most important salvage operation this decade and perhaps of all time, the recovery of TWA Flight 800.

En route to the crash site, *Grapple*'s crew and embarked members of Mobile Diving and Salvage Unit Two (MDSU-2) combined their salvage expertise in preparing four mooring legs, with spring buoys, for dropping upon arrival on station. Through the first days and nights of their arrival, the *Grapple* crew, aided by MDSU-2 and LCMs from Assault Craft Unit Two (ACU-2), rigged, deployed and heaved 'round so that by late afternoon on 31 July the *Grapple* had assumed her posture within a four-point moor, over a large debris area, mirroring the *Grasp* just a mile away.

On board the *Grapple*, divers were quickly organized into three crews comprising approximately 15 divers apiece. The 120-foot depth of the crash site and the need for a sustained bottom time dictated that the majority of the dives would have to be conducted using surface-supplied diving techniques. Every four days the crews rotated. Two crews dove the MK 21 surface-supplied diving system, with hot-water suits to combat the cold temperatures below. The surface-supplied teams operated off the *Grapple*'s fantail, running seemingly endless dive ops around the clock, splitting the 12-hour shifts between days and nights.

Long Days and Nights

"I am really proud to be a U.S. Navy Diver," said Quartermaster First Class/Diver Dennis VanBuren, the Leading Petty Officer of the *Grapple* Dive Locker recalling the operation. "The days, and especially the nights, began to take a toll on our divers, the hot sun in August to the cold rain in October, but they wouldn't stop. We kept thinking of the victims and their families, many of them Americans, and that fueled us, it pulled us together. That's how we kept going and got the job done." The third crew worked in conjunction with EOD Group Two scuba diving on outlying sonar contacts during daylight hours.

Equipped with an on-board chamber and a borrowed TRCS (Transportable Recompression Chamber System), more affectionately know as the "Tiny" Recompression Chamber System, the two chambers allowed *Grapple* divers to run overlapping 120/90 Sur-D O_2's (Surface Decompression using oxygen) while still maintaining an available chamber for emergencies. Each crew, trying to maximize its time on station, suited up its next team as its surfacing team began their chamber decompression obligation.

Deep Drone Helps Out

Once in the water, *Grapple* divers were steadily helped by SUPSALV's (Supervisor of Salvage) premier ROV (Remotely Operated vehicle), Deep Drone 7200. Boatswain's Mate Second Class/Diver Paul Potrok said of the ROV that "Despite it being a machine, it was kind of comforting at times to have Deep Drone as company on the bottom. I think victim recovery might have gotten a little emotional at times … Deep Drone, with its bright lights and all, helped us keep focused on our task." For all its technical wizardry, Deep Drone's most enhancing features on this job were its target locating sonar and three independent cameras. The sonar not only located distant piles

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of debris, but also afforded a means of guiding divers to selective pieces of wreckage and victims in near-zero visibility. The cameras consist of one 35mm still, and both a color and a black-and-white television camera as well. Like a wide-opened, extra pair of eyes, these cameras saved divers countless minutes of valuable bottom time. Through these cameras, divers and supervisors alike were allowed to gain a clearer visual picture of the bottom and methods of rigging debris before ever leaving the side.

Initially, the recovery portion of this operation was hoped to last four weeks, but bad weather, the inability to quickly determine a cause to this tragedy, and the sheer volume of collectable debris proved the situation otherwise. From both Hurricanes Eduardo and Fran to the wintertime nor'easters, deep-water currents continually hampered recovery efforts by slightly shifting and covering the remaining debris fields. For safety reasons, diving stopped when the weather got too rough, even though operations off the *Grapple* were sustained through 5- to 6-foot swells and 12-degree rolls. Returning salvage vessels continued to dive on thinned-out pockets of debris.

Salvage work done even under the best of conditions takes considerable time. The *Grapple* remained on station for over three months with only a 48-hour notice of tasking, a true testament to the ship logo, "Ready to Serve."

