APOLLO 15
PRESS KIT

TABLE OF CONTENTS

APOLLO 15 MISSION

The Apollo 15 spacecraft is scheduled for launch on July 26, 1971 from Complex 39A, Kennedy Space Center, Florida by the Saturn V launch vehicle. The prime crew consists of Spacecraft Commander, Colonel David R. Scott, USAF, Command Module Pilot, Major Alfred M. Worden, USAF, and Lunar Module Pilot Lieutenant Colonel James B. Irwin, USAF.

Objectives of the mission, to last up to 12 days, as outlined by NASA: to perform selenological inspection survey and sampling of materials and surface features in a preselected area of the Hadley-Apennine Region; emplace and activate Apollo surface experiments; evaluate the capability of equipment to provide extended lunar surface stay time, increase extravehicular activity (EVA) operations and surface mobility (Lunar Rover); and to conduct inflight experiments and photographic tasks from lunar orbit.

Following launch, the spacecraft will reach Earth Parking Orbit and remain in orbit for approximately two and one half revolutions prior to Translunar Injection. Next, the Command and Service Module docks with the Lunar Module and the spacecraft "coasts" to the moon. In orbit around the moon, the Command and Service Module/Lunar Module combination will descend to within 50,000 feet of the lunar surface before undocking. The Lunar Module will continue to descend while the Command and Service Module returns to an orbit approximately 60 miles high.

Stay time on the lunar surface is scheduled for approximately 66 hours. The ascent stage of the Lunar Module then lifts the astronauts back into lunar orbit where they will dock with the Command and Service Module. The Lunar Module is jettisoned and Transearth Injection follows. Just prior to reentry into the earth's atmosphere, the Service Module is jettisoned, and the astronauts in the Command Module splashdown in the Pacific Ocean. The target point for end-of-mission splashdown is at 26 degrees 07 minutes north latitude and 158 degrees west longitude or approximately 285 nautical miles north of Honolulu. Splashdown is scheduled for August 7, 1971 at 10:56 A.M. Hawaiian Standard time (4:56 P.M. CST).

Recovery forces for Apollo 15, stationed in both the Atlantic and Pacific Oceans, will consist of four ships, nine aircraft and nearly 1,700 personnel. CTF-130 (Manned Spacecraft Recovery Force, Pacific) forces will be stationed north of Hawaii. Two ships, eight helicopters and three Air Force HC-130H aircraft and nearly 1,100 personnel, will take part. Task Force 140 (Manned Spacecraft Recovery Force, Atlantic), comprising two ships, six HC-130H aircraft, three helicopters and approximately 600 personnel, will be positioned for possible launch abort operations. Other forces, primarily aircraft and personnel of the Air Force Aerospace Rescue and Recovery Service will be on alert around the world for contingency recovery support.

NAVY SPACECRAFT RECOVERY

The critical importance and impressive extent of U.S. Navy support of America's Manned Space Flight program is best illustrated by the total of more than 200 individual ships, and numerous aircraft squadrons and underwater demolition teams employed to date in world-wide spacecraft recovery duties. These units were assigned to U.S. Navy Manned Spacecraft Recovery Forces, Task Force 140 in the Atlantic and Task Force 130 in the Pacific.

Recovery ships are required on station prior to each mission and remain on station until spacecraft splashdown unless an earlier release is warranted. Although recovery of manned flights receives the most publicity, naval forces also have primary recovery responsibility for numerous unmanned spacecraft launches which provide essential scientific data pre-requisite to attainment of America's space goals. Safety of spacecraft personnel being of prime importance, manned spacecraft recovery is an exacting and demanding evolution which requires well equipped and trained crews.

The Commander Manned Spacecraft Recovery Force, Atlantic (Commander Task Force 140) is responsible for the coordination, training and control of ships and units assigned for each mission by Commander-in-Chief, U.S. Atlantic Fleet. Commander Task Force 130 has the same responsibility for units in the Pacific.

A period of indoctrination and equipment installation, familarization and training in spacecraft recovery is provided after the units have been designated. The indoctrination and training required varies with each unit since they may be veterans of previous missions. As an example, two of the Atlantic Fleet ships assigned for the Gemimi 12 mission were on their first recovery assignment while the USS WASP was on her sixth recovery mission.

The Atlantic and Pacific Task Forces are an important part of the world-wide Department of Defense Manned Space Flight Recovery organization. Directing all elements of this multi-service recovery team is the DOD Manager, who sits next to the NASA Mission Director in Mission Control Center during the period of each space flight. Throughout the mission, the DOD Manager maintains direct communication with recovery force commanders and, working in concert with the Mission Director, recommends to the force commanders action required to affect timely recovery of the astronauts and their spacecraft.

Preparatory to each such space mission, Navy recovery forces assume designated area readiness stations. With responsibility for coordination of Atlantic Command area recovery operations, Commander Task Force 140 and his staff guide operations from the Recovery Control Center, Atlantic at the Naval Air Station, Norfolk. Pacific recovery operations are controlled from the Recovery Control Center, Pacific on the Island of Oahu. During the prelaunch and mission flight period, staff personnel

maintain 24-hour surveillance of the position and readiness of all recovery forces, the spacecraft mission progress and weather conditions in the primary and contingency recovery areas. Direct communications are maintained with all assigned Atlantic and Pacific recovery units and the DOD Manager at Mission Control at Houston enable the Task Force Commanders to immediately and effectively react to recovery requirements.

The initial stations occupied by recovery ships are located along the ground track which the spacecraft will follow between lift-off and orbital insertion. The stations are changed as necessary during subsequent orbits to keep the ships in the best position for astronaut and spacecraft recovery. An example for the necessity of changing recovery areas was demonstrated during Apollo 9 and 11, when bad weather forced NASA to add an additional orbit to Apollo 9 and to move the landing point on Apollo 11.

The re-entry and splashdown accuracy obtained in the early Apollo flights permitted the release of some recovery ships after earth orbital insertion, and after translunar injection on Apollo lunar missions.

The Apollo 13 mission experienced a serious Service Module explosion as it neared the moon which necessitated a return to earth without a lunar landing. For the first time during Apollo lunar missions, a real possibility existed for a landing in the Indian Ocean or in the South Atlantic Ocean. However, a final mid-course correction eliminated these contingency landing sites and again the landing accuracy obtained in previous Apollo missions was acheived for Apollo 13.

Recovery force operations continue even after delivery of the astronauts to their base. The spacecraft is delivered to a point designated by NASA officials and recovery equipment is returned and repositioned in preparation for the next mission. At times the tempo of our space efforts has resulted in recovery forces being deployed in support of simultaneous missions.

The success of our space program is directly related to the Navy's outstanding efficiency in astronaut and spacecraft recovery. This capability in recovery procedures is well established through exacting attention to requirements and has resulted in a continuing record of successful recoveries. Naval forces will continue to provide this same professional level of support for forthcoming Apollo missions.

maintain 24-hour surveillance of the position and readiness of all recovery forces, the spacecraft mission progress and weather conditions in the primary and contingency recovery areas. Direct communications are maintained with all assigned Atlantic and Pacific recovery units and the DOD Manager at Mission Control at Houston enable the Task Force Commanders to immediately and effectively react to recovery requirements.

The initial stations occupied by recovery ships are located along the ground track which the spacecraft will follow between lift-off and orbital insertion. The stations are changed as necessary during subsequent orbits to keep the ships in the best position for astronaut and spacecraft recovery. An example for the necessity of changing recovery areas was demonstrated during Apollo 9 and 11, when bad weather forced NASA to add an additional orbit to Apollo 9 and to move the landing point on Apollo 11.

The re-entry and splashdown accuracy obtained in the early Apollo flights permitted the release of some recovery ships after earth orbital insertion, and after translunar injection on Apollo lunar missions.

The Apollo 13 mission experienced a serious Service Module explosion as it neared the moon which necessitated a return to earth without a lunar landing. For the first time during Apollo lunar missions, a real possibility existed for a landing in the Indian Ocean or in the South Atlantic Ocean. However, a final mid-course correction eliminated these contingency landing sites and again the landing accuracy obtained in previous Apollo missions was acheived for Apollo 13.

Recovery force operations continue even after delivery of the astronauts to their base. The spacecraft is delivered to a point designated by NASA officials and recovery equipment is returned and repositioned in preparation for the next mission. At times the tempo of our space efforts has resulted in recovery forces being deployed in support of simultaneous missions.

The success of our space program is directly related to the Navy's outstanding efficiency in astronaut and spacecraft recovery. This capability in recovery procedures is well established through exacting attention to requirements and has resulted in a continuing record of successful recoveries. Naval forces will continue to provide this same professional level of support for forthcoming Apollo missions.

APOLLO 15

POSSIBLE CONTINGENCY LANDING SITUATIONS

1. Launch Aborts to Landing

There are six different launch abort procedures. The first three result in a termination of the launch sequence and a Command Module (CM) landing in the launch abort area.

a. MODE I - This abort procedure is designed for safe recovery of the CM following an abort initiated between launch escape system (LES) arming (40 minutes before launch) and launch escape tower (LET) jettison (3 minutes and 16 seconds after launch). The procedure consists of the LET pulling the CM off the launch vehicle and propelling it a safe distance away from the launch vehicle. The resulting landing point would be near the ground track between the vicinity of the launch site and approximately 510 nautical miles downrange.

b. MODE II - This abort could be performed from the time the LET is jettisoned until the full-lift CM landing point reaches 3,200 nautical miles downrange (approximately 10 minutes after launch). The procedure consists of separating the Command Service Module (CSM) from the launch vehicle, separating the CM from the Service Module (SM), and then letting the CM free fall to entry. The entry would be a full-lift, or maximum range trajectory, with a landing on the ground track between 440 and 3,200 nautical miles downrange.

c. MODE III - This abort procedure could be performed from the time the full-lift CM landing range reaches 3,200 nautical miles downrange until an orbital trajectory is acheived (approximately 12 minutes after launch). The procedure consists of separating the CSM from the launch vehicle and then, if necessary, performing a retrograde burn with the Service Propulsion System (SPS) so that the half-lift CM landing point is no farther than 3,350 nautical miles downrange. The CM would then be separated from the SM and a half-lift CM entry would be flown, with the resulting CM landing point approximately 70 nautical miles south of the ground track between 3,000 and 3,340 nautical miles downrange. This procedure is designed to prevent a landing on Africa.

2. Launch Aborts to Orbit

The second three launch abort procedures are essentially alternate launch procedures and result in insertion of the spacecraft into a safe earth orbit. The CSM/LM or CSM alone could then remain in earth orbit to carry out an alternate mission, or, if necessary, return to the West Atlantic or Mid-Pacific Ocean after one or more revolutions. These three modes of abort are preferred over a Mode II or Mode III abort and would be used unless an immediate return to earth during the launch phase is necessary. In order to simplify the explanation of the procedures, they are discussed in the reverse order in which they would become possible.

a. MODE IV AND APOGEE KICK - This abort procedure is an abort to earth parking orbit that could be performed any time after the SPS has the capability to insert the CSM into orbit. The procedure consists of separating the CSM from the launch vehicle and, shortly afterward, performing a posigrade SPS burn to insert the CSM into earth orbit.

At any time during the third stage (S-IVB) burn portion of the launch phase the CSM has the capability to insert itself into orbit if the S-IVB should fail. "Apogee Kick" is a variation of the Mode IV abort, where the SPS burn to orbit is performed at or near the first spacecraft Apogee. The main difference between the two is the time at which the posigrade SPS burn is performed.

b. S-IVB EARLY STAGING - Under normal conditions, the S-IVB is inserted into orbit with enough fuel to perform the Translunar Injection (TLI) maneuver. If it becomes necessary to separate from a malfunctioning S-II stage, this fuel can be used during the launch phase to insure that the spacecraft is inserted into a safe parking orbit.

c. S-IVB EARLY STAGING TO MODE IV - Should it become necessary to separate from a malfunctioning S-II stage, the S-IVB could impart sufficient velocity and altitude to the CSM to allow the SPS to be used to place the CSM into an acceptable earth orbit. The procedure is a combination of S-IVB early staging and Mode IV procedures.

