In Memory of
Admiral "Ike" Kidd
Most Senior Navy Diver (page 14)

FACEPLATE

The Official Newsletter for the Divers and Salvors of the United States Navy
Volume 4, No. 2 / August 1999

BU2 (DV) Josh Ross surfacing through the ice

In This Issue

SUPSALV Sends

Having just returned from a truly joint search and salvage effort that located and recovered the Piper Saratoga and remains of John F. Kennedy Jr., his wife and sister in law; I want to express the pride I feel having witnessed first hand the true professionalism and exceptional cooperation of all those involved. You may not see the typical level of follow on stories to this salvage operation that you are used to; but don't conclude that those involved didn't perform magnificently in the face of extreme press scrutiny and pressure to resolve the matter quickly. The sailors on GRASP along with SUPSALV personnel both government and civilians developed and flawlessly executed a plan that ensured a successful recovery while being respectful for the gravity of the situation. Performing literally under the world's eye NAVY, USCG, NOAA, NTSB and state and local officials were able to bring closure to the families and the nation in this tragic time. I salute all those involved.

As you read the articles in this issue on salvaging a MARINE helo, diving in the Arctic and repairing ships and dams; the fact that divers worldwide are achieving exceptional re-

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SUPSALV Sends (continued from page 1)

sults, albeit they may not garner public attention at the level I spoke of above, shouldn't be surprising to you as NAVY divers. But please pass this newsletter around in the mess decks, goat locker, or wardroom to let others in on our secret - NAVY DIVERS "can do".

As we revel in our successes, please read and heed the input from our "Old Master" column. This issue's article by MDV Marty Hierholzer reflects on some of his background and provides sound words about looking after one another. As a very tight knit community, it's comforting to know that there is a Master Diver top side.

Finally, I do want to take this opportunity to bid farewell to Commander Bobbie Scholley "Supervisor of Diving" who has been a tremendous asset to this office with her interaction with the Fleet. CAPT (sel) Chris Murray is relieving Bobbie.

Dive Safe and keep charging!

CAPT B. Marsh
Director of Ocean Engineering
Supervisor of Salvage and Diving

E-mail: marshb@navsea.navy.mil

FACEPLATE is published by the Supervisor of Salvage and Diving to bring the latest and most informative news available to the Navy diving and salvage community. Discussions or illustrations of commercial products do not imply endorsement by the Supervisor of Salvage and Diving or the U.S. Navy.

Articles, letters, queries and comments should be directed to the Commander, Naval Sea Systems Command, NAVSEA 00C, 2531 Jefferson Davis Highway, Arlington, VA 22242-5160. (Attn: FACEPLATE). Visit our website at **http://www.navsea.navy.mil/sea00c.**

Captain Bert Marsh, USN
Director of Ocean Engineering
Supervisor of Salvage and Diving
NAVSEA 00C
marshb@navsea.navy.mil

Jim Bladh
Head, Operations Branch, 00C22
Managing Editor
bladhjc@navsea.navy.mil

HTCM (MDV) Chuck Young, USN
ENCM (MDV) Dave Davidson, USN
Fleet Liaison Editors
youngch@navsea.navy.mil
davidsondl@navsea.navy.mil

F. Scott Lassiter
Graphic Designer/Production Editor
slassiter@roh-inc.com

CH 53E SUPER STALLION JOINT EFFORT SALVAGE

By ENCM (SW/MDV) David Davidson

On March 18, 1999, four U.S. Marine Corps Air Warriors lost their lives in a CH-53E Super Stallion helicopter crash off the coast of Okinawa, Japan. Salvaging a downed aircraft that crashed for unknown reasons is an important task. Salvaging the wreckage provides important information, which could prevent future crashes and save the lives of our shipmates.

Initial tasking to coordinate search and recovery efforts and development of a salvage plan was assigned to LCDR Skogerboe, COMSEVENTHFLT and CTF 73 Salvage and Diving Officer. Initial search efforts were conducted by JMSDF

USMC CH-53E Main fuselage section (15,000 lbs.) being brought onboard USNS Narragansett

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vessel JDS MOROSHIMA (MSC 667) which identified location of wreckage. Utilizing USS PATRIOT (MCM 7) and EODMU FIVE DET 51 all bodies were recovered using MK16 UBA. The entire debris field was filmed using the USS PATRIOT's Mine Neutralization Vehicle (AN/SLQ-48). The debris field was approximately 175 yards long and 75 yards wide with depth ranging between 172 FSW and 188 FSW. The initial salvage recommendation was to conduct an extensive salvage using two barges, one floating crane, two platforms, mixed gas and military and contracted divers. The approximate cost for this type of salvage would exceed one million dollars. LCDR Skogerboe recommended using Pacific fleet assets, air diving and one platform equipped with a crane. The cost to mobilize the team and equipment was $25,000 excluding platform costs. This was a huge saving over the initial recommendation. USNS NARRAGANSETT, which was operating in the region, has a large fantail, is equipped with a 10-ton crane, and was an excellent choice for the platform.

With fewer dive lockers and reduced fleet manning, joint effort salvage is the wave of the future. Conducting joint effort salvage not only saves money, but enhances fleet capabilities to respond. This salvage was conducted using divers from COMNAVMARIANAS, MDSU ONE, NAVSPECWARUNIT ONE, 5th Force Reconnaissance Battalion USMC, and a Salvage Officer from COMLOGWESTPAC. COM-AVMARIANAS provided a MK3 Light Weight Dive System, 5th Force Reconnaissance Battalion provided a Transportable Recompression Chamber System (TRCS), and NAVSPECWARUNIT ONE provided high pressure air compressors. Not only was the salvage a joint effort, but to satisfy Guam area bends watch requirements, USS FRANK CABLE (AS 40) and EODMU FIVE provided divers to support COMNAVMARIANAS during ten humanitarian recompression treatments that happened in Guam while the divers were on this salvage operation.