A Team Effort

Not since the Space Shuttle Challenger accident in 1986 have so many Navy divers been assembled on one site. Along with the divers from the *Grasp*, *Grapple*, EOD, and MDSU-2, nearly all areas of the diving community were represented. Divers assembled from the research worlds of NUMI, NMRI and NEDU. From Norfolk, divers came from the Shenandoah, L.Y. Spear, SIMA and SDV-2. NDSTC even answered the call from far away Florida, making this operation a rare chance for different degrees of divers to come and work together.

Accidents during this operation were minimal — no small feat when considering at the end of this operation the Navy is likely to have logged well over 4000 dives. In the Dive Community, safety is always paramount, and our proven safety record here may be viewed as strong testimony to our pride, professionalism, and the outstanding training that we receive. Reflecting on dive school, Electrician's Mate Chief/Diver Andrew Alexander comments, "We dive exactly like we train. In addition, there are always going to be unforeseen circumstances that our training and experience will help us overcome, something we must always keep in mind."

Secondly, lest we forget, the Navy functions best when it functions as a team. "I just tried to be there whenever I was needed," said Damage Controlman Third Class Christopher Eastin, putting into words the dedication of the crew. For every diver that suited up on the side, there were deck hands, cooks, and engineers who had worked hard to ensure that we could comfortably sit there. These were the people the media did not often see. So to them, we would like to personally say — we saw the ways you helped; we appreciated your dedication. Thank you. ■

Warping tug tied up alongside USS* Grapple *to transfer debris.

Ensign Renteria has served as an Explosive Ordnance Disposal Assistant with EODMU Five DET Guam and as an 1190 for the Special Operations community. After completion of the Navy's Basic Diving Officer (BDO) course at the Naval Diving and Salvage Training Center (NDSTC), he has been assigned to the USS Grapple (ARS 53).

BM1(DV) Austin D. Fall also attended NDSTC. Upon graduation as a Second Class Diver he was assigned to the SIMA Guantanamo Bay, Cuba. Completion of his overseas tour led him back to NDSTC for First Class Diver Training. Since then, his assignments have been to the USS Recovery (ARS 43), MDSU Two DET 708, and EODMU Twelve DET 4. He is currently on board the USS Grapple (ARS 53).

EODMU Two Serves on the "Dream Team"

by LCDR Dave Lesko

On 18 July, EODMU Two Detachment Earle (OIC LT Scott Shire) and a four-person command/control/communication element were dispatched to Long Island to help recover victims from TWA Flight 800. The teams arrived on scene at Moriches within 72 hours of the incident. They were self-sufficient in both scuba and MK 16 UBA diving and search capabilities. Dive platforms included a 26-foot Rigid Hull Inflatable Boat (RHIB) and a 27-foot Boston Whaler. Within 5 days these teams were joined by EODMU Two Det Two, EODMU Two Det Six, and four support personnel for vehicle and boat maintenance. A second 27-foot Boston Whaler and two 22-foot Boston Whalers joined the EOD contingency.

Scuba teams from state and local police and fire departments and the FBI were invited to join the operation. Together with EOD assets, these teams comprised what was designated as "Mobile Dive Teams" or the "Dream Team" as they became affectionately known by SUPSALV, CAPT Chip McCord. Each organization conducted a separate dive operation from its individual platform. Recompression chamber support was available at the crash scene aboard the USS *Grasp* and USS *Grapple* and ashore at Moriches with a MDSU Transportable Recompression Chamber System (TRCS).

Debris was scattered over a 3-mile area with densities of varying degrees. Dense debris fields contained hundreds of extremely large items weighing several hundred pounds in piles or within close proximity. Scattered debris areas generally contained fewer, often times smaller individual items (compact discs, clothing, etc.) separated at times by over 1000 meters. Depths ranged from 110 fsw to 126 fsw.

Victim recovery was the sole tasking of initial missions and remained the highest priority throughout the operation. The extremely dense debris field (Search Area 1) was searched and eventually cleared using the available ARS assets and surface-supplied diving. The larger search area (Search Area 3) with lower debris densities and more widely separated targets was investigated, recorded, and cleared by Mobile Dive Teams. Search Area 2 was a small debris field of moderate density that was cleared using an ROV from *Pirouette* and scuba divers from the USS *Grapple* and the Mobile Dive Teams.