3. Earth Parking Orbit Aborts

Once the CSM is safely inserted into earth parking orbit, a return-to-earth abort would be performed, if necessary, by utilizing the SPS to perform a retrograde burn to place the CM on an atmosphere-intersecting trajectory. After entry, the CM would be guided to a pre-selected target point. This procedure would be similar to the de-orbit and entry procedure performed on the Apollo 7 and 9 earth orbital flights.

4. Translunar Coast Aborts

Should problems occur which would require the termination of the mission, abort date would be passed to the crew. In the event of loss of communications, block data previously stored aboard the spacecraft would be utilized by the flight crew to terminate the flight and target the spacecraft for a safe water landing.

The abort maneuver is a retrograde burn which provides for a direct return to earth for the CM. The longitude of landing is determined by the time at which the abort is initiated and the resulting trajectory. The latitude of CM landing will be within approximately 5 degrees of the latitude at which TLI occurred.

Whenever possible, a required abort will be initiated at TLI plus 90 minutes or one of the following ground elapsed times: 8, 15, 25, 35, 45, or 60 hours.

The TLI plus 90 abort will target the CM to land at the Atlantic Ocean Line for a normal launch on any azimuth and either TLI opportunity. All other block data will target the CM to the MPL. The crew may do a time-critical abort, which would provide a minimum return time to an unspecified landing area or to the closest available recovery line. A fuel-critical abort provides for a slow return to a recovery line, based upon the propulsion system limitation causing the abort.

As the distance between the spacecraft and the moon decreases, the return time to earth increases. At a point near the moon's sphere of influence, the return-to-earth time becomes less for a circumlunar abort then for a direct return-to-earth abort.

5. Lunar Orbit Insertion (LOI) Aborts

The LOI burn transfers the CSM/Lunar Module (LM) from its translunar trajectory to the lunar parking orbit (LPO). Premature termination of the LOI maneuver places the vehicle on an abnormal trajectory, from which either an alternate mission or an abort may result.

If an inadvertent SPS shutdown occurs early in the LOI burn, the flight crew will initiate an immediate SPS restart. If the restart is unsuccessful and an abort situation exists, the LM descent propulsion system (DPS) engine is used for the abort maneuver.

If no LOI burn is performed, an abort would be initiated two hours after the predicted LOI time. The earliest return to the MPL would have a return time of 42 hours, using the SPS in either the docked or undocked configuration. The next solution to the MPL has a return time of 66 hours using either the SPS or DPS and in either the docked or undocked configuration. Three solutions to the AOL are available, using the SPS docked with the LM or using the DPS in the docked configuration. These solutions have return times of 32, 57 and 81 hours respectively. The minimum return time for the CSM only is 27 hours if the landing longitude is unspecified.

6. Lunar Orbit Aborts

After LOI has been successfully completed, an abort to return the spacecraft to the earth is essentially an early transearth injection maneuver. During the lunar orbit phase of the mission, an abort is possible only at one time during each revolution.

7. Transearth Injection (TEI) Aborts

Should the TEI burn terminate early, an immediate engine restart would be attempted. If this is not possible the restart attempt would be delayed, dependent on how much of the TEI burn had been completed before engine shutdown.

8. Transearth Coast Aborts

From TEI until entry minus 24 hours, the only abort procedure that would be performed would be to use the SPS or the SM/Reaction Control System (RCS) for a posigrade burn that would decrease the transearth flight time and change the longitude of landing. Since the normal TEI maneuver targets the CM to the MPL, the spacecraft will not have the capability to land in the Atlantic Ocean unless an abort is initiated immediately after TEI, with the resultant landing point in the West Atlantic. After 24 hours prior to entry, no further burns to change the landing point will be performed. This is to ensure that the CM maintains the desired entry velocity and flight path angle combination that will ensure a safe entry.

RECOVERY PROCEDURES

With the spacecraft landing in the recovery area, helicopters from the primary recovery ship are immediately dispatched to the point of splashdown. The first recovery helicopter on the scene moves in downwind of the floating capsule where UDT swimmers and a flotation collar are dropped. The other helicopters provide backup personnel and reserve equipment and may also be used to retrieve any additional spacecraft components located in the area. Items retrieved might include the main parachutes, the capsule apex cover, and detached fragments of the heat shield. However, such secondary recovery action would occur if it does not interfere with the primary task of astronaut and spacecraft recovery.

Navy UDT swim teams designated for spacecraft recovery duties have undergone many hours of exacting training under NASA guidance to insure their familiarity with the special hazards and procedures required in their work. For example, they are trained to avoid explosive pyrotechnic devices on the spacecraft which may not have fired during the mission; and to be constantly alert to the dangers of toxic fumes or sudden chemical fires in the areas of the spacecraft reaction control thrusters.

In addition to the standard SCUBA equipment carried by each swimmer, each three-man recovery team is equipped with one spacecraft flotation collar, three 8-foot diameter sea anchors and specially designed life rafts.

The Apollo flotation collar was developed by engineers of NASA's Landing and Recovery Division to improve spacecraft stability and prevent it from sinking. The collar also provides an essential work platform around the spacecraft. It is made of five-ply raft fabric and is inflated when attached around the aft heat shield.

After the swimmers and flotation collar have been dropped to the capsule, the first helo is flown to a ready hover position which will not interfere with flotation collar installation. Another on-scene helicopter maintains communications with the Task Force Commander, keeping him informed of progress in recovery operations.

The first swimmer attaches a sea anchor to the spacecraft to slow its drift. The sea anchor is similiar to a small parachute and effectively brakes downwind movement permitting other swimmers to overtake the spacecraft. Two swimmers then approach with the flotation collar, and when installation on the capsule is completed, life rafts are dropped for their use as a rest, security and work platform. All on-scene helos then assume hover positions around the spacecraft to await the arrival of the astronaut recovery helo.

To talk with the spacecraft crew before hatch opening, a UDT swimmer attaches an interphone headset to a communications plug which is automatically deployed by the spacecraft at splashdown. This connection also permits UDT swimmers to communicate with the recovery ship or aircraft by having the astronauts relay.

If the descent parachutes are still attached to the spacecraft, they must be collapsed and secured to a life raft. The chutes must be fully detached from the spacecraft and removed from the immediate vicinity to prevent interference with the approaching recovery ship.

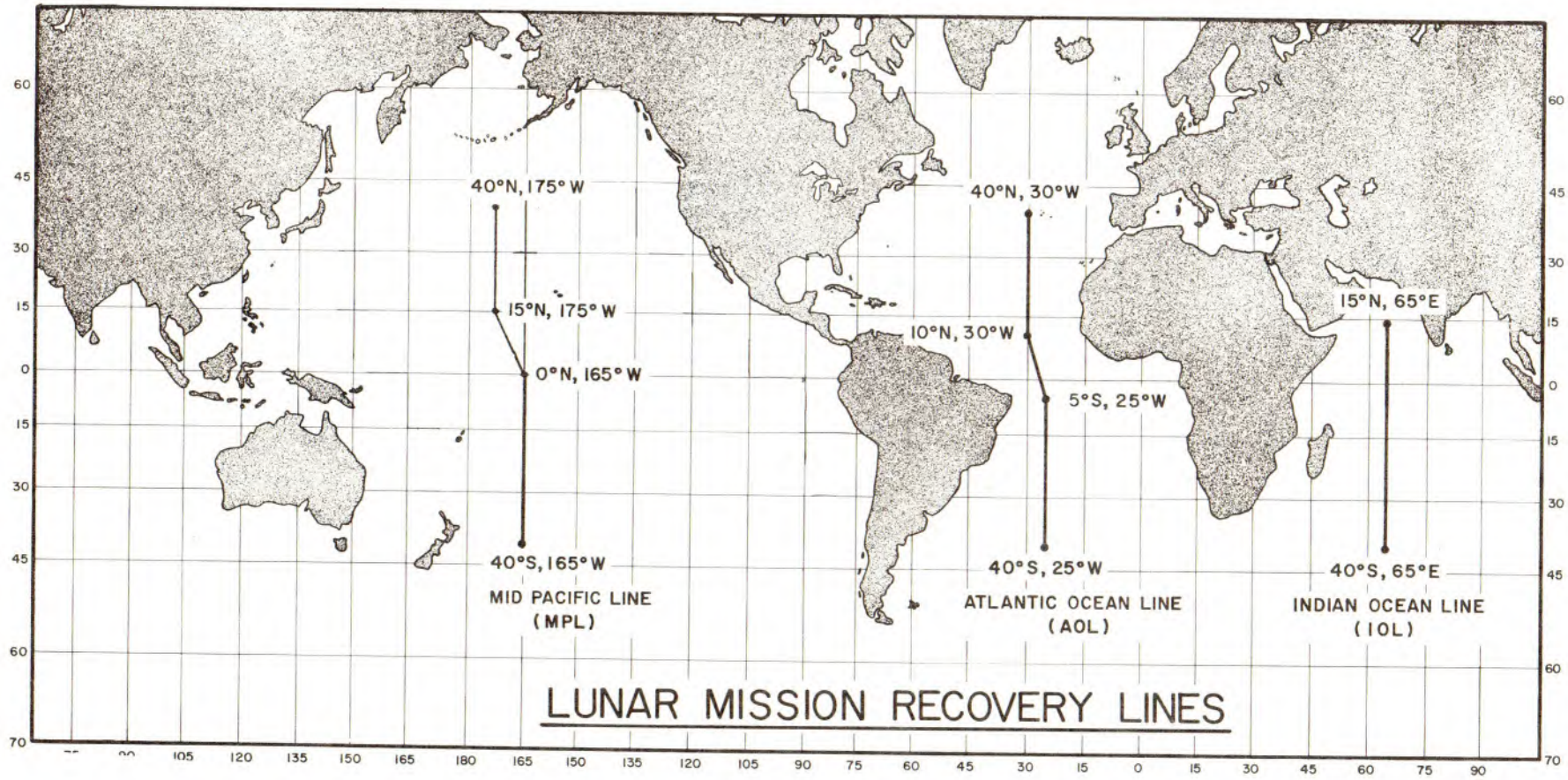
The crew will then be recovered and airlifted by helo to the recovery ship while the UDT swimmers perform any remaining operations aimed at securing the spacecraft for retrieval from the ocean. Retrieval procedures utilized depend upon the type of recovery ship arriving on the scene and weather conditions.

As the recovery ship nears the spacecraft, the swim team leader positions the swimmers to receive a retrieval line fired from the ship as it comes alongside the spacecraft. This line is hauled to the flotation collar on which the leader is waiting. A special device called a "Mercury Hook" is pulled out to the spacecraft by the swimmers. The hook is then attached to a sturdy recovery loop located at the apex end of the spacecraft. The sea anchor is then disconnected and the swimmers leave the spacecraft or a life raft where they await completion of spacecraft retireval.