Over ninety four percent of this CH-53E Super Stallion was recovered giving the Aircraft Mishap Board everything needed to determine the cause of mishap. A total of 54 dives to depths between 172-188 FSW was performed to recover the massive wreckage. Unfortunately, two of the 54 dives resulted in Type II Decompression Sickness. The first incident was on a 180/:25 Standard Air Decompression Table. The diver complained of Paresthesia in his left leg and was treated on a Treatment Table Six with maximum extensions at the 60 and 30-foot stops. After this case, all dives were bumped to the next Schedule regardless of work or profile. We had no problems with the numerous 190 FSW air tables, but had a second bends case on a 180/:25 Standard Air Decompression Table. This dive was bumped from a 180/:20 and the diver displayed weakness in his right arm approximately one hour after the dive. A Treatment Table Six with one extension at 60 FSW was performed and diver surfaced asymptomatic. Looking at the Navy statistics for these 180 FSW tables, it is hard to tell whether they give sufficient decompression due to the small sample of 180/:25 dives completed over the years. Decompression Table "soft spots" will be discussed in July 1999 at Naval Submarine Medical Research Laboratory.

Fantail of USNS Narangansett during salvage of USMC CH-53E Super Stallion helicopter

Deep air diving salvages provide an excellent opportunity to flex all of your diving/salvage skills. These dives required 30, 20, and 10-foot stops. Divers took three minutes to descend and had approximately 10 to 15 minutes to find and rig as many aircraft parts as possible. Divers had to have excellent rigging skills to perform this salvage while faced with Dyspnea, Nitrogen Narcosis, and a limited bottom time due to the depth. Regardless of the problem, this combined team of divers handled each situation in textbook fashion. Although this team has never worked together before, their professionalism and superb diving/salvage knowledge made this a highly effective and desired salvage team. Hoo Yah Navy Salvors!

Master Diver Dave Davidson is currently assigned at the Naval Sea Systems Command, Supervisor of Salvage and Diving, where he works in the Diving Division.

Dr. Kayar watches the beginning of a simulated dive to 759 feet of sea water (230 meters) that will last three hours. This 200 cu. ft. chamber was specifically designed for operating on a variety of gas mixtures including hydrogen, helium and air.

Experimental Biochemical Decompression Method for Navy Divers

By Doris Ryan

Navy biomedical researchers are looking for new ways of reducing the risk of decompression sickness for over 4000 divers working in the Navy's Explosive Ordnance Disposal, Naval Special Warfare, and diving communities. After a dive, Navy divers return to the surface slowly to allow time for losing excess gas absorbed in their bodies from the breathing mixtures used during the dive. A rapid ascent might cause the excess gas to form bubbles that could lead to serious health consequences. This decompression phase, structured to minimize the divers' risk of decompression sickness, can be time-consuming and dangerous.

A team of scientists and technicians at the Naval Medical Research Center (NMRC), Bethesda, MD, with funding from the Office of Naval Research, is making progress on a novel method of biochemical decompression. Dr. Susan Kayar, head of the NMRC Decompression Research Program, and her team have developed a research animal model for ultra-deep diving using hydrogen as the primary component of the breathing gas mixture. In this model, non-toxic bacteria (*Methanobrevibacter smithii)*, native to the intestinal tract, are used to remove some of the hydrogen dissolved in the animal during a simulated dive in a dry chamber.

According to Dr. Kayar, "Removing even a small portion of the total body burden of gas significantly reduces the risk of decompression sickness as the divers return from their dive. Right now, the approach we are using simulates ultra-deep dives to 2000 feet. We add bacteria into the intestines of our animal models to metabolize the hydrogen to water and methane. We measure how much methane the animal releases and this gives us an index of how well the bacteria are working in the intestine. From this we can predict how much the risk of decompression sickness is lowered."

While investigating the use of this method for divers, a spin-off product for general consumer use was discovered. Dr. Kayar pointed out, "This technique of using hydrogen metabolizing bacteria has an application for people who don't dive at all. A great many people experience overgrowth of bacteria that make hydrogen in their intestines. If for some reason that hydrogen isn't lost from the intestines along with the other intestinal gases, it can cause a great deal of pain, bloating and discomfort. It is possible that the bacteria we are working with here could significantly reduce their discomfort. So, a product that was originally designed for Navy divers may provide relief to a great many people."

With three years of basic research on this project behind her, the next step is to work through the FDA approval process and develop an enteric-coated capsule for divers to use. Dr. Kayar explained, "We would like to find a pharmaceutical company that would freeze dry the bacteria and encapsulate them for use in human trials to test the tolerance levels. This is the first step in transitioning the research re-

Roland Ramsey, chamber support technician (left) and Dr. Kayar (right) watch as a simulated 3-hour dive begins in the laboratory. Equipment to operate the chamber and facilities include high ventilation fans for the chamber room, infared cameras, hydrogen sensors for detecting hydrogen leaks, and a computerized system for automated running of the diving chamber. Since mixtures of hydrogen and oxygen are explosive over a wide range of thier relative concentrations, this system is designed to reduce the risks of operator error in gas mixing in the chamber.

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sults from animal testing to human testing."

The current studies focus on hydrogen for deep diving, but future plans are to extend the approach to shallow water air diving, using bacteria that metabolize nitrogen. Dr. Kayar said, "What we would like to do is to make a transition from hydrogen metabolizing bacteria to nitrogen metabolizing bacteria, but the problem is that nitrogen metabolism is much slower. What we need is a more active form of bacteria to be developed and this will probably require some genetic engineering. We would be interested in working with a commercial or academic partner who would develop the bacteria we need for this research."

Dr. Kayar's team is interested in investigating other areas of decompression sickness as well. Dr. Kayar pointed out three areas she would like to work on, questions yet to be answered, "Is the risk of decompression sickness higher or lower when a diver is cold or warm during the dive, or cold or warm during the period immediately after decompression? Is an inflammatory response to the bubbles a cause of decompression sickness and not how many bubbles or the location of the bubbles a cause? Can decompression sickness be avoided by blocking an immune reaction by the body?"

Dr. Kayar is assisted in her research in biochemical decompression by Dr. William Whitman and Winston Lin, microbi-

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PMS Corner

"Service to the Fleet"

The following is a summary of the MIPS/MRCS changes since the 1-99 FR. Some of these changes may not have made the 2-99 FR deadline.

5921/047 Swimmer and Divers' Support Facilities.
Updated procedure for inspection of Quincy 5120 compressor intake/discharge valves.

5921/171 & 177 TRCS & MK 3 MOD 0 LWDS.
Added torque requirements for flask valves and blowout disks.

