

MONTHLY REPORT - DECEMBER '71

Recovery of RV-3 (SV #1)

Headquarters [REDACTED] and SSC (L. Molaskey) representatives joined the recovery team at sea on 1 November as the White Sands approached the recovery site. Preparations for the first dive got underway almost immediately.

The refrigerator for cooling the payload was in final stages of completion. As originally constructed, the unit consisted of a 3/4 inch plywood box built around a 2 x 4 frame. The outside dimensions approximately 8 x 8 x 8 feet. The insulation consists of 1-1/2 inch glass wool blankets fabricated with the aluminum side facing the interior of the box. The cooling unit was mounted to the outside of the box blowing air from the outside into the box through an opening behind the cooling coil. After reviewing the requirements, it was agreed that the set up could not adequately refrigerate 8,000 pounds of sea water to below 40°F in the outside ambient of about 90°F in bright sunlight. Therefore, the following modifications were recommended:

1. Paint the outside all over with white paint.
2. Construct a recirculating duct to take the cooled interior air and pass it over the cooling coils in a closed system.
3. Insulate the cooling unit as much as possible.
4. Tape all seams to shut off air leakage.

After these modifications were accomplished (Figure 1) the shipping container was loaded into the box, (Figure 2) flushed, and filled with clean sea water. The original water temperature was recorded to be 70°F. The unit was then sealed and the cooling process started.

While this was going on the Trieste was being prepared for launching. At about 2030 the dock well was flooded and by 2230 the Trieste was trailing in tow off the stern of the White Sands. The gassing operation started as soon as the dock well was pumped out. By 2200 on 3 November 67,000 gallons of aviation gasoline and 32 tons of steel shot had been loaded into Trieste and predive checkout had started.

Meanwhile the temperature of the interior of the refrigerator appeared to have stabilized at about 56°F. The coolant coil could not increase the differential. It was therefore decided to request an air drop of dry ice to lower the temperature. In addition, plastic bags and buckets of fresh water were loaded into the deck top refrigerator to make ice. The plan being to open the box, install the dry ice and regular ice, seal it up and hopefully lower the temperature below 40°F. The following afternoon as the pre-dive checks were being completed the Air Force parachuted (Figure) 600 pounds of dry ice which was then loaded into the unit.

While the air drop was in process, the White Sands was heading for the "zero dot" (Deep Ocean Transponder). This is the transponder laid on the bottom by the search team to mark the location of the package. It is a transmitter that when interrogated by a signal of the proper frequency returns a signal of its own. The search team has planted two such dots. The zero dot being 160 - 165 yards north of the payload and the other dot, designated dot 3, was reported to be about 110 yards N E of the zero dot. These dots were located from the surface using satellite navigation and then interrogating them from the sea going tug boat Apache. Apache, meanwhile was preparing to plant two additional dots in the area.

The new dots were planted and their position, or at least the position of the Apache as the dots were released from the surface, was recorded. These additional dots were to act as position markers to help remove ambiguity in the range readings from the other dots and to provide a fixed pattern on the ocean floor from which to navigate on the bottom. The preliminary data, before the first dive, was:

<u>Channel No.</u>	<u>Operating Frequency</u>	<u>Estimated Location</u>
0	12.5 KHz	160 yards N of P.L.
2	13.5 KHz	On Trieste
3	14.0 KHz	110 yards N.E. of 0
5	15.0 KHz	5,330 yards S.W. of 0
8	16.5 KHz	5,670 yards S.E. of 0


The position of the "zero dot" was reported to be 24° 47.5' North latitude by 162° 01.7' West longitude. A 37 KHz pinger was also reported to have been planted on the bottom 30 yards from the zero dot by the search team.

Final preparations for the dive commenced as the White Sands approached the location of the 0 dot. The recovery hook was attached to the Trieste by divers, (Figure), the anti-chamber filled with sea water and the Trieste descended toward the bottom.

At about 2000, one hour and forty-five minutes after leaving the surface, the Trieste reported their position 300 feet above the bottom which was at 16,400 feet. Relaying their range to each of the dots in the pattern, the Trieste attempted to close in on the zero dot. At the same time, their position was plotted both on Apache and White Sands. As the Trieste approached the zero dot they observed a sonar contact on their CTFM. They changed course to investigate the contact and found nothing. The same type of search maneuvers were conducted with several other sonar contacts. Each time no visual ~~con-~~ contact was made. During the dive, there seemed to be a discrepancy in the range data indicating that the dots were not located where they were reported to be. At about 0200 the dive was terminated unsuccessfully. The scaph reached the surface at about 0345.

Meanwhile the temperature of the refrigerator box had stabilized at just below 50°F.

Immediately following the dive the weather conditions deteriorated to the extent that it became impossible to safely operate the small boats required to service Trieste. After waiting several days for the weather to improve the recovery team returned to Pearl Harbor to repair damage to Trieste caused by the rough seas. (A pan and tilt camera assembly had been broken off and lost as well as the dot launcher containing an operational dot).