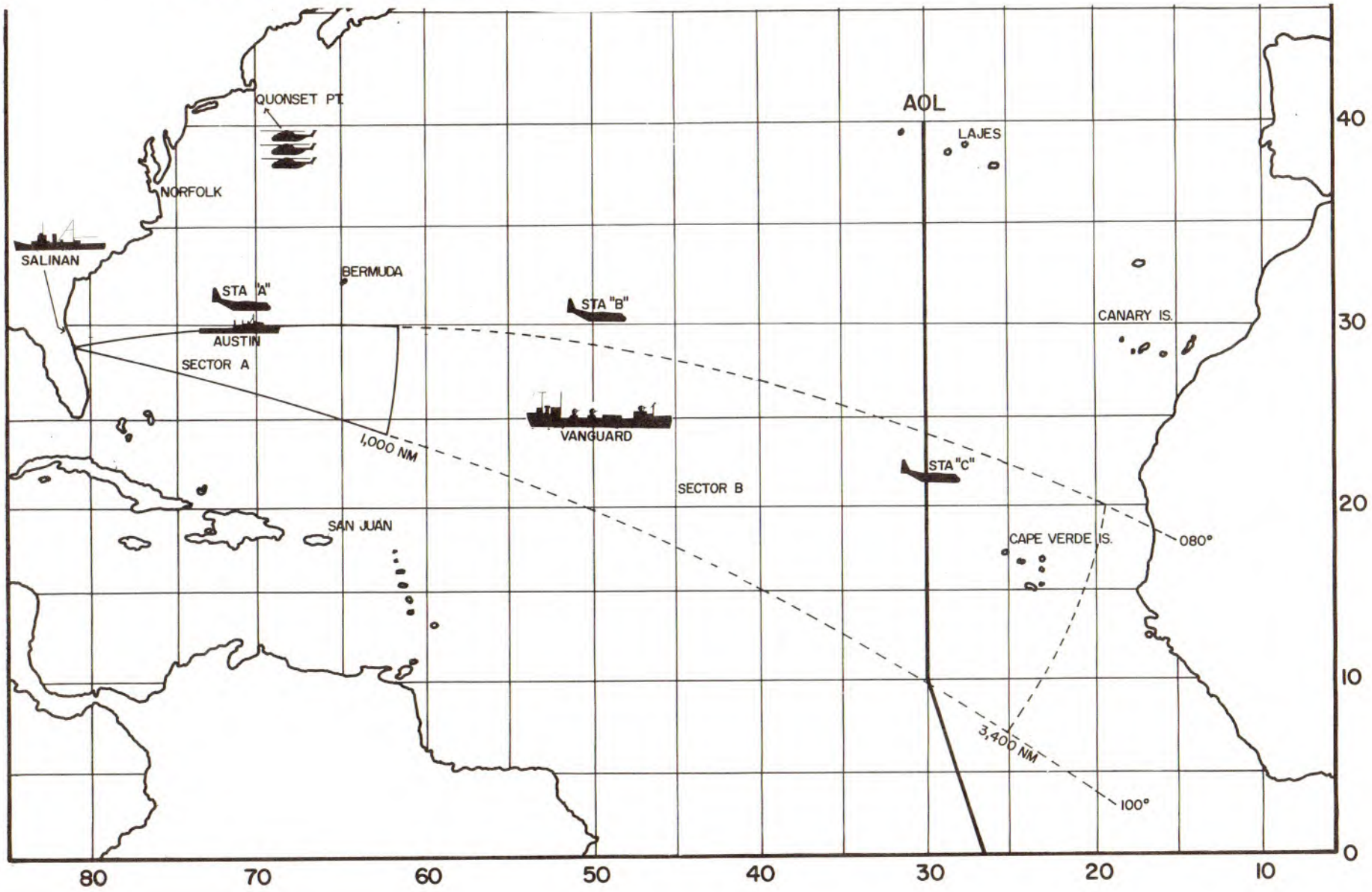
The ship does not begin hauling in the line until the UDT leader determines that all is in correct order. Swimmers have been alerted to remain clear of the heavy, bobbing spacecraft during retrieval. When all checks are completed and swimmers are safely away from the spacecraft, the leader gives the "all clear" signal and hoisting operations begin. When the spacecraft is aboard the ship, the swimmers are recovered.

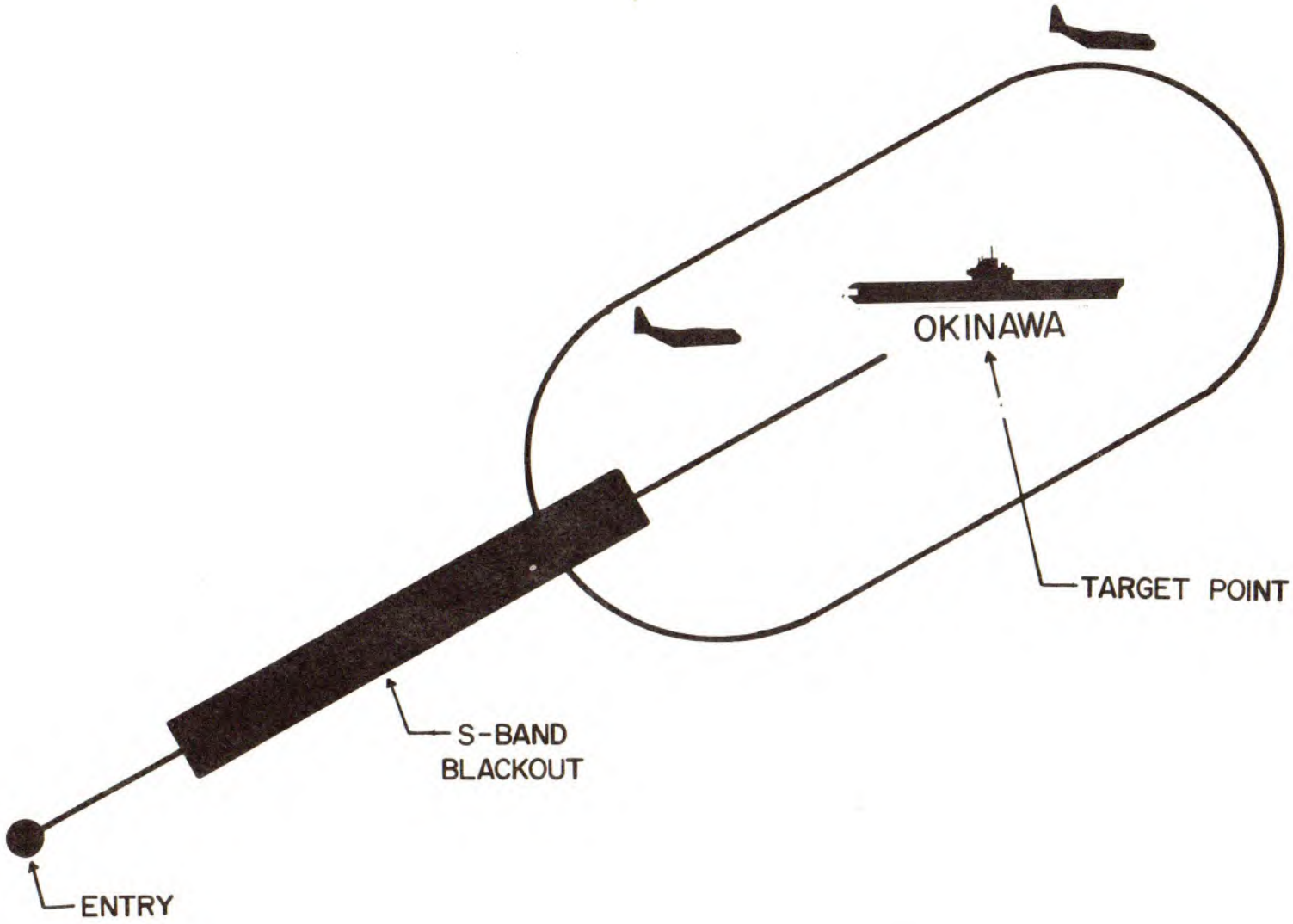
	NORFOLK	CHARLESTON	MAYPORT	CAPE KENNEDY	KEY WEST	BERMUDA	SAN JUAN	CANARY ISLAND	CAPE VERDE	ASCENSION	STATION 1
NORFOLK		386	532	589	863	683	1252	3130	3100	4720	490
CHARLESTON	386		163	258	573	767	1138	3341	3165	4880	480
MAYPORT	532	163		123	450	835	1111	3457	3290	4960	515
CAPE KENNEDY	589	258	123		320	840	973	3378	3320	4975	524
KEY WEST	863	573	450	320		1093	966	3545	3399	4950	740
BERMUDA	683	767	835	840	1093		856	2548	2410	4055	337
SAN JUAN	1252	1138	1111	973	966	856		2770	2460	5005	740
CANARY ISLAND	3130	3341	3457	3378	3545	2548	2770		750	2005	2900
CAPE VERDE	3100	3165	3290	3320	3399	2410	2460	750		2310	2720
ASCENSION	4720	4880	4960	4975	4950	4055	5005	2055	2310		4160
STATION 1	490	480	515	524	740	337	740	2900	2720	4160	

Distance Point-to-Point (Atlantic)


40°N, 175° W
15°N, 175° W
0°N, 165° W
40°S, 165° W
MID PACIFIC LINE
(MPL)
40°N, 30°W
10°N, 30°W
5°S, 25°W
40°S, 25°W
ATLANTIC OCEAN LINE
(AOL)
15°N, 65°E
40°S, 65°E
INDIAN OCEAN LINE
(IOL)
LUNAR MISSION RECOVERY LINES

LAUNCH ABORT AREA AND FORCE DEPLOYMENT





PRIMARY LANDING AREA AND FORCE DEPLOYMENT

MANNED FLIGHT RECOVERY CHRONOLOGY

MISSION #	RECOVERY DATE	PILOT(s)	RECOVERY SHIP	OCEAN
Mercury				
MR-3	5 May 1961	Alan B. Shepard, Jr.	LAKE CHAMPLAIN CVS-39	Atlantic
MR-4	21 Jul 1961	Virgil I. Grissom	RANDOLPH CVS-15	Atlantic
MA-6	20 Feb 1962	John H. Glenn	NOA DD-841	Atlantic
MA-7	24 May 1962	M. Scott Carpenter	PIERCE DD-753	Atlantic
MA-8	3 Oct 1962	Walter M. Schirra, Jr.	KEARSARGE CVS-33	Pacific
MA-9	16 May 1963	L. Gordon Cooper, Jr.	KEARSARGE CVS-33	Pacific
Gemini				
GT-3	23 Mar 1965	Virgil I. Grissom John W. Young	INTREPID CVS-11	Atlantic
GT-4	7 Jun 1965	James A. McDivitt Edward H. White	WASP CVS-18	Atlantic
GT-5	29 Aug 1965	L. Gordon Cooper, Jr. Charles Conrad, Jr.	LAKE CHAMPLAIN CVS-39	Atlantic
GT-6	16 Dec 1965	Walter M. Schirra, Jr. Thomas P. Stafford	WASP CVS-18	Atlantic
GT-7	18 Dec 1966	Frank Borman James A. Lovell, Jr.	WASP CVS-18	Atlantic
GT-8	16 Mar 1966	Neil A. Armstrong David R. Scott	LEONARD MASON DD-852	Pacific
GT-9	6 Jun 1966	Thomas P. Stafford Eugene A. Cernan	WASP CVS-18	Atlantic
GT-10	21 Jul 1966	John W. Young Michael Collins	GUADALCANAL LPH-7	Atlantic
GT-11	15 Sep 1966	Charles Conrad, Jr. Richard Gordon, Jr.	GUAM LPH-9	Atlantic
GT-12	15 Nov 1966	James A. Lovell, Jr. Edwin E. Aldrin, Jr.	WASP CVS-18	Atlantic

MISSION #	RECOVERY DATE	PILOT(s)	RECOVERY SHIP	OCEAN
Apollo				
AS-205 Apollo 7	22 Nov 1968	Walter M. Schirra, Jr. Donn F. Eisele Walter Cunningham	ESSEX CVS-9	Atlantic
AS-503 Apollo 8	27 Dec 1968	Frank Borman James A. Lovell, Jr. William A. Anders	YORKTOWN CVS-10	Pacific
AS-504 Apollo 9	13 Mar 1969	James A. McDivitt David R. Scott Russell L. Schweickart	GUADALCANAL LPH-7	Atlantic
AS-505 Apollo 10	26 May 1969	Thomas P. Stafford John W. Young Eugene A. Cernan	PRINCETON LPH-5	Pacific
AS-506 Apollo 11	24 July 1969	Neil A. Armstrong Edwin E. Aldrin, Jr. Michael Collins	HORNET CVS-12	Pacific
AS-507 Apollo 12	24 Nov 1969	Charles Conrad, Jr. Richard F. Gordon, Jr. Alan L. Bean	HORNET CVS-12	Pacific
AS-508 Apollo 13	17 Apr 1970	James A. Lovell, Jr. John L. Swigert, Jr. Fred W. Haise, Jr.	IWO JIMA LPH-2	Pacific
AS-509 Apollo 14	9 FEB 71	Alan B. Shepard, Jr. Stuart A. Roosa Edgar D. Mitchell	NEW ORLEANS LPH-11	Pacific

HISTORY
TASK FORCE 140

The U.S. Navy has been an important participant in America's space program since it began in 1958. For a variety of cogent safety and cost reasons, the United States space program has been and is predicated on the concept of at-sea landing and recovery of astronauts and their spacecraft. The Navy has logically been selected to provide this support since it is the sole U.S. military force possessing the necessary capability to perform at-sea recoveries under all circumstances.