5921/177 TRCS.
Added MRC's to inspect CO2 Scrubber and test communications.

5921/181 FADS III.
Changed maintenance requirement for Norman filters to inspect and replace if contaminated. Added new MIP for MAKO Model 5409 (Highstar Model 74628MD/ME) HP air compressor. Added new MIP for ISUZU diesel engine Model C240 PW (used with Highstar Model 74628MD compressor), and Models 3KA1, 3KB1, and 3KC1 (used with the Bauer K-15-D compressor).

5921/034 Divers' Life Support System.
Deleting A-9 MRC 88 9JLH N. All relief valves will be tested at 3 year intervals unless the relief is suspect. The intent of this maintenance requirement is to test the relief without exceeding the max system operating pressure.

H-012/144 Life Preserver.
Clarified pressure requirements

H-012/118 LAR V.
Numerous changes. Updates for tech manual in routing.

NEW MIP Buoyancy Compensator.
PMS developed for SCUBAPRO SUPERHAWK BC.

SURFMER 23 (Surface Ship Maintenance Effectiveness Review).
Various 5921/5971/H-012 MIPS and over 100 MRCs were reviewed. This review covered all MIPs assigned to ARS 50 Class ships. Look for changes in upcoming force revision 3-99. NAVSEA 00C/NEDU will hold a DIVMER Diving Equipment and System Maintenance Effectiveness Review in October to review all 5921 & H-012 MIPs. Our intention is to have NAVSEA, ISEAs, and fleet divers familiar with the maintenance, review the effectiveness and efficiency of our existing maintenance requirements.

Points of Contact:

HTCM(MDV) Young NAVSEA 00C36
Comm: 703-607-2766, DSN: 327-2766, E-mail: **youngch@navsea.navy.mil**

BMCS(SW/DV) Duffy NAVXDIVINGUNIT Code 0311
Comm: 850-230-3100/3162, DSN: 436-4651, **E-mail: duffy_kerry@nedu.org**

REMOTE POLAR ICE DIVING

BU2 Ross and EA2 Mercado prepare to make a dive under the ice.

BY CUCM(SW/MDV) DAVY J. DANIELS

Underwater Construction Team ONE recently embarked on one of it's most logistically complex diving operations exercising Department of Defense's only capability to conduct polar ice diving from a self-sustained, remote ice camp. In March 1999, three C-130 airlifts containing 17 pallets with 64,000 pounds of equipment and seventeen personnel were mobilized to Thule, Greenland, 800 miles north of the Arctic Circle to dive in Wolstenholme Fjord – the only location on earth where three active glaciers join together.

HMC Hall and BU2 Reese using Ice Penetration System (IPS) to melt the ice hole.

Upon arrival in Greenland, the divers attended an Arctic survival course, "Cool School," hosted by survival experts from the 109th Air National Guard out of Schenectady, NY. After two days of formal classroom instruction, they were put to the test in the harsh Arctic environment for a 30-hour period while exposed to wind chills dropping to –50°F. In all, seven different types of survival shelters were constructed ranging from a traditional igloo to fighter trenches and snow caves carved in a 25-foot snow bank. The culmination of "Cool School" was sleeping overnight on a bed of ice in your survival shelter with the warmth generated from a candle and body heat.

With basic survival skills and a better appreciation for the elements, the divers got down to their main mission – mobilizing a completely self-sustained, remote Arctic ice camp to conduct polar ice diving through five feet of ice. Under the direction of Project Supervisor CM1(SCW/DV) Leonard McGuire, a five-man pioneer group departed from Thule for Wolstenholme Fjord to assemble the pioneer camp, which provides an initial shelter and safe haven from the Arctic environment for themselves and the 12-person main body soon to follow. In a perfect world, the main body would have followed the pioneer group in 24 hours to assist in completing the camp assembly. Unfortunately, it isn't a perfect world, and the pioneer group remained isolated for three days during white-out conditions with winds exceeding 70 knots. On the fourth day after mobilizing the pioneer camp, the remaining personnel were able to arrive on

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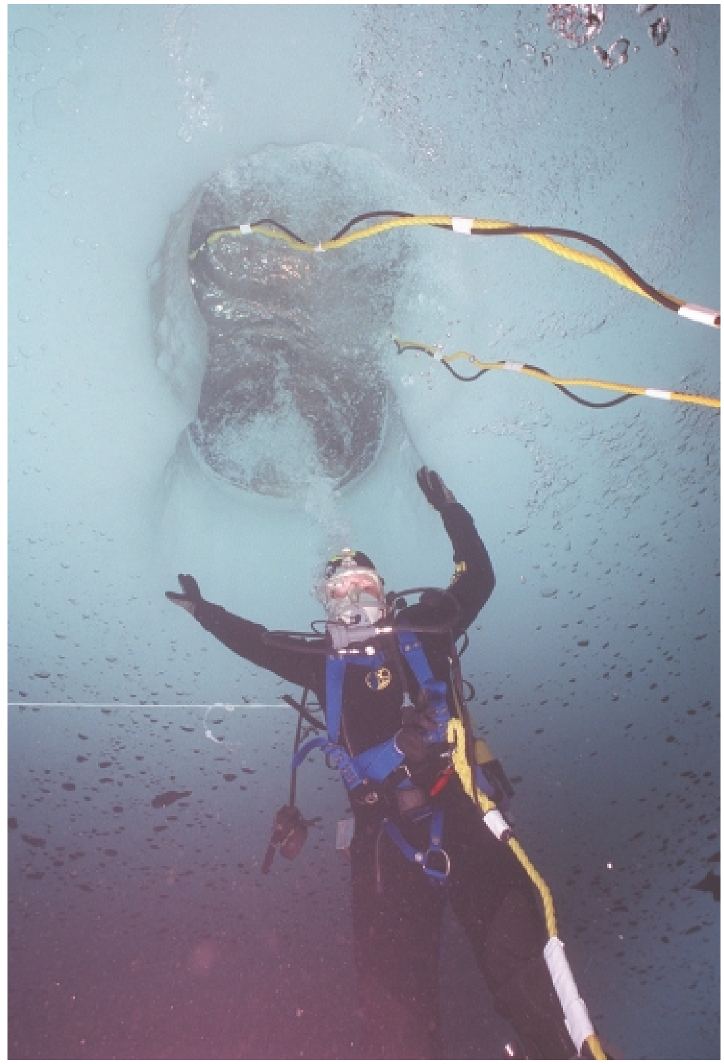
site and the thirteen-tent ice camp was completed within five days.