Each morning, an in-depth dive operation and safety brief was conducted by the Mobile Dive Team Coordinator/EOD Task Element Command (LCDR Dave Lesko was relieved by LT Anne Roper on 28 August) with all Mobile Dive Team leaders. Weather and sea conditions, target assignments, emergency plans, and safety considerations were reviewed. Mobile Dive Teams would then conduct an open-ocean transit via small boat 12 miles to the crash site.

The primary mission of the Mobile Dive Teams was victim recovery in debris areas of lesser densities precluding the efficient use of surface-supplied diving and an ARS in a four-point moor. Dive teams utilizing small boats and GPS navigation systems could easily transit to the far and removed areas. Once at the suspected location of a target, a marker clump was deployed and used as a descent line. Divers deployed to the bottom in scuba and conducted a search using AN/PQS 2A sonar. Poor visibility precluded visual contact beyond 8 feet. As debris was discovered, it was recorded using video and searched for victims. A reconnaissance of the bottom was also conducted. In the initial phase of the operation, searched debris was marked with a 5-foot piece of polypro line to prevent redundant searching. On several occasions victims were detected with laser line scan, located, and recovered by divers using the AN/PQS 2A handheld sonar.

After each dive, divers completed a survey summarizing his or her dive, recording and describing debris. This data was reviewed by the Mobile Dive Team Coordinator each night in order to develop target lists with a high probability of victim recovery for the following day. The dive surveys were also entered into the database and charted as existing or recovered items. Through these reports, the mapping and analysis of the debris fields, as well as the catastrophic sequence of events during the accident, would be established.

Diving within the debris in scuba was always a concern. In large debris fields, divers dove in pairs with the standby diver always at the ready to enter the water. The searching of debris for victims placed personnel in extremely hazardous situations. Situation awareness and diver discipline were critical to the safe conduct of this mission. Miles of twisted rubble and wire were encountered and closely examined. Over 100 victims were recovered by the divers from this environment without an accident or incident involving a scuba diver.

Eventually, the debris had to be removed from the bottom to reveal existing victims. Diver teams then rigged the debris for a lift and removal by a warping tug. All debris was tagged with the location of recovery for further analysis. Mobile Dive Teams were eventually aug-

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Divers from EOD Mobile Unit Two Detachment Earle en route to the crash site. The boat in the background carries NY City Police divers.

EODMU TWO (from page 10)

mented and supported with divers from the USS *Grapple*.

Throughout the operation, environmental conditions were continually a concern. Water temperatures ranged from a surface temperature of 66 to a bottom temperature of 48. Variance was as much as + or -5 degrees on a given day depending on the weather. During 15-minute dives in wetsuits, divers sometimes became chilled. Powerful currents contributed to the fatigue. Seas ranged from less than 1 foot to greater than 10 feet. Several dive days were lost due to a hazardous sea state. Fog was of great concern, as what appeared to be a clear day could result in visibility of less than 50 feet within minutes. Sharks were encountered by divers in the water column on several occasions without incident.

Diver fatigue and mental stress under these arduous conditions was of great concern. With a limited number of dive days remaining due to the approaching fall, it was imperative that dives be conducted whenever possible. Individuals dove up to 15 consecutive days on several occasions. Personnel were continuously monitored for physical and mental fatigue. Psychiatrists were available to all concerned. On days that weather precluded diving, all divers were allowed to rest. Team leaders also released personnel for rest as required throughout the operation. EODMU Two divers conducted more than 900 dives to 120 fsw during this operation without a diving accident.

The crash of TWA Flight 800 was an unfortunate tragedy in which the Navy and several civil and federal agencies were called upon for emergency assistance to execute extremely dangerous missions under less-than-pleasant conditions. Despite the external pressures from various entities, those involved responded in an extremely professional manner. The focus of all involved remained the safe and efficient recovery of victims for the grieving families and the recovery of debris which would eventually result in an explanation of the tragedy. From the perspective of the Explosive Ordnance Disposal personnel assigned to this mission, the operation was a total success. Through teamwork and continual mutual support of those involved, all obstacles encountered were overcome. ■

During this operation LCDR Lesko was assigned to COMLOGGRU Two as the EOD Task Element Commander and Mobile Dive Team Coordinator. He is currently the Operations Officer at EODMU Two.