This vital role in support of the NASA directed manned space program has been successfully completed for the Mercury and Gemini series and continues in the current Apollo space program.

Navy recovery forces in the Atlantic and Pacific report to the Department of Defense Manager for Manned Space Flight Support for recovery duty 24-hours prior to each launch. From Mission Control Center, Houston, the DOD Manager exercises overall coordination of the world wide deployment of military recovery forces based on NASA supplied information and advice.

Both Atlantic and Pacific Recovery Forces are commanded by Navy officers who direct all assigned recovery forces in their area of responsibility to meet mission requirements established by NASA.

The Atlanti Task Force One Forty responsibilities are full time since the Force Commander also functions as the Navy Deputy to the DOD Manager and is the Chief of Naval Operations Representative for Manned Space Flight Support matters. These duties involve continuous liaison with other commands and NASA in matters concerning Navy support of the Manned Space Program.

Command of the Atlantic recovery forces was originally an additional duty assigned to Commander, Cruiser-Destroyer Flotilla FOUR. The increased tempo and complexity of the space effort during the Gemini program necessitated establishment of the present specialized, dedicated force working full time to meet additional demands imposed on the Navy. In response, CNO authorized Task Force 140 as a separate organization under the command of Rear Admiral William C. Abhau on November 26, 1965.

During the final days of 1965, TF-140 conducted recoveries of Gemini missions 6 and 7.

1966 was a year of continued growth of the U.S. Space Program. The Navy continued its important role in recovery operations. The first unmanned Apollo missions were conducted successfully and the Gemini program was completed in November. There were five manned Gemini flights, two unmanned Apollo flights and the unmanned Titan IIIC/Heat Shield Test flight; all supported by recovery forces assigned to CTF-140. Improved recovery techniques and the continued success of the Gemini program enabled a reduction in the number of ships deployed in the Atlantic during each mission.

1967 was a year of operational reviews and training for Manned Spacecraft Recovery Force, Atlantic. After a tragic fire that took the lives of three astronauts in January, the unmanned Apollo 4 mission was rescheduled for April, But further delayed as a result of technical difficulties until finally launched on November 9. Apollo 4 was recovered in the Pacific by the USS BENNINGTON CVS-20.

On May 26, Rear Admiral Thomas A. Christopher relieved Rear Admiral Abhau as Commander Manned Spacecraft Recovery Force, Atlantic. On July 1, the command was designated a shore duty billet for assigned personnel. In August, construction of Recovery Control Center, Atlantic began in the headquarters building at NAS Norfolk.

On November 2, Commander Task Force 140 and his operational staff deployed to Cape Kennedy, for the Apollo 4 mission. Recovery units for this first launch of the Saturn V vehicle included: USS AUSTIN LPD-4; USS JOSEPH P, KENNEDY DD-850; USS HOIST ARS-40; USS YORK COUNTY LST-1175; and USS SABINE AO-26, along with five helicopters of Helicopter Anti-submarine Squadron 11; six swimmers from Underwater Demolition Team 21 and an RA3B aircraft from Heavy Attack Photo Squadron 62. The launch was made on November 9 and the command module was recovered in the Pacific Recovery Area by the USS BENNINGTON.

In addition to a possible Apollo 4 command module recovery due to mission abort, AUSTIN, with her assigned helicopters and underwater swimmers, was assigned the task of retrieving two camera cassettes and any pieces of the burned-out first stage rocket booster surviving ocean impact. The camera cassettes were ejected from the Saturn V vehicle shortly after photographing the separation of the first stage rocket booster from the second. Both camera cassettes were recovered intact and several fragments of the booster were successfully retrieved for NASA engineers to evaluate.

Immediately after completion of the Apollo 4 flight, the Recovery Control Center at Cape Kennedy was deactivated and installed equipment removed to Norfolk for installation in Recovery Control Center, Atlantic. All space flight recovery operations scheduled for the Atlantic are now directed from Norfolk. The Recovery Control Center was completed in late January and was dedicated by Commander-in-Chief, U.S. Atlantic Fleet on 1 February 1968. It is located in the headquarters building, SP-71, Naval Air Station, Norfolk.

Apollo 5 was launched from Cape Kennedy on 9 February. This mission launched an unmanned, non-recoverable Lunar Module into orbit using an uprated Saturn I booster.

Communications exercises were conducted on March 5 with unalerted merchant ships at sea in order to evaluate their capability for supporting Apollo recovery operations on a "Ship of Opportunity" basis. Such support might be required in the event of a spacecraft landing in a contingency area outside of the normal recovery area.

During the period of 1-9 April, an evaluation of the NASA Mobile Quarantine Facility (MQF) was conducted in USS RANDOLPH CVS-15 inport at Norfolk and USS WILLIAM WOOD DD-715 at sea in the Virginia Capes area. The purpose of this test was to evaluate the compatibility of the MQF with the ships involved and to explore other support problem areas which might be encountered when astronauts are returned from the lunar surface.

On 4 April, Apollo 6 was launched from Cape Kennedy, completing 2 3/4 revolutions of the earth before being recovered in the Pacific recovery area by USS OKINAWA LPH-3. USS AUSTIN LPD-4 in the Atlantic with her helicopters and underwater swimmers was assigned the task of retrieving six camera cassettes which were to be ejected after first and second booster stage separation. Two cassettes were ejected, both of which were retrieved at sea and returned for NASA engineers to evaluate.

A preventative maintenance and upkeep modification program was initiated in May for recovery equipment held in custody of this command. The Apollo Davit Cranes for use on destroyers were disassembled, inspected, repaired and tested prior to reissue. This program was extended to include servicing of cranes which will be provided to the Pacific Fleet.

On 23 July, CINCLANTFLT made an annual administrative inspection of the command and awarded a grade of excellent.

On 31 July, Rear Admiral Thomas A. Christopher was relieved as Task Force Commander by the Chief of Staff, Captain Coleman W. Sims. Admiral Christopher retired from the Navy having completed 35 years of active service. On 12 August, Rear Admiral Philip S. McManus relieved Captain Sims as Force Commander. Captain Sims resumed duties as Chief of Staff.

Apollo 7 was launched from Cape Kennedy on 11 October and recovered South of Bermuda on 22 October by the Primary Recovery Ship USS ESSEX CVS-9. Two days later ESSEX arrived at Norfolk and offloaded the command module. At NAS Norfolk in hanger LP-2, the command module was deactivated by NASA and North American Rockwell technicians, then flown to California for a complete engineering study.

Apollo 8 was launched on 21 December and was recovered on 27 December by the USS YORKTOWN CVS-10 in the Pacific, 1000 miles South of Hawaii, successfully completing the first lunar orbital mission.

In January, Task Force 140 began training for the Apollo 9 earth orbital mission. USS GUADALCANAL LPH-7 was named as the primary recovery ship and received at-sea training in recovery operations. The amphibious transport USS CHILTON LPA-38 and the amphibious cargo ship USS ALGOL LKA-54, both on their initial recovery duty, also conducted at-sea training in preparation for the scheduled 28 February launch.

Also during the month of January, the Mobile Quarantine Facility was tested onboard the GUADALCANAL and the destroyer USS Myles C. FOX DD-829. Other units assigned to the Apollo 9 mission included Helicopter Antisubmarine Squadron THREE, Underwater Demolition Team TWENTY TWO, and the USS PAIUTE ATF-159, the inport standby rescue salvage ship.

Apollo 9 was launched on March 3 and splashdown on March 13 in the Atlantic 400 miles north of Puerto Rico when bad weather necessitated a change in the primary recovery area.

Apollo 10, the second manned lunar mission, was launched on May 18 and recovered on May 26 by the USS PRINCETON LPH-5 in the Pacific, 349 miles southeast of American Samoa. Atlantic Fleet units supporting this mission were the USS OZARK MCS-2; USS CHILTON LPA-38; USS RICH DD-820 and USS SALINAN ATF-161.

Apollo 11, the first manned lunar landing, was launched on July 16, 1969 and was recovered in the Pacific on July 24. During this mission, Astronauts Neil Armstrong and Edwin E. Aldrin, Jr., became the first two men to set foot on the moon. Recovery was made by USS HORNET CVS-12. Units in the Atlantic Fleet supporting the mission were the destroyer USS NEW DD-818; USS OZARK MCS-2 and USS SALINAN ATF-161. Nine Air Force HC-130H Rescue Aircraft were assigned mission support.

On October 2, 1969, Commander Task Force 140 received NASA's Group Achievement Award. Then on October 16, a Certificate of Appreciation was presented to the Commander by NASA's Manned Spacecraft Center, Houston, Texas. These awards were for outstanding services as the recovery force for Apollo missions in the Atlantic.

Apollo 12, man's second voyage to the surface of the moon, was launched on November 14 and was recovered in the Pacific by the USS HORNET CVS-12 on November 24. Astronauts Charles Conrad and Alan Bean conducted extensive investigations of the lunar surface as Richard Gordon maintained a vigilance from the orbiting command module. Units in the Atlantic supporting this mission were: USS HAWKINS DD-873; USS AUSTIN LPD-4; USS ESCAPE ARS-6; a four helicopter detachment from Helicopter Antisubmarine Squadron FIVE on launch abort standby aboard an aircraft carrier operating off the eastern seaboard. Ten Air Force HC-130H Rescue Aircraft were assigned mission support.

On January 9, 1970, Rear Admiral William S. Guest relieved Rear Admiral Philip S. McManus as Commander Manned Spacecraft Recovery Force, Atlantic.

Apollo 13 was launched on April 11, 1970. 55 hours later the lunar mission was aborted and the astronauts began their return to earth. The lunar module was used to place the spacecraft on a free return trajectory and supported the astronauts for the remainder of the flight. On Friday, April 17, the astronauts were recovered by USS IWO JIMA

LPH-2 approximately 530 miles southeast of American Samoa. Atlantic Fleet units supporting the mission were: USS NEW DD-818; USS ESCAPE ARS-6, the inport standby ship; a detachment from Helicopter Antisubmarine Squadron THREE, on standby at Quonset Point, R.I.; and a WC-121N weather aircraft from Weather Reconnaissance Squadron FOUR. Eleven Air Force HC-130H Rescue Aircraft were assigned mission support.

On July 22, 1970, Manned Spacecraft Recovery Force, Atlantic was awarded the Meritorous Unit Commendation by the Secretary of the Navy for meritorous service from July 1, 1967 to July 26, 1969.

On August 26, 1970, Rear Admiral Richard R. Pratt, Commander Service Force, U.S. Atlantic Fleet relieved Rear Admiral William S. Guest as Commander Manned Spacecraft Recovery Force, Atlantic (CTF-140); Navy Deputy to the Department of Defense Manager and Chief of Naval Operations Representative for Manned Space Flight Support Operations, as additional duties.

Apollo 14 was launched from Cape Kennedy on 31 January 1971 and was recovered some 760 nautical miles south of American Samoa in the south Pacific by the primary recovery ship USS NEW ORLEANS LPH-11. Units assigned to support this mission in the Atlantic were the USS SPIEGEL GROVE LSD-32, USS HAWKINS DD-873, USS PAIUTE ATF-159, a detachment of helicopters from Helicopter Antisubmarine Squadron SEVEN and six HC-130H aircraft from the U.S. Air Force Aerospace Rescue and Recovery Service.