Nothing could be taken for granted. Fuel, rations, shelter, communications, power distribution, and diving equipment were all transported in, but water had to be obtained on site. Initially, ice had to be mined from an iceberg, located three miles away, for melting to provide drinking water. By the fifth day, a reverse osmosis unit (RO) was functional and producing up to 22 gallons of water per hour. This in itself was not an easy task as the ambient seawater temperature necessitated pre-warming before the RO unit could function correctly.

With the remote base camp fully operational, a 3 by 6-foot primary dive hole with a 3-foot diameter emergency hole located 75 feet away was melted through 5 feet of ice using a diesel-electric boiler ice penetration system (IPS). With the dive hole complete, TRCS lined up, VHF and HF communications established with Thule Air Base, and the Iridium satellite cellular phone operating, the diving began!

The ambient water temperature was 28.6° F, therefore the divers used Poseidon Odin regulators with the MK-20 mask and Poseidon Unisuits for thermal protection. After four days of diving operations conducted from within the base camp dive tent, smaller six man detachments set out to conduct remote dives from the base camp. The groups departed for three days to specific locations using 4WD ATVs towing two 12 by 12-foot mobile work shelters and navigating by GPS. Upon arrival to their destination they again established a dive hole and base operations on a much smaller scale.

In conclusion, the divers lived in the 12 by 16-foot tents with four people per tent for a period of fourteen days, completed 23 dives in depths of water ranging from 40 – 100 fsw, and were awarded the Arctic Service Ribbon.



Commanding Officer LCDR John Rosner diving under the ice cap.

The following personnel from Underwater Construction Team One participated in the Arctic Polar Dive: LCDR John Rosner ***CO UCT ONE,*** *LT Shawn Cullen* ***XO UCT TWO,*** *CUCM(SW/MDV) Davy Daniels, BUC(SWC/DV) Roy Ronkowski, HMC(SW/DV) Mike Lettmoden, HMC(DV) Sammie Hall, CM 1(SCW/DV) Leonard McGuire, EO1(SCW/DV) James Palaniuk, BU2(SCW/DV) John Bauer, BU2(DV) Mike Reese , CM2(DV) Elisia Correa, EA2(DV) Blair Mercado, BU2(DV) Joshua Ross, SW2(DV) Brian Oliver, HM2(DV) Chris Walker, PH2(DV) Eric Lippmann , EA1(SCW) Leo Calumpang*

CUCM(SW/MDV) Daniels completed Second Class Dive School in 1986, First Class Dive School in 1988, and was selected as Master Diver in 1993. He served two tours at UCT ONE and reported to USS HOLLAND (AS 32) after selection as Master Diver. Currently, CUCM Daniels is serving as Command Master Diver and starting his fourth tour at UCT ONE.

COMMAND IN THE SPOTLIGHT

SRF Yokosuka DiveLocker"Nan Demo Dekimasu"

By: Bill O. Morris

Aerial view of the U.S. Naval Ship Repair Facility, Yokosuka, Japan.

The Job:
On 18 FEB 1999, USS MOBILE BAY (CG 53) and LT Plath (NSRF Ship Superintendent) informed NSRF Dive Locker of a crack in MOBILE BAY's hull platting (starboard side, frame 134, approx. 10 feet below the waterline). A closed cofferdam was installed to seal the crack and allow shop personnel (X-26/11, weld shop) to conduct initial repairs. Due to pre-heat requirements and other design factors, it was determined that the cracked section of the hull plating would require replacement. To accomplish this we could dry-dock the ship or place a large open top cofferdam over the crack. Due to time and cost, we decided to use an open cofferdam. The initial design and templating was started on 02 MAR 1999 with the cofferdam complete and ready for installation on 06 MAR 1999.

Cofferdam Installation:
Due to the positive buoyancy of the cofferdam and depth at which it was designed to float, the cofferdam was relatively easy to install. The cofferdam was lowered alongside the diving boat and towed to the starboard side for installation. A major factor in the rigging plan was dealing with the approximately 24,000 lbs. of positive buoyancy that resulted once the cofferdam was sealed and pumped down. The cofferdam was helped down with three wire ropes (6 x 17 x 7/8). These wires went underneath the ship to padeyes on the port side above the waterline. The cofferdam was hogged into the ship with three other wire ropes. Once all lines were snugged and the curvature and sealing face checked, we started pumping down the cofferdam using two 2 1/2" eductors. We pumped down half way and checked all rigging for tightness. We also checked to see if the cofferdam had moved up at all (no movement noted). Final pump down was conducted and all rigging was checked again as well as the cofferdam position. And once again, everything looked good. The cofferdam was left dry with no personnel working in or on it for one day to ensure the cofferdam and rigging held. The total bottom time to install the cofferdam was 2 hours. On Monday 08 MAR 1999, X-72 "riggers" rigged scaf-

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MMCS(MDV) Morris, EN1(DV) Hibler, LT Plath(Ship Superintendent), Mr. Kimata (Design Division) watch as the cofferdam is readied for installation.

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folding and a splashguard to allow shop workers to work inside the cofferdam. The cofferdam was removed on 12 MAR 1999 by removing the eductors and check valves and letting the cofferdam flood. All rigging was then removed and the dive boat towed it pierside for removal by a pier crane.

Points of Interest:
Cofferdam 18' tall, 8' wide, 5' deep, approx. weight in air 3,000 lbs. (positive in water), buoyant force when installed and pumped down approx. 24,000 lbs. NSRF designs the majority of their large cofferdams to float or be neutrally buoyant (i.e., FFG APU cofferdams are approximately 50 lbs. positive). Cofferdam is made with a replaceable wood face so that it may be used on different ships and different areas of the ship. Dry dock cost savings, approximately $500,000 (U.S. cost).