MDSU Two Rounds Out the Recovery Team

by BMC(SW/DV) Ruben Finger

During the recovery efforts after the TWA Flight 800 crash, the presence of diving detachments from Mobile Diving and Salvage Unit Two added an invaluable and flexible asset to the On-Scene Commander. Due to the drawdown of salvage forces in the fleet (all Atlantic fleet salvage ships were involved), MDSU Two augmentation was essential for the full utilization of the ships, craft, and scuba teams involved.

On July 20 the first group of what would eventually grow to over 40 MDSU Two divers arrived on station at East Moriches. Under the NAVSEA Supervisor of Salvage, the initial shore-based diver teams were being formed, consisting of both civilian and military divers. They were supported by the MDSU Two chamber team made up of BMCM(MDV) Eric Frank, BMC (SW/DV) Ruben Finger, MR1(DV) Roger Riendeau, and MR1(DMT) Scott Allison, who (at Moriches) provided the primary shore-based recompression chamber using the Transportable Recompression Chamber System throughout the operation. Several hyperbaric treatments were conducted by the MDSU Two detachment using the TRCS. All chamber operations were completed successfully and safely.

While some MDSU divers were on the beach, most of the divers were attached to the two on-site Navy salvage ships, the USS *Grapple* (ARS 53) and the USS *Grasp* (ARS 51). Their augmentation proved to be essential in maintaining the high-tempo salvage operations on board the two ships. Dive teams were able to continue round-the-clock salvage operations using two 12-hour shifts. The integration of MDSU Two personnel was a smooth one, with many of the divers having been previously stationed on ARS 50 ships. For the younger divers, such as EM3(DV) Dave Doolittle, EM3 (DV) Stephen Duncan, and HT2 (DV) David Skujins, this operation provided an excellent opportunity to gain valuable at-sea diving and salvage experience, at times under adverse conditions. Divers typically dove to depths of 120 fsw in sub-50 degree water using the MK 21 surface-supplied diving systems and hot water suits.

Capt. McCord (SUPSALV), BMCM(MDV) Frank and MM1(DV) Riendeau discuss TRCS operations during TWA Flight 800 recovery.

MDSU divers were also continuously on the Warping Tugs provided by Amphibious Construction Battalion Two and supervised operations during much of the recovery effort. Warping Tugs, with the leadership of HTCM (MDV) Matteoni and BMC (DV) Ruben Finger, were employed primarily in the smaller debris fields with the responsibility of retrieving smaller pieces of wreckage that had been

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MDSU TWO (from page 12)

previously marked off by scuba dive teams. These hardy platforms also assisted in heavy lifts in the main debris fields, recovered beach gear legs, and served as scuba platforms for dive operations.

Proving MDSU's determined professional spirit, several divers volunteered to return to the operation after having completed one rotation. BM1(DV) Alan Warf, MR1 (DV) Kim Heckhausen, and MR1 (DV) Brian Kerr augmented the ARSs originally and then returned to help form a MDSU Two scuba dive team utilizing a 22-foot Rigid Hull Inflatable Boat as the dive platform.

With long days being the norm, the sailors took advantage of their time off in many different ways. The opportunity to exchange sea stories with the divers from other military commands, as well as the civilian dive teams from the local police departments, increased the camaraderie in this already-close community.

For most of the divers, one of the highlights of the experience was an impromptu show put on by Margaritaville's Jimmy Buffet, who happened to be touring in the New York area. During the show he expressed his gratitude and appreciation for the hard work being done by the Navy divers as well as everyone else involved in the recovery efforts. After his performance at the Coast Guard Station at Moriches, Buffet ended his visit with a few photos and signing the entrance of the Transportable Recompression Chambers with "Best Wishes to all those who enter, Jimmy Buffet." ■

BMC/DV Finger is a First Class Diver assigned to MDSU-2 in Little Creek, VA. Chief Finger was a Team Leader on the TWA Flight 800 salvage recovery from July to September 1996. He is currently deployed to the Mediterranean with MDSU-2 Bravo Team. Chief Finger plans to attend Master Diver evaluation in the near future.