During the period 1-10 May, CTF-140 Communications Department assisted Commander Fleet Electronic Warfare Support Group, Atlantic (FEWSG) during EXOTIC DANCER IV by providing communications support.

On 27 May, Rear Admiral Roy G. Anderson relieved Rear Admiral Richard R. Pratt as Commander Service Force, U.S. Atlantic Fleet with additional duties as Commander Manned Spacecraft Recovery Force, Atlantic (CTF-140).

During the period 6-22 June, staff communications assisted FEWSG by providing communications support for an Operational Readiness Exercise. The Recovery Control Center, Atlantic was made available to FEWSG as their Control Center for this exercise. Also during the month of June, CTF-140 conducted two simulated mission abort exercises for staff personnel in the Recovery Control Center to prepare for the scheduled 26 July launch of Apollo 15.

Apollo 15 is scheduled to be launched from Cape Kennedy on 26 July 1971. Forces assigned to CTF-140 for mission support includes: USS AUSTIN LPD-4, on station approximately 500 nautical miles downrange from the launch pad for launch abort duties and to remain on station until the spacecraft has achieved successful translunar injection; USS SALINAN ATF-161, the inport standby salvage ship at Mayport, Fla.; a three helicopter detachment from Helicopter Antisubmarine Squadron THREE from Quonset Point, R.I., on standby for search duties in the event Apollo 15 is aborted during early seconds of powered flight and three HC-130H aircraft from the U.S. Air Force Aerospace Rescue and Recovery Service to provide contingency rescue support in case of an abort.

REAR ADMIRAL ROY G. ANDERSON

Roy Gene Anderson was born in Neosho, Missouri on December 24, 1915, son of Roy Godfred Anderson and Ila Gene (Bowers) Anderson. He attended Neosho High School and Kansas State Teachers College, Pittsburg, prior to entering the U.S. Naval Academy, Annapolis, Maryland on appointment from his native state in 1936. Graduated and commissioned Ensign on June 6, 1940, he subsequently advanced in rank to that of Rear Admiral to date from December 1, 1965.

Following graduation from the Naval Academy in 1940, he joined the USS MINNEAPOLIS and was serving with that cruiser in the Pacific at the outbreak of World War II. In November 1942 he received submarine training at New London, Connecticut, and reported on board USS FLYING FISH in March 1943. In April 1944 he reported on board USS KINGFISH, completing eight war patrols against the Japanese on the two submarines.

From June 1945 until June 1946 he was a student at the Postgraduate School, Annapolis, then continued graduate work at California Institute of Technology at Pasadena where he received a Master of Science degree in aeronautical engineering in June 1947. He next had duty in connection with guided missiles in the Bureau of Ordnance, and in March 1948 became Executive Officer of USS CUSK. In December 1949 he assumed command of USS CARBONERO and in November 1951 was assigned to the Office of the Chief of Naval Operations dealing with submarine launched guided missiles. There he also had duty as the CNO REGULUS Project Officer. In November 1953, he reported as Operations Officer to Commander Submarine Squadron FIVE, and in May 1955 became Commander Submarine Division FIFTY-FIVE, a guided missile division. In December 1955, he reported as Plans Officer in the Special Projects Office, Navy Department.

In August 1958, he reported as Chief of Staff to Commander Submarine Squadron FOURTEEN, the first Polaris submarine squadron. In August 1960, he joined the Joint Staff of the Commander in Chief Atlantic, and from August 1962 to January 1963 he attended the Industrial College of the Armed Forces, Washington, D.C. Following this training he served as NATO Nuclear Planning Officer in the office of CNO, where he also served as Deputy to the Chairman, Multilateral Force Working Group. In August 1964 he assumed command of USS TACONIC (AGC-17) and in June 1965 became Commander Amphibious Group FOUR.

In March 1967 he reported as Senior Naval Member, Military Studies and Liaison Division, Weapons Systems Evaluation Group, Office of the Secretary of Defense. In February 1970 he reported as Director of the Long Range Objectives Group (Op-93) in the office of CNO and in August 1970 became the Director, Systems Analysis and Long Range Objectives Division (Op-96). It is from this assignment that Rear Admiral Anderson assumed command of the Service Force, U.S. Atlantic Fleet with additional

duty as Commander Manned Spacecraft Recovery Force, Atlantic on May 27, 1971.

Rear Admiral Anderson is authorized to wear the Legion of Merit with two Gold Stars, the Bronze Star Medal with Gold Star and Combat "V", and the Commendation Ribbon with Bronze Star and Combat "V".

This official home address is 220 East Maple Street, Neosho, Missouri. He is married to the former Olivia Ratliff, of Neosho, and they have two children, Mr. Jean Langston Radford and Philip R. Anderson.

CAPTAIN LEO W. EARLY
CHIEF OF STAFF
TO
COMMANDER MANNED SPACECRAFT RECOVERY FORCE,
ATLANTIC (TF-140)

Captain Leo W. Early, a native of Radford, Virginia, entered the United States Navy in April 1941, and in December 1941, was designated as a naval aviator. Captain Early holds a Bachelor of Science Degree in Chemical Engineering from Virginia Polytechnic Institute.

From 1942 until the end of World War II and release from active duty, he served in Patrol Bombing Squadrons 52, 207, 21 and 98.

In October 1946, he returned to active duty, and assumed the duties of Training Officer at the Naval Air Station, Key West, Florida. From October 1947 until June 1948, he served as the Air Officer of the USS NORTON SOUND (AV-11). In July 1948, he enrolled in a one year course at the Navy General Line School, Newport, Rhode Island, and in June 1949, reported as the Administration Officer of the Naval Air Station, Roosevelt Roads, Puerto Rico.

In July 1950, he reported as the Executive Officer of Utility Squadron FOUR. In June 1951, he assumed the duties of the Administrative Officer on the staff of the Chief Naval Air Basic Training Command, and continued in this capacity until August 1953, when he enrolled at the Naval War College, Newport, Rhode Island. Following the assignment at the Naval War College, he attended helicopter flight training, and in September 1954, assumed the duties of Executive Officer, Utility Squadron TWO. In June 1956, he assumed command of Helicopter Squadron NINE.

In July 1957, he reported to the office of the Chief of Naval Operations, initially as the Head of the Rotary Wing Antisubmarine Weapons System and subsequently as the Head of the Amphibious Branch. In February 1960, he reported as the Executive Officer of the USS BOXER (LPH-4), and in April 1961, assumed the duties of Assistant Inspector General in the office of the Bureau of Weapons. On 1 July 1961 he was promoted to the rank of Captain, and in March 1962, assumed command of the Naval Air Station, Glynco, Georgia.

In June 1964, Captain Early assumed the duties of assistant Chief of Staff for Training and Plans on the staff of the Commander Naval Technical Training Command, and in August 1965, reported to the staff of the Commander Service Force, Atlantic Fleet as assistant Chief of Staff for Ordnance. In July 1969, he assumed the duties of his current position as Chief of Staff to the Commander Manned Spacecraft Recovery Force, Atlantic (TF-140).

Captain Early wears the Air Medal with gold star, American Defense Service Medal, American Campaign Medal, Asiatic-Pacific Campaign Medal, World War II Victory Medal, National Defense Service Medal with bronze star, the Philippine Liberation Ribbon and the Navy Meritorious Unit Commendation.

Captain Early is married to the former Miss Eula M. Phillips of Radford, Virginia, and they have four children, Leo W. Jr., Timothy Jon, Patricia Ann and Karen Lee. The Early family resides in Virginia Beach, Virginia.

USS AUSTIN (LPD-4)

USS AUSTIN (LPD-4) is the fourth ship of her type, the first of her class and the third of the Fleet to bear the name. She is named for the city of Austin, Texas, which commemorates Stephen Fuller Austin, American colonizer and statesman. Her keel was laid at the New York Naval Shipyard, Brooklyn, on 4 February 1963. AUSTIN was christened 27 June 1964. Her sponsor was Miss Lynda Bird Johnson, the daughter of the 36th President of the United States, representing the city of Austin. AUSTIN was commissioned 6 February 1965.

AUSTIN remained at the New York Shipyard until May 1965 completing final trials and inspections. She arrived at the Norfolk Naval Shipyard on 26 May to complete outfitting. During September and October AUSTIN was engaged in refresher training and a shakedown cruise in the area of Guantanamo Bay, Cuba.

From November 1965 through April 1966, AUSTIN engaged in local independent steaming and amphibious exercises to maintain her operational readiness. AUSTIN assisted in the withdrawal of units of the Inter-American Peace Force from the Dominican Republic in mid-1966. From December 1966 to April 1967 AUSTIN maintained a readiness condition for an extended deployment to the Caribbean during the summer.

On 15 April 1967, AUSTIN departed for Morehead City, N.C. to embark units of a Marine Battalion Landing Team and commenced her first deployment as part of the Caribbean Ready Force. The ensuing four months were active, with AUSTIN participating in numerous amphibious training exercises.

On 4 November 1967, a detachment of Navy helicopters, members of an Underwater Demolition Team and NASA representatives boarded to take part in possible recovery of the Apollo 4 spacecraft. AUSTIN recovered two camera cassettes from the first stage booster of Apollo 4. On 4 April 1968 AUSTIN repeated this performance for the Apollo 6 unmanned flight.

At Bridgeport, Conn., on 12-23 February 1968, AUSTIN participated in test of the CH-53 helicopter with the Sikorsky Aircraft Company. Part of the test included AUSTIN being towed by a CH-53 helicopter.

On 19 July AUSTIN entered Norfolk Naval Shipyard for a yard period which ended on 19 December.

On 18 May 1969, AUSTIN departed Norfolk for a four-month Caribbean deployment as part of the Caribbean Amphibious Ready Group. Early in the deployment AUSTIN took part in Operation EXOTIC DANCER II, a joint Army, Navy, Marine and Air Force exercise which involved amphibious and airborne troop operations in Puerto Rico and Vieques.

Following a leave and upkeep period in Norfolk, AUSTIN commenced training and preparations for assignment as the Atlantic recovery ship for the second U.S. moon exploration mission, Apollo 12. Departing Norfolk on 4 November, AUSTIN took station on the equator for the launch on 14 November 1969, and remained in the South Atlantic in readiness for recovery of the astronauts and the command module until 24 November when Apollo 12 splashdown occurred in the Mid-Pacific as had been planned. Enroute home, AUSTIN made a brief stop at Port-of-Spain, Trinidad for fuel on 29-30 November and arrived in Norfolk on 6 December for a holiday leave and upkeep period.

In March 1970 AUSTIN deployed with Amphibious Squadron TWO for duty with the Sixth Fleet in the Mediterranean Sea. The ship conducted amphibious landings in Carboneras, Spain; Lovo Santo, Corsica; and Porto Scudo, Sardinia.

AUSTIN returned to Norfolk in Mid-July and entered the Norfolk Naval Shipyard for repairs. During this period, AUSTIN was presented with the squadron's Battle Efficiency Award for excellence in the areas of material, administrative and battle readiness. The ship also was awarded the "E" for excellence in Amphibious Assault, Operations, Air, Engineering, Supply and Communications areas, thus making AUSTIN the top award winner in the Atlantic Fleet Amphibious Force.

AUSTIN has recently returned from a second Mediterranean deployment, having deployed with Amphibious Squadron TWO.

AUSTIN is currently making preparations as a support ship in the Apollo Space Program with Apollo 15 scheduled for launch on 26 July 1971. AUSTIN will be the single Atlantic Fleet recovery ship at sea for this mission and will be stationed approximately 500 nautical miles downrange from Cape Kennedy for launch abort duties.

CAPTAIN ROBERT S. VERMILYA
COMMANDING OFFICER
USS AUSTIN (LPD-4)

Captain Robert S. Vermilya enlisted in the Navy in January 1944. He commenced flight training under the V-5 program in March 1945 and was commissioned and designated a Naval Aviator in January 1947.