NSRF Yokosuka Dive Locker Info:
21-man locker consisting of 11 Japanese divers and 10 USN divers (I believe we are the only dive locker in the world that uses non U.S. Divers to conduct USN diving). Primary job is underwater ship husbandry (surface and subs), secondary is conducting any other type of diving required. NSRF has two MK3 LWDS (190' cert), a LCM-6 diving boat and a Dixie double-lock chamber. We support fly-a-way jobs in Singapore, Korea, Thailand, Hong Kong, Diego Garcia and anywhere else in the Far East. NSRF in general is a repair activity mainly manned by Japanese nationals. (1,900 Japanese, 75 USCS and 80 USN personnel). We have all shops and codes that a shipyard has and 6 dry-docks (capable of docking a CV). For more information, please visit NSRF's Internet site at http://www.srfyoko.navy.mil/redbookn/csindex.html.

Cofferdam being rigged alongside dive boat.

The weld repair prior to painting.

MMCS(SW/MDV) Bill Morris is currently serving as Master Diver at the U.S. Naval Ship Repair Facility in Yokosuka, Japan. (Note: Bill served there previously as a second class diver. Other diving billets where Bill has served include, USS Florikan, MDSU-1, USS Dixon and Naval Special Warfare Group One.

Divers Perform Ordnance Operations at Solomons, Maryland

By. James C Vaughan

As part of the relocation of Naval School, Explosive Ordinance Disposal (NAVSCOLEOD) from Indian Head MD to Eglin Air Force Base ,FL., the Commandant, Naval District Washington tasked the Commanding Officer, NAVSCOLEOD with clearing all inert ordnance training aids located in the Solomons Training Complex Solomons, Maryland.

NAVSCOLEOD had utilized the Solomons Training Complex for the underwater ordnance segment of the US Navy EOD School curriculum from the early 1970's to January 1999. The underwater training area was located in the Patuxent River and centered around the U.S. Navy pier extending from the Solomons Training Complex into the Patuxent River.

Inert MK 6 Moored Mine (era WWII) after towing to the beach.

Prior to NAVSCOLEOD occupying the Solomons Training Complex, the area had been utilized from 1942 to 1947 as part of the U.S. Naval Mine Warfare Test Station. During that time the area was utilized for test and assembly of underwater ordnance. At one point in the area's history, U.S. Navy Gruman Avenger dive-bombers flew over the base at all hours of the day, dropping inert mines and torpedoes into the water.

Inert MK 52 Bottom Mine after towing to the beach.

With the area's history in mind a comprehensive underwater search was required to ensure the removal of all ordnance. During the final classes of NAVSCOLEOD, instructors had the students perform underwater sweeps and recovery of known ordnance located in the school's designated training areas. To determine the locations of other ordnance, the Calvert Marine Museum, located in Solomons, MD, provided historical information in the form of an article titled,

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Group photograph of MK 52 recovery team.

ter Mine and a MK 52 Bottom Underwater Mine. The operation was performed with approximately 40 dives totaling approximately 40 hours of accident free bottom time.

Due to its advanced state of decay, the MK 6 (dated to World War II) was disposed of in accordance with local and federal regulations. Since the MK 52 was in good condition, it was shipped to Eglin Air Force Base for use at the NAVSCOLEOD as a training aid for EOD students.

"Solomons Mines," A History of the U.S. Naval Mine Warfare Test Station, Solomons, MD, 1942-1947, by Merle T. Cole, 1998.

After review of the article supplied by the Calvert Marine Museum, the extended search area was designated from Point Patience due east-southeast to the Solomon Island Bridge and then due north-northwest to the shoreline and covered approximately 3 square miles. Water depth ranged from the high tide mark to 70 feet of water with visibility from 0 to 2 feet.

Underwater search options were first conducted with NAVSCOLEOD personnel towing MK 26 ordnance locators from behind MK 5 Zodiac inflatable boats. Any magnetic anomalies identified by the MK 26 were marked by the Global Positioning System and buoyed. EODMU personnel dove on each buoy and performed a circle search around each location. After positive identification and determination of inert ordnance, the item was brought to the surface with the use of a lift bag, and towed to the U.S. Navy pier by the MK 5 for lifting and disposal.

The clearance operation occurred between 20-30 April 1999, recovering two training mines, a MK 6 Moored Underwa-

BMCS (EOD) Jarvis, NAVSCOLEOD led the clearance; NAVSCOLEOD, Naval Explosive Ordnance Disposal Technology Division (NAVEOD-TECHDIV), Explosive Ordnance Disposal Mobile Unit (EODMU) TWELVE, and EODMU TEN supported the operation by providing equipment and the following personnel.

CDR (EOD) Wiegert, USN Active Duty	*(XO) NAVSCOLEOD*
BMCS (EOD) Jarvis, USN Active Duty	*NAVSCOLEOD*
BMC (EOD) Volz, USN Active Duty	*NAVSCOLEOD*
GM1 (EOD) Thomas, USN Active Duty	*NAVSCOLEOD*
EN1 (EOD) Iron Moccasin, USN Active Duty	*NAVSCOLEOD*
AO1 (EOD) Mattson-Laurent, USN Active Duty	*NAVSCOLEOD*
CDR (EOD) Webber, USN Active Duty	*(XO) NAVEODTECHDIV*
LCDR Turok (DV), USN Reserves	*EODMU TWELVE*
LCDR Daly (DV), USN Reserves	*EODMU TWELVE*
HTCM Jorgensen (EOD), USN Active Duty	*EODMU TEN*
BM1 Vaughan (DV), USN Reserves	*EODMU TEN*
ET1 Mullinex (DV), USN Reserves	*EODMU TEN*
CM1 Davis, USN Active Duty	*EODMU TEN*
EN2 Van Skoik (DV), USN Reserves	*EODMU TEN*
BM2 Jacobs (DV), USN Reserves	*EODMU TEN*
EN2 Garcia, USN Reserves	*EODMU TEN*
HM3 Rodriguez (DV), USN Reserves	*EODMU TEN*

BM1 (DV) James C. Vaughan has been in the U.S. Navy Diving Community since his graduation from Second Class Dive School in 1978. BM1 Vaughan is also an employee of Phoenix Marine Inc., NAVSEA's Diving Services Contractor.