FBI Divers Join TWA Flight 800 Salvage Effort

by Robert A. Burkes

The New York Office Scuba Team was established in 1982 by New York Office Special Operations Division. Since then the team has conducted technical installations for Special operations and has made frequent trips to assist other field offices with recovering weapons for criminal cases. Team capabilities gradually increased to include inch-by-inch metal detector grid searches of underwater crime scenes including subsea photographic coverage. Equipment was procured for surface towed side-scan sonar mapping of the bottom and for lifting vehicles and human remains. During May of 1995 the New York team was augmented to 12 members, including technically trained agents, in anticipation of handling additional assignments as directed by FBI Headquarters. A good move, as right on the heels of a 5-week summer deployment to the Atlanta Olympics came a challenge few would predict and none would forget.

TWA Flight 800, a 747 aircraft, crashed July 17, approximately 8 miles off of Long Island's southern coast. Thus began one of the most extensive salvage operations in U.S. history. Headed by the Navy's Supervisor of Salvage (SUPSALV), a complete map of the debris on the bottom was prepared from sonar side-scan and laser line scan data. U.S. Navy salvage vessels equipped with cranes, ROVs (robot submarines operated by cable), and hard hat divers worked with scuba divers to pick up heavy wreckage. Hard hat divers were especially useful in cleaning up areas of concentrated debris which required lots of work within a 100 foot radius. Widely scattered for miles around, however, were thousands of individual pieces of debris. Each could most efficiently be recovered by a scuba team.

A scuba operation of extreme complexity and great magnitude ensued, coordinated by Navy SUPSALV. Navy, FBI, and police divers kicked off each day's work with the Navy's target assignment briefing at the Moriches Coast Guard Station. Next, the 70 odd divers in small craft sailed for the debris field approximately 10 miles distant. Using handheld Global Positioning System (GPS) receivers, each target was quickly located and marked with a buoy, long line, and clump anchor. Cold water necessitated heavy wet suits. Teams of one to three divers breathing air from large capacity (100 to 160 cu. ft.) scuba rigs splashed for the 115+ foot swim to the bottom. Watched over by dive boats above, the swimmers were allowed 13 to 15 minutes bottom time to hunt. Time was severely limited to reduce exposure to decompression problems. Two Navy recompression chambers stood by to treat any emergencies. Most searches were successful, though hurried, as divers were guided through the murky waters by the pinging echoes from their handheld "two alpha" sonar guns.

Very large debris was rigged by divers for lift by Navy shipboard cranes. Small pieces and human remains were brought up by hand in bags. Divers documented each target search for SUPSALV and crash investigators. All debris was delivered to FBI agents aboard Naval vessels and Coast Guard stations. After tagging and documenting the recoveries, the

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agents sent them on to an aircraft hangar for investigation. This became a monumental effort undertaken by hundreds of agents and support personnel from offices nationwide. Prominent everywhere were the members of the FBI Evidence Response Teams.

The scuba operation continued as SUPSALV conducted continuous repetitive side-scan sonar sweeps of the same search areas. Divers used handheld metal detectors to identify targets that may have become buried in the sand. ROVs tethered to salvage ships cruised the bottom giving many areas another look. Human remains were retrieved throughout the operation and remained top priority.

Fall weather brought rough seas, making the job more dangerous. The search continued though, until no unexamined targets remained visible to the side-scan sonar. Over 3000 dive targets were examined in the 23-square mile search area. There ended one of the largest underwater salvage efforts, comparable only to the Challenger space shuttle recovery operation off the coast of Florida. ■

Robert A. Burkes is a Special Agent with the FBI's New York Office.