He has served in numerous operational squadrons and has participated in world cruises aboard the USS RENDOVA (CVE-114), USS TARAWA (CV-40), and the USS BURTON ISLAND (AGB-1). Other sea duty tours include a cruise in the USS VALLEY FORGE (CVA-45) during the Korean War, Commanding Officer of Helicopter Antisubmarine Squadron SIX while aboard the USS KEARSARGE (CVS-33) on deployment in the Tonkin Gulf and as Operations Officer and then Executive Officer on the USS IWO JIMA (LPH-2) participating in nine amphibious assaults in Vietnam. More recently he was Commanding Officer of the USS SANDOVAL (LPA-194) Captain Vermilya assumed command of USS AUSTIN in April 1970.

His shore duty assignments have included Flight Instructor, General Line School, Ohio State University, Aide and Flag Secretary to Commander Fleet Air San Diego, Operations Training Officer of Commander Antisubmarine Air Group 51 and student at the Naval War College.

Captain Vermilya has been awarded the Silver Star, Bronze Star, Air Medal with Star, Navy Commendation Medal with Gold Star/Combat "V", the Navy Unit Citation and the Meritorious Unit Citation in addition to the World War II, Korean, and Vietnam Service Ribbons.

Captain Vermilya and his wife, the former Miss Virginia Jensen reside at Virginia Beach, Virginia, with their two sons, Robert and Richard.

LIEUTENANT MONROE M. BAILEY
COMMANDING OFFICER
USS SALINAN (ATF-161)

Lieutenant Monroe M. Bailey enlisted on July 25, 1950. Upon completion of basic training, he reported to the USS FLOYDS BAY (AVP-40). In 1954 he reported to the U.S. Navy Diving School and graduated a First Class Diver.

From April 1955 until September 1956 he served aboard the USS GRAPPLE (ARS-7). In September 1956 he reported for duty at the Naval Ordnance Underwater Station, Newport, R.I.

Lieutenant Bailey next served aboard the USS SUNBIRD (ARS-15) from July 1958 until he received his commission in October 1962. He reported to the USS LUSIENO (ATF-156) upon completion of Officer Indoctrination School in December 1962, where he served until April 1966. He then served on the USS SKYLARK (ASR-20) until September 1968. Prior to reporting to SALINAN, he served at the Recruit Training Command, Orlando, Florida.

Lieutenant Bailey is married to the former Miss Josephine Hobbs of Tifton, Ga. They have three daughters.

USS SALINAN (ATF-161)

USS SALINAN was built by the Charleston Shipbuilding and Drydock Company of South Carolina and commissioned in August of 1945. The ship is named after the Salinan Indian tribe of California. The primary mission of a fleet tug is heavy towing and salvage with search and rescue as a secondary mission, but SALINAN has been very successful in a large number of research projects, especially deep sea research.

SALINAN is a Service Force ship of the U.S. Atlantic Fleet under the control of Service Squadron EIGHT. She is homeported in Mayport, Florida, having been shifted in 1967 from Key West, her homeport for 21 years.

SALINAN's duties have taken her throughout the Gulf of Mexico, the Caribbean Islands, various east coast ports and up the Mississippi river. In 1947, SALINAN towed the aircraft carrier KEARSARGE from the Panama Canal to Boston, Massachusetts. SALINAN rescued several ships which had become grounded on the coral reefs in the Florida Keys.

SALINAN has also salvaged various aircraft which have been forced down into the sea, including helicopters, jets and conventional aircraft.

In 1959, SALINAN participated in a deep sea research project to lay a moor in 6,000 feet of water. SALINAN completed this project successfully. During the late 50's and early 60's SALINAN did research in mine warfare, antisubmarine warfare and submarine development.

On several occasions, SALINAN has engaged in joint operations with ships of foreign nations. In 1962 she provided technical assistance. Later that year, she operated with two Canadian vessels, conducting shock tests. The duties of the SALINAN frequently take her to the Caribbean Islands.

In 1965 SALINAN participated in rescue and salvage work after hurricane Betsy destroyed the New Orleans waterfront. In the month that SALINAN worked in the area she salvaged numerous small craft, several heavy vessels and cleared the channels for other rescue and salvage craft. This is hard, demanding work but the training of SALINAN's crew has always proven itself valuable and worthwhile in time and property saved.

Several times in her history SALINAN participated in the United States space effort, generally as a stand-by unit for recovery or as a test support vessel. The ship is well equipped for deep sea recovery operations.

HELICOPTER ANTISUBMARINE SQUADRON THREE

Helicopter Antisubmarine Squadron THREE was commissioned on 18 June 1952, at the Naval Air Facility, Elizabeth City, N.C. By December, the squadron was near full strength. Fourteen helo's, the HUP-2, were received and extensive pilot and sonar operator training started. On 1 September 1954, while proceeding to its home station from the USS VALLEY FORGE, HS-3 was ordered to NAS Quonset Point, R.I. to assist in disaster relief after the ravages of Hurricane Carol. The squadron moved from NAS Elizabeth City to NAS Norfolk, Va., in early 1960.

In April 1960, HS-3 joined TASK GROUP BRAVO. Exercises with ASW units of the Canadian Navy in "OPERATION SHORTSTOP" were a prelude to the formal commissioning on 25 May of Carrier Antisubmarine Air Group FIFTY-SIX. In September of 1961 the first HSS-2's to be delivered to an operational squadron in the Atlantic Fleet were received. On 24 May 1962, HS-3 rescued Scott Carpenter after his space capsule, AURORA 7 had overshot the primary recovery ship by 200 miles. During the period of 26 October to 23 November 1962, HS-3 deployed aboard the USS WASP to participate in the Cuban Blockade.

On 23 March 1965, HS-3 participated in the recovery of the GEMINI 3 space capsule. Astronauts Virgil Grissom and John Young were lifted from the "Molly Brown" by HS-3 and returned to the USS INTREPID. On 31 March, HS-3 exceeded 30,000 accident free hours, and in June won the Battle Readiness "E" for a record third consecutive year. In July while operating from the USS GUADALCANAL, HS-3 picked up astronauts Young and Michael Collins from their GEMINI 10 spacecraft. In September, this time flying the new SH-3D "Sea King" from the deck of the USS GUAM, HS-3 lifted astronauts Richard Gordon and Charles Conrad from their GEMINI 11 spacecraft.

In December 1968, a detachment went aboard the USS GUADALCANAL as a back-up for the successful Apollo 8 mission. In February a detachment again boarded the GUADALCANAL and successfully recovered the Apollo 9 astronauts. In June 1969, the squadron participated in Operation Sparkplug in the Carribbean. In September, the squadron embarked in USS YORKTOWN as a part of Carrier Air Group FIFTY-SIX for a four month deployment to the North Atlantic.

In February 1970, HS-3 changed homeport to NAS Quonset Point, R.I., and became the Air Group for USS INTREPID. In April HS-3 supplied a large detachment to USS INDEPENDENCE, giving the squadron its first taste of operations aboard a large attack aircraft carrier. During the period of September through December 1970, the squadron supplied ASW and plane guard services for USS FORRESTAL during the work-up period in preparation for a six month deployment to the Mediterranean.

In January 1971, HS-3 departed Norfolk for the Mediterranean and in February rescued 18 crewmembers and two women passengers from a disabled Greek ore ship. A few days later, HS-3 provided transportation for the Secretary of the Navy and his party, during a tour of USS FORRESTAL and accompanying ships. The squadron returned to Quonset Point in early July 1971.

COMMANDER WARREN H. WINCHESTER
COMMANDING OFFICER
HELICOPTER ANTISUBMARINE SQUADRON THREE

Commander Warren H. Winchester was born on 7 April 1932 in Union County, North Carolina. He attended schools in Mineral Springs, N.C.. and graduated from Pfeiffer Junior College, Misenheimer, N.C., prior to entering the Naval Service in August of 1953.

Commissioned an Ensign, USNR, from the Naval Aviation Cadet Program on 9 August 1955, he was designated a Naval Aviator on the same day, and received orders to "Lighter than Air" training. He was designated an LTA pilot on 1 February 1956.

Commander Winchester's first operational tour was with Air Ship Patrol Squadron TWO, Glynco, Ga. He spent only a short time with ZP-2 prior to being transferred to the then-forming Air Ship Early Warning Squadron ONE, where he spent three years as a squadron pilot. During his tour with ZW-1, he augmented into the Regular Navy.

In June 1959, he reported to the U.S. Naval Postgraduate School, Monterey, Calif. He graduated in July of 1961, receiving his Bachelor of Science Degree in Naval Science.

Ordered in August of 1961 to the U.S. Naval School, Preflight, Pensacola, Fla., he served as the Senior Leadership Instructor until May 1963, when he transitioned to helicopters prior to reporting to HS-3 in December 1963.

While in HS-3, he served as Training Officer and Maintenance Officer. In March of 1965 he recovered astronauts Grissom and Young of Gemini THREE. He detached from HS-3 in November of 1965.

He reported in December 1965 to the Royal Canadian Navy Helicopter Antisubmarine Squadron, HS-50, Shearwater, Nova Scotia, for duty as an Exchange Officer. He served as Operations Officer in HS-50 until his transfer in October 1967 to HS-1, Key West, Fla.

Until his transfer in December 1968, he held the billet of Operations Officer. His next duty was with Commander Fleet Air Key West, where he was the Assistant Chief of Staff for Maintenance.

He was briefly again in HS-1 for replacement training prior to reporting to HS-3 as Executive Officer on 14 May 1970.

Commander Winchester is married to the former Charlotte Gehlhaus, of Atlantic Highlands, N.J. They have two sons and a daughter. He resides at 106 Pequot Trail, East Greenwich, R.I.

REAR ADMIRAL THOMAS B. HAYWARD, U.S. NAVY

Rear Admiral Thomas B. Hayward, a native of California, first joined the Navy in 1943 as a naval aviation cadet. Prior to earning his wings he entered the U.S. Naval Academy, from which he was subsequently graduated in June of 1947. His first tour of duty as an Ensign was in the Engineering Department on board USS ANTIETAM. Returning from a Western Pacific deployment in the fall of 1948, he entered flight training at Pensacola and was designated a Naval Aviator in July 1950.

As a newly appointed LTJG, he reported to Fighter Suqadron (VF) 51 and made two combat cruises with Air Wing FIVE which included 16 months in the Korean Theater.

Following the Korean Conflict, Rear Admiral Hayward was ordered to Test Pilot Training at NATC, Patuxent River. This course of instruction led to his assignment to the Flight Test Division where his principal projects were in flight testing of high performance aircraft.

Four years of sea duty followed as a fighter transition training instructor with All Weather Fighter Squadron THREE and as Executive Officer of VF-211. These tours were interspersed with the Command and Staff Course at the Naval War College. Rear Admiral Hayward's next shore assignment was to Washington as Administrative Aide and Special Assistant to the Secretary of the Navy from 1961 to 1963. In August 1963, he joined VF-103 as Executive Officer, and later as Commanding Officer. In June 1965 he assumed command of Attack Carrier Air Wing TEN in the Mediterranean operating from the USS SHANGRI-LA. After return of the Wing to the U.S., Rear Admiral Hayward commenced reorganization of the Air Wing in preparation for combat duty with the USS INTREPID off Vietnam. Air Wing TEN became the only all-attack wing to serve with the Seventh Fleet.

In 1967 he completed a year of instruction at the National War College, after which he served as Commanding Officer, USS GRAFFIAS (AF-29) serving again with the Seventh Fleet. In October 1969, Rear Admiral Hayward reported to command the USS AMERICA (CVA-66) from his previous assignment as Executive Assistant and Naval Aide to the Under Secretary of the Navy. On November 25, 1970, Admiral Hayward assumed command of the following Hawaiian-based commands.