On 17 November, the day following arrival at Pearl Harbor, a briefing was held with Admiral Lacey at the Submarine Base. All the officers of the Trieste and White Sands, and Cdr. Mooney participated. Following that meeting 

met with Adm. Lacey for further discussion of the operation. The outcome of these briefings and discussions was a decision to return to the site and again try to recover the payload. This time, however, more support from the Navy will be available. It seems that much more attention from the higher ups in the Submarine fleet will be directed toward successful completion of the operation. As a result, Lt. Cdr. Bartels, Officer in Charge of White Sands and Trieste, was directed to outline his needs and requirements for continuation of the operation. A list of requirements was started immediately. The objective was to be ready to go back to sea by Saturday, 20 November.

Activity on the ship became intense as plans were being made to repair Trieste, order replacement parts, provision the ship for the operation, etc. Among the items required were: two new outboard motors, a new Boston Whaler, a large refrigerator to replace the one built aboard ship on the way out, gas hose for refueling Apache and loading Trieste, more shot, lithium hydroxide for Trieste's life support system, fuel oil, lubrication oil, food, fire pump parts, etc.

The task element got underway at 1300 on Sunday, 21 November. Another tow ship, the "Coucall" joined White Sands in the channel of Pearl Harbor and the tow line transferred. As they reached the mouth of the harbor, Coucall reported that her ~~towing~~ engine (a device that maintains proper tension in the tow line) had failed and that she could no longer tow White Sands safely. The tow line was separated, White Sands headed out under her own power, and a rush call put in for Apache. Fortunately, the crew of Apache were all aboard and she was dispatched immediately to pick up the tow. They again were underway by nightfall.

The following day, while in transit to the recovery site a battery problem on Trieste was surfaced. One of the primary battery cells was grounding out and it could not be determined if it was cracked due to the pressure from the 16,400 foot dive or if it were some other problem resulting from the rough weather after the dive. In any event, the problem had to be resolved prior to the next dive. Around-the-clock attention was directed towards a solution which finally turned out to be not one big problem as suspected but two small failures in series. These were corrected and the Trieste was ready to dive again.

Continued bad weather and high seas prevented further operations until 29 November when Trieste was launched and the ²evaluation in preparation for the next dive commenced. The pre-dive checks were completed, all of the electrical problems resolved, the recovery hook lowered into the water on floats and Trieste towed to the dive site. The hook was fastened into place (It is attached just prior to the dive so that it and Trieste are not subjected to long periods of exposure to surface action which could cause damage.)

The dive got underway at 1745. On the way down, the scaph developed a list to port of about 25°. The pilots tried to correct the attitude by dropping shot from the opposite side. It was stated that the pilot didn't feel he had control until after they reached a depth of 7,000 feet.

They continued down to about 15,000 feet, stopped, and started interrogating the trans~~mitters~~^{PONDERS}. They first pinpointed their location about 5,000 feet from the #3 dot. After driving to the target and lowering to the bottom they searched the base line between dots #3 and zero crossing the base line about four times. In the process they encountered several equipment problems. The computer power supply failed and dumped part of its memory. Riding with the trail ball out to about 35 feet they couldn't see the bottom so they winched it in to 10 feet. That was a little too much because when they started to move forward, the cable assumes a slight angle to the rear pulling the scaph down slightly. With the residual list because of improper metering of the shot ballast on the way down, the port skag started dragging the bottom. They then tried to lower the trail ball slightly and it wouldn't pay out. The end result was that they either had to slow down or slide the skag on the bottom. In this configuration it was extremely difficult to steer a steady course.

The doppler sonar system also failed on the bottom. This device provides both height off the bottom information as well as horizontal velocity. The loss of this information is not critical to the mission since they have redundant depth indicators and a means of determining their position other than through velocity time relationships. After searching the 3 - 0 base line and investigating several CTFM sonar signals with no success and having

been down for almost eight hours the battery voltage was reaching its minimum safe level, they picked up a CTFM signal in a direction West of dot #3. They drove in that direction until they suddenly lost the contact. They immediately slowed down and peering out the viewing scope they spotted the payload passing about two feet to the right of the starboard skeg. (The reason for losing the target is that the CTFM has a minimum range of 30 yards but the visual range through the viewer is about 30 feet. There is a dead zone between the two). They came to an immediate stop but their momentum carried them beyond the package. They then started to maneuver the scaph around to bring the payload into view when the low voltage battery alarm came on. They tried to operate the mechanical arm in order to plant another transponder next to the payload and the shoulder movement would not operate to the right. It was suspected that the combination of low voltage and the list of the vehicle was too great a load for the arm shoulder motor. In any event they were not able to deploy the dot. With very little power remaining and little hope of even tripping the recovery hook they decided to head for the surface. The last check of the battery on the bottom indicated 4 of the 65 or so cells had been depleted to the extent that they had reversed polarity. The decision to surface was confirmed. They reached the surface at 0415 Wednesday morning.

Again after several days of waiting for the weather to abate to the level where operations could be resumed it was decided to head for the shelter of the islands where Trieste could be reloaded into White Sands and any damage repaired before attempting another dive.