NYSP Proud to Assist

by Sgt. Gary A. Barlow

The New York State Police (NYSP) were proud to assist the Navy in the recovery of TWA Flight 800. Although this was the first time the NYSP has assisted the Navy in a recovery operation, the association between the State Police and the Navy began in 1934, when the first state police dive team was trained at the U.S. Navy Salvage School at Bayonne, NJ. In 1957, when the NYSP team switched to scuba, NYSP diver instructors were trained at New London, CT. The NYSP now runs a five-week training program for new divers at its Academy in Albany, NY.

A primary function of the NYSP is to offer services and support to communities and law enforcement agencies across the state. The NYSP has trained other agencies, including the Albany County Sheriff Department and the Albany City Police. The NYSP divers have invited other teams to their annual in-service training, and hosted the New York City PD scuba unit at last summer's in-service and February ice-diving schools.

The NYSP routinely recovers victims and evidence, averaging 250 dive details and logging 1200 dives a year, but has never been involved in an operation of this magnitude. Diver training includes zero visibility diving, crime scene awareness, and evidence collection, qualification to 132 ft., and ice diving. But for many of our divers, this was their first taste of salt water.

Working with the Navy was a very enriching experience, especially for our younger members with no military experience. Long boat rides through fog, losing sight of the shoreline and then pulling along side a ship the size of the *Oak Hill* can be a very humbling experience to a trooper only familiar with a 17-foot Boston Whaler. Our divers are particularly fond of some of the tools the Navy divers use, especially the underwater handheld sonar, or "2-Alpha."

Our divers appreciated the clean bottom and good visibility that made this difficult recovery operation a little easier than it could have been. We were thankful that, in our support capacity, we did not have to deal with this tragedy, and the grief it has brought, in the one-to-one personal interactions we normally have at a local level. ■

NY State Environmental Officers Gary Enright and Joe Kiefer, along with NYSP Diver Bob Caridi, take on supplies.

Sgt. Gary A. Barlow is Assistant Division Diving Officer for the New York State Police.

The OLD MASTER

by QMCM(SW/MDV)
Brendan W. Murphy
Combat Logistics Group Two

There are certain "givens" in the world — things that are not done. For instance, it is wise not to spit into the wind or step into a bite of line. On a larger scale, one must never fool with Mother Nature. In the diving community there are two such givens. The first is that the Master Diver is always right. Though this rule in particular is one of my favorites, I have nonetheless personally proved it to be in error so many times it should probably be considered invalid. The second given in the diving community is to never assign more than one Master Diver to any particular operation. This theory is based on the supposition that there would be a tremendous clash of wills. The resultant fallout from such an ill-advised action would far exceed any benefits gained. Though this second given is universally accepted, it is also misguided and inaccurate.

I have worked with a variety of Master Divers, from MMCM(SW/SS/MDV) Wiley, the Navy's most senior Master Diver, to ENC(SW/MDV) Babin, a recent selectee. I have worked diving, salvage, and ships' husbandry operations, large and small, locally and in remote foreign areas. The one common thread in the success of these missions has been the varied input received from my fellow Master Divers, both on active duty and retired. Recently, the tragic crash of TWA Flight 800 tested this very premise.

After defining the mission and assembling assets and personnel, Rear Admiral Kristensen, OTC, Captain McCord, Supervisor of Salvage and Diving, and the Commanding Officers, LCDR Orr of the USS Grasp and LCDR Robertson on board the USS Grapple wisely looked to their Master Divers for action. Team building was a concern because there were divers from over 20 different Navy commands and civilian municipalities. In order to attain and maintain unit integrity and cohesiveness, Rear Admiral Kristensen directed that all divers, regardless of their background, be considered as "one team." This being the case, if the second "given" had been even remotely true, the TWA Flight 800 salvage operation could have very easily evolved into a national embarrassment. This was not the case. Solid and unwavering command and control from the top provided the atmosphere where failure was not an option. Subsequently, the Master Divers, through the untiring and heroic efforts of the divers working for them, successfully completed the largest aircraft salvage in history.