Deep Freshwater/ High Altitude Diving

By: MDV William R. Deen

Underwater Construction Team TWO Air Det Alfa (AD/A) recently completed a challenging Dam Bulkhead Installation Project at Abiquiu Lake located in north central New Mexico. Seventeen underwater construction technicians provided diving services to the Army Corp of Engineers in support of a $4,000,000 prime contract with Triton Marine to install two additional flood control gates in the dam flood control outlet tunnel. The inlet to the tunnel is a concrete structure 52 feet high submerged in 150 feet of freshwater in the middle of the lake. To drain the tunnel, two steel bulkheads had to be placed at the upstream side of the tunnel inlet. With the tunnel sealed off by the two bulkheads, tunnel water was drained downstream creating a dry tunnel for the installation of the two additional emergency flood control gates.

The bulkheads are each 24 feet high by 7.5 feet wide and weigh over 12 thousand pounds a piece. Our divers had to endure the difficulties of high altitude diving, near freezing temperatures, and zero visibility while guiding these enormous doors into place with less than 5/8” margin. Four months of extensive research, planning, and training were required to safely execute this tasking. To compensate for the lowered barometric pressure at the elevation of 6250 feet, Canadian High Altitude Surface Decompression Tables were provided by the Supervisor of Diving and Salvage. At the maximum depth of 152 feet of fresh water and 30 minutes of bottom time, divers were required to decompress on a 200-foot table making five stops prior to reaching surface, followed by an hour of surface decompression in the Transportable Recompression Chamber System (TRCS). To reduce the risk of decompression sickness, the divers’ hot water temperature was carefully monitored to maintain a comfortably cool diver on the bottom and then warming on ascent to minimize the on gassing at depth and maximize the off gassing during decompression.

One of the two 24 foot tall, 6.5 foot wide, 12,000 pound bulkheads that were installed to facilitate installation of new Flood Control Gates.

The 45ft x 65ft, steel pontoon dive barge was moored in a tight four-point moor over the tunnel inlet. AD/A divers were outfitted with the MK-21, Aluminum 80 EGS with first-stage cold water kits, DUI Hot-water suits , Osprey Helmet Mounted Camera and Lighting systems, and 500-foot Aqua-lite umbilicals. Surface supplied air was delivered from a MK-3 Lightweight Diving System (LWDS). Hyperbaric chamber requirements were supported by two TRCS’s outfitted with N_2O_2 treatment gas (one on the dive barge, the other on shore for off duty emergencies.) Due to the freezing temperatures the TRCS was housed in a heated UCT Arctic tent and the MK-3 LWDS inside a 28-foot mobile dive trailer.

Nearly a week ahead of schedule AD/A began the first series of dives which concentrated on washing off several deep layers of silt and removing debris from the top of the inlet. The next series penetrated into the inlet’s openings where divers descended through 4' X 8' openings in the trash rack just upstream of the inlet. Divers progressively cleaned and inspected both bulkhead tracks.

Bulkhead installation was tricky and dangerous. With the barge’s forward edge centered directly over the inlet, each bulkhead was lowered in 40-foot increments until suspended five feet above and near the channel guides. Divers then descended to the top of the inlet where they located the opening guides and the bulk-

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(continued from page 12)

A deep freshwater dive from high altitude can be more challenging than a deep sea dive.

head. Determining distance and direction, the divers provided crane signals to the supervisor who relayed them to the crane operator. Once the bulkhead was lined up and squared off to the opening, divers double checked gaps and umbilical positions. Bulkheads were then inched toward the opening. With less than 5/8 of an inch of margin, both divers worked to nudge bulkheads into a perfect fit with the guides. Bulkheads were then lowered again at 40-foot increments until they sealed against the bottom.

With bulkheads in place and the 1800 x 12 foot diameter tunnel drained, an interior tunnel inspection revealed damaged rubber J-seals which required bulkhead removal for repairs. At this point two events combined to jeopardize the lives of the entire AD/A crew. First, the contractor's redesign of the bulkhead shear gates, which permit flooding the tunnel and pressure equalization across the bulkheads, had significantly increased the flooding and venting rate. A previously slow and controlled evolution became almost an explosive one. Second, the contractor commenced the reflooding evolution without notifying the AD/A crew. Red diver was at 150 feet inside the trash rack being tended by Green diver at 100 feet at the inlet to the trash rack. The rapid release of the air from the tunnel lifted Green diver toward the surface. Red diver was able to grip the ladder in the inlet and became the hold down point to keep Green diver from rapidly surfacing. The rapid expansion of the vented air caused a surge of water that swamped the dive barge and washed even secured equipment including a 4,000 lb air compressor over the side. After 7 minutes the venting ceased and AD/A went about the business of recovering the divers. Line pull signals verified some line fouling. Working with the tenders, the divers were able to pull their way to the 48-foot decompression stop. As the divers worked toward the 32-foot stop, increased umbilical tension was noted. The standby diver was deployed to investigate the fouling. The standby diver found the air compressor precariously suspended at 15 feet and pinching the divers' umbilicals. Knowing that the divers would be taken to the bottom if the compressor broke free, a quick life and death decision was made to use planned omitted decompression to clear the divers of this dangerous situation. Both divers were directed to ascend one at a time to the standby diver, where their umbilicals unfouled and return to the 32-foot stop. In water decompression was adjusted for omitted decompression and the divers surfaced to complete decompression in the TRCS.

The bulkheads were repaired and then re-installed by AD/A. In total, AD/A conducted 68 high altitude surface decompression dives totaling 51 hours of bottom time and 111 hours of decompression. Using U.S. Navy Divers, over $200,000 were saved during the installation phase. Another $200,000 were saved in the recovery phase by the ingenuity of AD/A. Utilizing 40-foot wire pendants and a subsurface tension buoy, the retrieval wires were left in place during installation of the bulkheads. Upon project completion, the bulkheads were lifted from the bottom. All previous bulkhead contracts required divers for both the installation and recovery phase.

U.S. Navy Master Diver Wm. R. Deen is an Advanced Underwater Construction Technician, and Graduate of the Naval Senior Enlisted Academy. Deen is currently serving as the Command Master Chief and Command Master Diver at UCT TWO, Port Hueneme,CA.

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ologists at the University of Georgia, and by Dr. Terry Miller and Dr. Mike Wolin, bacteriologists at the New York State Department of Health. Her Bethesda team is composed of her graduate research assistant Andreas Fahlman, and chamber operators and technical support personnel Richard Ayres, Jerry Morris, Roland Ramsey, Chief Robert Hale and Chief Anthony Ruopoli.