Commander, Hawaiian Sea Frontier
Commandant, Fourteenth Naval District
Commander, Pearl Harbor Naval Base
Commander, Manned Spacecraft Recovery Force, Pacific
Commander Fleet Air Hawaii
Commander, Barbers Point Fleet Air Detachment

Rear Admiral Hayward wears the Legion of Merit with Gold Star, the Distinguished Flying Cross, Air Medal, Navy Commendation Medal and Navy Unit Citation.

Mrs. Hayward is the former Peggy Keating of Medford, Massachusetts. The Haywards make their permanent residence in Virginia Beach, Va. They have two daughters, Cynthia Marie Hayward at home and Mrs. Colleen Hayward Smith and a grandson of Charlottesville, Va.

HISTORY
TASK FORCE 130

Task Force 130, the Pacific Recovery Force for the Manned Spacecraft Missions, was activated in 1962 during the Mercury series of manned space flights. The Force's area of responsibility covers the entire Pacific Ocean, from the West Coast of the United States to the middle of the Indian Ocean.

Eleven officers and five enlisted men are permanently assigned to the Task Force. During space flight missions, approximately 1500 men are temporarily assigned from the Navy, Air Force, and Army. Navy units come from the First and Seventh Fleets, while Air Force aircraft and personnel are assigned from the Pacific Aerospace Rescue and Recovery Center. Army personnel come from Army units in Hawaii.

The Task Force saw its first support action on October 3, 1962, when the aircraft carrier USS KEARSARGE recovered Mercury 8 Astronaut, Walter M. Schirra and spacecraft Sigma 7. The Force deployed again on June 16, 1963, this time to recover Faith 7, the Mercury 9 spacecraft piloted by Astronaut L. Gordon Cooper. Again, the KEARSARGE was the pick-up ship. Both missions were planned Pacific landings, and both were recovered in their planned landing areas Northeast of Midway Island.

During the Gemini series of space missions, Task Force 130 played the part of a contingency recovery force. However, during the Gemini 8 mission her training and experience gained from previous missions was realized.

Gemini 8 Astronauts Neil Armstrong and David Scott brought their craft down for a secondary landing in the Western Pacific recovery zone about 600 miles South of Yokosuka, Japan.

Task Force 130 units involved included two Navy destroyers and four Air Force C-130B rescue planes from the Pacific ARRS. The destroyer USS GEORGE K. MACKENZIE was in Okinawa taking on fuel and the USS LEONARD F. MASON was in the northern sector of the recovery zone where the MASON had patrolled in support of an earlier orbit.

Rescue 1, one of the four Air Force aircraft ordered aloft, spotted the capsule before it landed. After splashdown, the plane's three pararescue men parachuted into the sea and attached a flotation collar to the capsule. The MASON arrived on the scene in less that four hours, coming close enough to the capsule so that the astronauts were able to step with dry feet from their vehicle to a jacob's ladder placed on the ships side and then climb aboard. The Force received the National Aeronautics and Space Administration Group Achievement Award for its outstanding work in the recovery of Gemini 8.

The remainder of the Gemini missions were completed without incident. In February 1966, Apollo 201 was launched. It was a down-range shot that was recovered in the area of the Ascension Is. Then, in 1966 Apollo 202 was launched from Cape Kennedy and recovered in the Pacific near Wake Is.

The nation's most powerful rocket launch vehicle, the Saturn V, was tested in space for the first time during the Apollo 4 mission flown on November 9, 1967. Test results proved the ability of the heat shield to withstand high temperatures created by the same type of high-speed atmospheric re-entry which astroanuts will experience upon return from the moon. The carrier BENNINGTON, assisted by the destroyer CARPENTER and six Hawaii-based Air Force C-130 rescue aircraft made an efficient and rapid recovery of the capsule despite heavy ocean swells and rain squalls in the splashdown area.

Apollo 6 objectives were similar to those of Apollo 4. The landing platform helicopter ship OKINAWA replaced the BENNINGTON. Other elements of the recovery force remained the same as the Apollo 4 mission. Again Task Force Team functioned smoothly in the efficient recovery of the capsule.

For Apollo 7, TF-130 manned two planned contingency emergency landing areas in the Pacific as backup in case an inflight malfunction of the spacecraft necessitated a landing in other than the Atlantic Ocean Primary area.

Apollo 8 was recovered on 27 December 1,000 miles south of Hawaii after completing 10 orbits of the moon. YORKTOWN (CVS-10) with Underwater Demolition Team TWELVE and Helicopter Antisubmarine Squadron FOUR aboard made the recovery.

For the Apollo 9 mission, COCHRANE and NICHOLAS served as contingency recovery ships. The destroyer MASON joined the recovery force, making this the smallest number of recovery ships on duty in the Pacific to date for a manned space mission.

Apollo 10 was recovered by PRINCETON with Underwater Demolition Team ELEVEN and Helicopter Antisubmarine Squadron FOUR aboard.

Apollo 11 Astronauts and their spacecraft were recovered by the USS HORNET (CVS-12) on 24 July 1969.

Apollo 12 Astronauts and their spacecraft were recovered on 24 November 1969 by USS HORNET. Assisting were Helicopter Antisubmarine Squadron FOUR and Underwater Demolition Team THIRTEEN. THe USS JOSEPH STRAUSS (DDG-16) was on inport standby in Hawaii.

Apollo 13 was launched on April 11, 1970. 55 hours later the lunar mission was aborted and the astronauts began their return to earth. The lunar module was used to place the spacecraft on a free return trajectory and supported the astronauts for the remainder of the flight. On Friday, April 17, the astronauts were recovered by USS IWO JIMA LPH-2, approximately 530 miles southeast of American Samoa. Other units supporting the mission were, USS BENJAMIN STODDERT DDG-22, USS KAWISHIWI AO-146, USS GRANVILLE S. HALL YAG-40, Helicopter Antisubmarine Squadron FOUR and a detachment from Underwater Demolition Team THIRTEEN.

On November 25, 1970, Rear Admiral Thomas B. Hayward assumed duties as Commander Manned Spacecraft Recovery Force, Pacific (CTF-130).

Apollo 14 was launched on January 31, 1971. Ten days later the spacecraft landed near the primary recovery ship USS NEW ORLEANS LPH-11. Other units assigned mission support included: USS CARPENTER DD-825, USS PONCHATOULA AO-148, Helicopter Antisubmarine Squadron SIX and a detachment from Underwater Demolition Team ELEVEN.

Apollo 15 is scheduled to be launched on 26 July 1971 for a 12-day mission. USS OKINAWA LPH-3 has been selected as the primary recovery ship. Apollo 15 is scheduled to splashdwon approximately 300 nautical miles north of Hawaii on 7 August. Other units assigned mission support includes: USS KAWASHIWI AO-141; Helicopter Combat Support Squadron ONE; and members of Underwater Demolition Team ELEVEN.

Captain Robert T. Tolleson
Recovery Officer
Task Force 130

Captain Robert T. Tolleson was born in Phoenix, Arizona, April 12, 1919. He attended Phoenix Junior College and the University of Arizona before commencing Navy flight training in June 1941, at the Naval Air Station, Jacksonville, Florida.

In March 1942, he completed flight training and was commissioned an Ensign in the Naval Reserve. He served as a flight instructor at the Naval Air Station, Jacksonville, and Naval Air Station, Miami, until November 1943, when he was assigned as material and gunnery officer with Patrol Squadron 125.

Following further flight instruction he served with Fleet Air Wings ONE and EIGHTEEN until January 1948. He then served a six months tour at the Naval Air Facility, Litchfield Park, Arizona. He became executive officer of the Naval Air Station, El Centro, California, in June 1948, after which he attended General Line School in Monterey, California.

In 1961, Captain Tolleson became the representative of the Chief of Naval Operations for support of manned spaceflight operations, involved in Project Mercury. He took command of the U.S. Navy Astronautics Group at Point Mugu, California until August 1964, when he was assigned Recovery Officer for Commander Task Force 130. During his tenure in Hawaii, in which he has taken part in all Gemini and Apollo mission, including six manned recoveries in the Pacific, the most recent Apollo 13.

Captain Tolleson has been awarded the Navy Commendation Medal, the NASA Exceptional Service Medal and the Navy Meritorous Unit Commendation for his role in Manned Spacecraft Recovery. For his participation in the flawless Apollo 11 recovery he received the Legion of Merit.

CAPTAIN ANDREW F. HUFF
COMMANDING OFFICER
USS OKINAWA (LPH-3)

Captain Andrew F. Huff, Commanding Officer of USS OKINAWA (LPH-3), graduated from the University of Texas Naval ROTC Unit in February 1945. His early duty stations included the USS COGHLAN (DD-606) and the USS CONE (DD-866).

In February 1947 he joined the Second Marine Division as a Naval Gunfire Officer. This was followed by duty in USS FARGO (CL-106), and orders to Flight training in 1948. His first duty after being designated a Naval Aviator was with Patrol Squadron 8.

In 1952 he returned to the Naval Air Advanced Training Command as a Flight Instructor at NAS Hutchinson, Kansas. From 1954 to 1956 he served with Air Transport Squadron 22 and from 1956 to 1958 as Aide and Flag Lieutenant to Commander Sixth Fleet.

In 1958 Captain Huff returned to operational flying in Air Antisubmarine Squadron 39, which was followed by duty in the office of the Chief of Naval Operations, Strategic Plans Division until 1962.

He served as Executive Officer, and then Commanding Officer of Air Antisubmarine Squadron 29 onboard USS KEARSARGE from 1962 until 1964. After a year as Commander Carrier Antisubmarine Group 59 onboard USS BENNINGTON he reported to USS VANCOUVER as Executive Officer, and was subsequently assigned as Plans Officer, Office of the Director, ASW Programs, Office of the Chief of Naval Operations. Captain Huff commanded USS NIAGARA FALLS from August 1968 until February 1970. He assumed command of OKINAWA on 25 April 1970.

Captain Huff is married to the former Andrea Lago of Boston, Mass. The Huff's have two sons; Gregory, a junior at Harvard, and Kenneth presently attending Deerfield Academy, Deerfield, Mass.

He reported to USS CORAL SEA as Navigator in November 1965. In July 1966 he became the Operations Officer for the 1966-67 Far East Deployment. CORAL SEA was awarded the Navy Unit Commendation and Captain Wyand was awarded the Bronze Star. He reported to Staff, Commander in Chief, U.S. Pacific Fleet in May 1967 as Striking Forces Officer and in June 1968 as Command and Control Officer and was awarded the Legion of Merit.

Captain Wyand assumed command of USS KAWISHIWI (AO-146) on 28 May 1970, and deployed to the SEVENTH Fleet on 29 July 1970.

Captain Wyand married the former Barbara Baldwin of Greenville, Michigan in 1945. The Wyand's have three children, Susan, Donald and Nancy, and reside in quarters MAKALAPA, Pearl Harbor, Hawaii.

USS KAWISHIWI (AO-146)

As primary logistics support unit for Apollo 15, the KAWISHIWI is participating in her sixth spacecraft recovery deployment. She was logistics support ship for Mercury 9, Gemini 10, Gemini 11, Gemini 12 and Apollo 13.

Built by the New York shipbuilding Corp., Camden, N.J., and commissioned July 6, 1955, the fleet oiler is the only ship bearing the name of the Kawishiwi River, located in the Northeast corner of Minnesota. An Ojibway Indian name, it translates to "River full of beavers' houses."

A unit of the Service Force, Pacific Fleet, KAWISHIWI is designed for high-speed replenishment of fuel needs of today's far-flung fleets. She has deployed to the Western Pacific 35 times since April 1956, providing support to Seventh Fleet combatant forces in the Tonkin Gulf and South China Sea off the coast of Vietnam. Her record of service has been a proud one, with many "firsts," from pumping capacities to transferring heavy loads between ships underway.

KAWISHIWI's cargo capacity is 181,000 barrels - over seven mission gallons and includes 125,000 barrels of fuel oil, 45,000 barrels of jet fuel, and 11,000 barrels of aviation gasoline.