Contrary to popular opinion, the impossible was achieved. Over a 3½ month period, 18 Master Divers worked together effectively. The 10 who worked from 2 weeks to over 3 months directly at the salvage site were:

MTCM(SW/MDV) Matteoni, MDSU 2
BMCM(SW/MDV) Frank, MDSU 2
EMCM(SW/MDV) Propster, SIMA Norfolk
ENCM(SS/MDV) Curtis, USS Shenandoah
QMCM(SW/MDV) Murphy, USS Grapple
ENCM(SS/MDV) Perna, SIMA Norfolk
BMCS(SS/MDV) McMurtrie, NAVSEA
HTCS(SW/MDV) Royce, SIMA Norfolk
BMC(SW/MDV) Dennis, USS Grasp
MMC(SW/MDV) Sharpe, USS Grapple

There were eight other Master Divers that supported the operation in a more indirect way but whose contributions were nonetheless critical. These eight supported the operation with their divers and equipment. The behind-the-scene Master Divers were:

HTCM(SW/MDV) Phalin, NMRI
BMCS(SW/MDV) Westbrook, NDSTC
EMCM(SS/MDV) Donlon, NSSF
BMCS(SW/MDV) Ledbetter, EODMU Six
QMCM(SW/MDV) Stock, SIMA Norfolk
HTCM(SS/MDV) Young, EDU
HTCS(MDV) Trautman, SDV-2
HTCS(MDV) Furr, NSWG-2

During the entire operation, the Master Divers conferred with one another constantly. Every aspect of diving and salvage was covered at one time or another. On any given day a rigging problem would be discussed and solved, the method and length of a treatment decided, even how a liberty party was going to get ashore and where they would be berthed. Don't be confused: it was not diving and salvage by committee. More accurately, it was the efficient use of an enormous database of information and experience.

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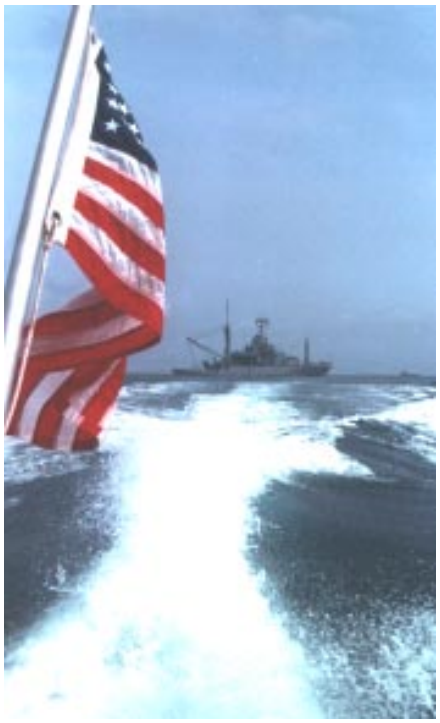
In summary, Master Divers are aggressive problem-solvers extremely capable of thinking and acting independently. As the TWA Flight 800 salvage operation illustrated, these character traits do not preclude Master Divers from working as "one team"; on the contrary, they enhance their ability to do so.

Master Chief Murphy was Master Diver on board the USS *Grapple* (ARS 53) during the TWA Flight 800 salvage operation. He worked on the project from 26 July through 4 November 1996. Currently he is serving on the staff of Combat Logistics Group Two. Master Chief Murphy's previous salvage experience includes tours on board ex-USS *Recovery* (ARS 43) and Mobile Diving and Salvage Unit Two.

Editor's Note: As we go to press, there has been no determination by the NTSB or FBI as to the cause of the crash. Four scallop trawlers are currently working 24 hours a day under the SUPSALV Search and Recovery Contract, dragging the crash site and recovering small pieces of debris in hopes of locating conclusive evidence.

Last Reminder:

The 1997 NEDU/Sealab Reunion is planned for weekend of 13-16 March in Panama City. For details, please contact Bob Barth at NEDU, 321 Bullfinch Road, Panama City, FL 32407-7015. Phone: (904) 230-3100 / Internet: BARTH_BOB@hq.navsea.navy.mil.



Departing from the USS* Grasp *(U.S. Navy photo by Chief Journalist Richard Toppings).

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