Doris Ryan has a degree and background in journalism and is currently a science writer. For the last 8 years she has been writing on the accomplishments of the Navy's biomedical laboratories, including Diving and Submarine Medicine. Doris started with the Naval Medical Research and Development Command in Bethesda, Maryland and currently works at the Navy's Bureau of Medicine and Surgery, Naval Medical Research and Development Division, Washington, DC.

U.S. Navy Master Diver Billets (correction and additions)

NAVY EXPERIMENTAL DIVING UNIT, Panama City, FL
MMCM Jim Hebert

UCT 1, Little Creek, VA
CUCM Marty Hierholzer
CUCM Davy Daniels
CEC Henry Stark

UCT 2, Port Hueneme ,CA
CUCM Rusty Deen
SWCS Frank Iusi

CB Logistics Center,
CUCM Dennis Knopick

NDSTC
CECS Alan Ramsey

Historical Notes

The following excerpt is from Chapter 15 of 20,000 Jobs Under the Sea, *by Torrence R. Parker, published by Sub-Sea Archives, Palos Verdes, CA, 1997.*

The Third Navy Dive School

During the early years of submarine development (the Navy got its first one in 1903), disasters such as the sinking of the *F-4* in 1915 and *S-51* in 1925 made the safe rescue of submarine personnel a top priority for Navy divers. Accordingly, in 1927 the Navy established its third diving school with Lieutenant Henry Hartley, who had received diver training in Newport school, as its director. With a strong emphasis on salvage and submarine rescue, the Naval School, Diving and Salvage, was the only diving school in the country at the time. The new school graduated about 30 students per year. Hartley later retired from the Navy in 1947 as a Rear Admiral.

In 1928, to further deep diving and underwater equipment capabilities, the Experimental Deep Sea Diving Unit was established. Both the Experimental Diving Unit (which had already conducted hyperbaric tests with helium-oxygen breathing mixtures in 1924 with physicist Elihu Thompson and others at the Bureau of Mines of the Department of Commerce), and the Naval School, Diving and Salvage, were located in the Washington D.C. Navy Yard.

During World War II, the demand for divers to support maritime operations rose dramatically. These salvage, harbor clearance, and fleet maintenance operations were required worldwide and existing Navy training facilities could not be expanded sufficiently to meet the needs. The Army, Coast Guard, and Navy Seabees all opened their own diver training schools, with emphasis on salvage diving techniques. Combined, these military diving schools graduated over 600 divers a year – 20 times more than the prewar Navy output of 30 divers a year. This created a postwar surplus of military trained divers, and after the war many ex-military divers attempted to break into commercial diving, but only a small percentage were able to obtain work.

Obituary

✯✯✯✯ Admiral Issac Kidd Dies; Led Atlantic Fleet

Isaac Campbell Kidd Jr., 79, a Navy Admiral who retired in 1978 as Commander-in-Chief of the U.S. Atlantic Fleet and as NATO's Supreme Allied Commander in the Atlantic, died June 27 at his home in Alexandria. He had been battling cancer for five years.

Admiral Kidd's Navy career spanned 40 years, including combat operations in the Pacific, Atlantic, and the Mediterranean during World War II and service in the office of the Chief of Naval Operations during the Cuban Missile Crisis, the loss of the submarine Thresher, the Tonkin Gulf incident and the Dominican Republic crisis.

As Chief of Naval Material from 1971 to 1975, he was the Navy's top procurement, labor relations and logistics officer, directing a civilian and military work force of 350,000 men and women.

From 1975 until his retirement, Admiral Kidd served concurrently as Commander-in-Chief of the U.S. Atlantic Command, Commander-in-Chief of the Western Atlantic Area and NATO's Supreme Allied Commander.

His career included 23 years of sea duty, 15 of which were in command of destroyers, destroyer divisions and squadrons, a flotilla and three U.S. fleets in the Atlantic, Pacific, and the Mediterranean.

His military decorations included the Defense Distinguished Service Medal with Oak Leaf Cluster, four Navy Distinguished Service Medals, the Legion of Merit with two Gold Stars and a Bronze Star Medal with combat V.

Admiral Kidd was born in Cleveland into a Navy family . He entered the U.S. Naval Academy in 1938 after having attended St. Albans School and Columbian Preparatory School in Washington and Ohio State University.

His father, Navy Rear Admiral Isaac C. Kidd, was killed aboard his flagship, the battleship Arizona during the attack on Pearl Harbor on December 7 1941, and was posthumously awarded the Medal of Honor.

With the U.S. entry into World War II, the Naval Academy class of 1942 graduated five months early, and the younger Isaac Kidd began his career as a Naval officer shortly after his father died.

He participated in North Atlantic convoy duty during the war and in the invasions of North Africa, Sicily and Italy as a destroyer gunnery officer. Later in the war he participated in combat operations in the Pacific.

After the war, he was an aide to the Superintendent of the Naval Academy and attended the National War college.

On retiring from the Navy, Admiral Kidd served on various committees for Congress, the National Science Foundation, the Department of Defense and the General Accounting Office, including the Defense Science Board and the board of visitors of the U.S. Naval Academy.

He lived in Atlanta but returned to the Washington area 14 years ago.

He was a member of the Military Order of the Carabao, the Annapolis Yacht Club and Queen of Apostles Catholic Church in Alexandria.

Survivors include his wife, Angelique de Golian Kidd of Alexandria; six children Isaac Campbell III of Annapolis, Kevin Gilmore of Portland, Ore., Marie Angelique de Golian Smith of Bexley, Ohio, Christopher Alexander of Alexandria, Regina Inez Wolbarsht of McLean and Mary Corrinne Littlepage Plumer of Atlanta; 17 grandchildren; and a great-grandchild.

***Editor's Note*: Admiral Kidd was the most senior officer authorized to wear the U.S. Navy Diving Officer's Insignia. He always supported the divers efforts. For example, in the spring of 1976 when he was Commander-in-Chief of the U.S. Atlantic Fleet, he provided a CINCLANTFLT aircraft to take Navy Divers to the Diving Symposium at Battelle, and to make sure that they arrived on schedule he and his wife Angelique accompanied them on the trip. (Admiral Kidd participated throughout the entire program.) The U.S. Navy Diving community has lost a great friend.**

The Old Master

By: MDV Marty Hierholzer

MDV Marty Hierholzer

You know, we are getting some pretty smart people into the Navy diving ranks these days. I remember when, as a 3rd- and 2nd-Class Petty Officer, all I needed to know about diving was how to work underwater and ascend no faster than my smallest bubble. Eventually, QA, PMS, OPs, EPs, PSOBs, certification, diving safety surveys, DORAs, and the like came to pass. I remember asking a Senior Chief who had been around forever, "Why the hell do I need to know any of this stuff when my job is to make money in the water?" At the time, I had just made Chief and Diving Supervisor. It now seems that with the computer age and the paperless Navy, many smart 2nd- and 3rd-Class Petty Officers are handling these administrative requirements more and more, and doing a great job at it also. However, some things have not changed like the risks and hazards associated with putting a man underwater.

The Dive Manual is filled with rules and policies about diving. Most are common sense, some don't make much sense, and others seem to have a lot of gray area and vagueness. There is a book written by Commander Edward C. Raymer, USN (ret) (also a LDO), a Navy diver during WWII, called *Descent into Darkness*. It is on the mandatory reading list for CPO selectees. *Descent* is a perfect discussion on the fundamentals of diving as well as the "hairy-chested, deep-sea diver" image. The book mainly deals with the salvage of the battleships NEVADA, CALIFORNIA, WEST VIRGNIA, OKLAHOMA, UTAH, and ARIZONA at Pearl Harbor. We hear tales of a diver's compressor being removed by shipyard workers while divers were on the bottom, why the standby diver came about, how oxyarc cutting was invented, body retrievals, accidents to divers, why two divers are needed for wreck diving, the importance of proper hose tending, etc. We also read about divers on liberty, unauthorized alcohol stills, why the "babes" prefer divers, and ships torpedoed out from under sailors during battle.

The most important lesson learned by studying the Diving Manual and *Descent* is the realization that most of our rules and guidelines are written in some Navy diver's blood. That's right; a deep sea diver either died or was seriously hurt, and so we learned a lesson that went into the Diving Manual. No matter how well we know principles, there is no substitute for common sense, alertness, attention to detail, and a cool head when the situation gets hot.

I remember back in 1981, while diving the MK-12 (the Navy was too proud to use the Superlight 17 yet), I got down to about 40 fsw and slowly passed out. It seems that some smart individual, while charging the HP banks during chow, forgot to open the manifold valve when he was done. Can this happen on your dive station? You bet it can! Anytime someone does not pay attention or does not put the divers' safety first; accidents can and will happen. We run into enough trouble on a "normal" dive with fouling, entrapment, lost comms, etc., we should not have to deal with easily preventable problems. Believe it or not, three months ago, I was the Master Diver on the side when two MK-21 divers got to five feet on descent and reported, "NO AIR!" You guessed it; someone closed the ¼-turn valves on the MK-3 console instead of opening them.

We belong to a small, elite group of courageous and dedicated individuals who worked hard to earn that pin. Our entrance test is an angle descent to danger and a hogging line through fear. Our only consolation when we find ourselves trapped in a ballast tank, under five feet of mud, or alone with some poor soul's remains under 100 fsw, is that our shipmates are topside, waiting and ready to get us home safely. Stay alert, take care of each other, and show the new guys the way—the right way—to do business. Have a nice diving day.

Master Diver Marty Hierholzer enlisted in the Navy in 1979. He attended Second Class Dive School in Panama City FL in 1981, completed Diver First and Saturation training and was selected as a master diver in 1990. He has completed diving tours with UCT ONE Little Creek, NCSC Dive Locker PC FL, CSDG1 Det Alameda CA, NCTC Port Hueneme and is currently attached to UCT ONE as Command Master Chief and Master Diver.

From the Supervisor of Diving

Commander Bobbie Scholley

It's amazing how quickly time goes by when you are at the end of a great tour of duty. But it's that time for me. I will be leaving NAVSEA in July and will be relieved by CAPT(sel) Chris Murray. CAPT(sel) Murray is coming to us from a very successful and exciting command tour at Mobile Diving and Salvage Unit TWO. While he commanded MDSU TWO, in addition to many deployments and salvage operations, they were involved in the salvage and recovery of victims from the Haitian Ferry Sinking, salvage of NASA's Titan IVa Missile and the salvage of the MONITOR's propeller from 230 FSW. CAPT(sel) Murray has a tremendous wealth of knowledge and experience in diving and salvage as well as a well rounded background in acquisition and program management. I'm confident that the fleet will be as excited at having him as the new Supervisor of Diving as I am.

Before I leave, I'd like to pass along one last thought to all of you in the fleet. During the past two and half years, we at NAVSEA have tried to provide the fleet with the equipment and support that they needed to fill operational requirements. The problem that we run across is making sure that the requirements are properly identified and documented so that we can get funding from OPNAV. As many of you know, the budget process at OPNAV requires us to project what funding we need five years in advance. In order to meet this, we must get operational requirements from the fleet as early as six years before you need the equipment and support. This can be done, but not without good input from the fleet. My challenge to you is to look closely at your operations for now and the future and identify your requirements. These requirements can be anything from equipment that's available commercially, to diving Biomedical developments to equipment which is not currently available but needs to be developed. Once these requirements are identified, you need to document them and submit them via the chain of command. And you don't need to wait for a Working Diver Conference to do this. With this kind of input, NAVSEA should be able to provide better support into the future.

CAPT(sel) Chris Murray relieved CDR Bobbie Scholley as Supervisor of Diving on 23 July 99. CDR Scholley will be attending the Industrial College of the Armed Forces.

As I move on in my career and back into the fleet, I would like to thank all of you for making my tour as Supervisor of Diving a challenging and rewarding experience. Although my background is in salvage and husbandry, I also really enjoyed working with and learning more about the other navy diving communities such as SPECWAR, EOD and UCT. In addition to the wonderful interaction I've had with the fleet over the last 2 1/2 years, this tour has reaffirmed to me that U.S. Navy Divers are truly the BEST in the world! Thanks for your superb support and I look forward to seeing you back in the fleet.

DEPARTMENT OF THE NAVY
SEA 00C
NAVAL SEA SYSTEMS COMMAND
2531 JEFFERSON DAVIS HIGHWAY
ARLINGTON VA 22242-5160

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