Homeported at Pearl Harbor since 1958, KAWISHIWI earned the Battle Efficiency "E" in 1957, 1958 and 1963; The Gunnery "E" in 1958 and 1963; and the Communications "C" in 1963. In 1962 she won the Ney Award for serving the best meals afloat anywhere in the U.S. Navy.

CAPTAIN DONALD MCKAY WYAND
COMMANDING OFFICER
USS KAWISHIWI (AO-146)

Captain Wyand was born in Kisbey, Sask., Canada, the fourth of six sons and one daughter of Mr. and Mrs. Hedley Wyand.

He attended school in Santa Paula, Calif., San Jose State College and enlisted as an Apprentice Seaman in 1942, then to the V-5 Aviation Cadet program and commenced flight training in June 1943.

He was designated as a Naval Aviator in April 1945 at Corpus Christi, Texas. Upon completion of operational training at Fort Lauderdale, Fla., and initial carrier qualifications he reported to Torpedo Squadron FORTY ONE. In July 1948 he went to Inactive duty.

From August 1948, until returning to active duty he graduated from Western Michigan University, and continued post graduate studies at the University of Michigan, part time, while a member of the faculty of Western Michigan University. Captain Wyand was recalled to active duty and assigned to the staff of Commander Fleet Air Seattle in 1952.

In 1953 he reported to Fleet All Weather Training Unit, Pacific as a Night Attack and Instrument instructor. He was ordered to the Naval Examining Center, Great Lakes in 1955, supervising the preparation of Aviation Officer promotion examinations.

In July 1956 he reported to General Line School, Monterey, Calif., in June 1957 to the Armed Forces Staff College and then to the Naval Intelligence School, Washington, D.C.

Upon completion of Intelligence School in September 1958, he reported to the carrier BENNINGTON. He was ordered to Carrier Air Group NINE in April 1960 as Operations Officer. He then completed two deployments with the U.S. SEVENTH Fleet in USS RANGER (CVA-61) from 1961 to 1963.

In March 1963 he reported to Attack Squadron 125 as Executive Officer and to ATKRON 113. He participated in combat flight operations over Laos in 1964. In October 1964, he was ordered to the "Fighting Redcocks" of Attack Squadron TWENTY-TWO as Commanding Officer.

Captain Wyand participated in 161 combat missions from USS MIDWAY, April through October 1965. He was awarded two Distinguished Flying Crosses, fifteen Air Medals, three Navy Commendation Medals, Vietnamese Cross of Gallantry with Bronze Star and Palm, and his squadron was awarded the Navy Unit Commendation.

COMMANDER STEPHEN ANDERS COAKLEY
COMMANDING OFFICER
HELICOPTER COMBAT SUPPORT SQUADRON ONE

A native of Long Beach., Calif., Commander Stephen A. Coakley graduated from the University of Southern California in 1955.

During his attendance at the university, he enlisted in the Naval Reserve and subsequently received an enlisted qualification in submarines aboard the USS CARBONERO. He received his commission as Ensign through the Reserve Officer Candidate Program in 1955 and was subsequently ordered to the Bureau of Naval Personnel for temporary duty while awaiting orders to flight training in Pensacola.

After completing advanced flight training in March 1957, he received his wings at Corpus Christi, Texas. His first fleet assignment was to All-Weather Attack Squadron 35 based at the Naval Air Station, North Island. This tour of duty involved detachment operations aboard Pacific Fleet attack carriers. In 1960 he was transferred to Attack Squadron 121 at NAS Moffett Field and later NAS Lemoore as an instructor in tactics and instrument flying techniques.

In April of 1964, he underwent helicopter transition training at Ellyson Field in Pensacola. Following this training he received orders to Helicopter Utility Squadron ONE (the present HC-1), where he was assigned as Officer in Charge of a detachment based aboard USS STATEN ISLAND (AGB-5) deploying to the Antarctic in support of Operation Deepfreeze 65.

After undergoing training in Helicopter Antisubmarine Squadron 10, Commander Coakley reported to HS-6, also at NAS Imperial Beach, Calif. As Operations Officer he participated in combat search and rescue operations aboard the carrier KEARSARGE in the Gulf of Tonkin during 1967 and 1968.

Transferred to the Armed Forces Staff College at Norfolk in January 1969, he was involved in the study of joint and combined military operations and planning on a world-wide scale.

Upon completion of this course of instruction he was assigned to the staff of Commander Antisubmarine Warfare Group FIVE as Air Operations Officer.

Returning for a second tour in HC-1 in March 1970, Commander Coakley became Executive Officer of the squadron. On 2 April 1971 he assumed command.

Commander Coakely has been awarded the Air Medal, Navy Commendation Medal with Combat V, Meritorious Unit Citation, National Defense Medal, Antarctic Service Medal, Armed Forces Expeditionary Medal, and the Vietnamese Service Medal.

Commander Coakley and his wife Joan currently reside with their two children, Timothy and Ellen, in Chula Vista, Calif.

HELICOPTER COMBAT SUPPORT SQUADRON ONE

Helicopter Combat Support Squadron ONE (HC-1), formerly known as Helicopter Utility Squadron ONE, was commissioned at Naval Air Station, Lakehurst, N.J., in 1948 as the Navy's first operational helicopter squadron. Shortly thereafter, the squadron was moved to NAS Miramar, Calif., where it achieved operational status, and in 1951 moved to its present location at the Naval Air Station, Imperial Beach, Calif. The squadron was redesignated Helicopter Combat Support Squadron ONE on 1 July 1965 as it more accurately described the mission of the command. Since commissioning, the squadron's primary mission of Air-Sea rescue has remained unchanged. During the Korean conflict, HC-1 pilots and crewmen were among the first into combat and pioneered new techniques of personnel rescue from behind enemy lines.

Until September 1967, HC-1 was the largest and most active squadron of its type in the Navy. Its detachments provided helicopter services for every major ship in the Pacific Fleet, from Antarctic-bound ice breakers to modern attack carriers on patrol in the China Sea. Its responsibilities were extended over an area encompassing nearly 50 million square miles and as the versatility of the helicopter increased, so did the demands for services. HC-1 accomplished such diversified additional missions as ice reconnaissance, medical evacuation, logistic support, vertical replenishment, guided missile recovery, photo reconnaissance, ground support with gunships, National Geographic surveys, personnel transfer, gunfire spotting, fleet training assistance, minesweeping , and transfer of chaplains throughout the fleet for ship's church services.

As of today, the "Angels" of HC-1 have successfully accomplished the rescue of over 1,420 military and civilian personnel.

With an allowance of 100 officers and 428 enlisted men, HC-1 deploys its seven detachments numerous times each year leaving a skeleton staff remaining premanently shore based. Still retaining the many services of personnel transfer and all types of utility transfer, the HC-1 "Angels" primary mission is plane guard for every modern attack carrier in the Pacific Fleet. Taking their station on the starboard of the ship, they await a life saving mission of mercy to render assistance to any distress signal on land or sea.

SH-3D SEA KING

The SH-3D "Sea King" helicopter is manufactured by the Sikorsky Aircraft Division of United Aircraft Corporation, located in Stratford, Conn. It is one of the Navy's newest additions to the ASW (Antisubmarine Warfare) arsenal, and was first delivered to fleet units in the summer of 1966.

Basically designed as an ASW vehicle, the SH-3D is provided with all of the necessary equipment and instrumentation for all-weather ship and shore based operations to detect, track, identify and, if necessary, destroy enemy submarines. In addition to its ASW functions, the "Sea King" is well equipped for and very proficient in executing rescue at sea.

The "Sea King" weights 11,800 pounds with a maximum "fully-loaded" weight limitation of 20,500 pounds. it is 16' 10" in height, 16' 4" in width and 72' 8" long (including rotor blade spread). It is powered by two General Electric T58-10 turboshaft engines, each capable of developing 1400 shaft horsepower and supporting the aircraft at speeds from 0 (hover) to 160 mph. The SH-3D carries a fuel load in excess of 5,500 pounds enabling it to remain airborne for six hours. The electrically operated winch is capable of lifting 600 pounds and carries 100 feet of cable.

Two pilots and two crewmen are required for tactical flight. The pilots are responsible for the flight and navigation of the aircraft while the crewmen operate the sonar and the rescue equipment. The helicopter uses all of the standard radio and navigational equipment and also has a Dead Reckoning Tracer which receives its guidance information from a doppler radar.

One of the most extraordinary features of the "Sea King" is its boat-shaped hull which enables it to land, taxi and take off from the water.

The SH-3D represents the Navy's newest and most sophisticated ASW helicopter and encompasses all of the necessary equipment to fulfill its mission in any environment and in any weather.

UNDERWATER DEMOLITION TEAM ELEVEN

The Underwater Demolition Teams of the U.S. Navy, popularly known as the Navy's "Frogmen", have brilliantly performed their mission of beach reconnaissance and obstacle clearance as well as many associated tasks requiring highly trained and physically fit combat units since their conception during World War II.

Originally organized as small six man Naval Combat Demolition Units, they were re-organized and expanded to 100 man Underwater Demolition Teams, with the added mission of reconnaissance, after the disastrous landings at Tarawa, where entire waves of landing craft carring U.S. Marines went aground on a submerged coral reef which had not been revealed by aerial reconnaissance photos. The Marines were forced to wade the mile and a half to the beach in hip deep water under withering Japanese fire. The losses were staggering.

A recurrence of this tragedy was prevented by the rapid formation of 34 highly trained UDT teams, eventually numbering 3500 men and officers, who cleared every subsequent amphibious beach assault in the Pacific and proceeded the landings at Normandy.

The Germans had prepared huge obstacle fields and fortications on the Normandy beaches. The D-Day landings were successful due to the work of UDT units who cleared a path through the obstacle fields despite 70% casualties. Prior to each landing in the Pacific, the teams would conduct a reconnaissance on the morning or evening of D-Day minus 4, operating from small, fast boats, followed by a demolition clearance at dawn of D-Day, just prior to the run of the first wave of boats.

After the war, demobilization reduced the number of UDT Teams to two teams in the Atlantic and Teams ONE and THREE, organized as Underwater Demolition Unit ONE, on the West Coast. UDT ONE, the immediate ancestor of UDT ELEVEN, was commissioned on 21 May 1946.

By 1948, UDT teams had dwindled to a skeleton complement of only 7 officers and 45 enlisted men each. 1947 marked the first peace time Artic trip for UDT with their participation in the Point Barrow Re-Supply Expedition, the first of many cold weather operation exercises.

The outbreak of the Korean War brought the Teams back into their familiar role of beach reconnaissance and further expanded their mission to include inland demolition raids, buoy laying, bomb and mine disposal operations, and guerilla drops behind enemy lines and channel clearance.

With a base at Camp McGill in Japan, Team ONE combined forces with a detachment of Marines to form a raider group whose mission was to destroy tunnels and bridges of coastal railroads and highways, a task at which they were highly successful. Next for UDT ONE came the familiar job of reconnoitening beaches, including the mud flats at Inchon, where the masterful amphibious

landing occurred with UDT ONE men serving as assault wave guides. During the mopup of the operation, UDT ONE was called upon to set buoys, conduct bomb and mine disposal operations, assist in salvage work, and demolish hazardous wrecks.

As the United Nations forces conducted amphibious landings at the ports of Wonson and Chinnampo in Korea, UDT was assigned the new mission of searching and clearing these harbors of mines which had been heavily sewn by the Communists. Conditions of extreme cold and a shortage of adequate equipment made this an arduous task, but by November 1950, 200 miles of channels were cleared and the landings were successful, due to these "Human Minesweepers."

In all, UDT ONE saw three tours of duty in Korea during the conflict alternating between administrative reconnaissance behind friendly lines and guerilla drops behind enemy lines. While serving as part of Naval Beach Group ONE in Korea, the Team earned the Presidential Unit Citation and the Naval Unit Commendation.

After the signing of the Korean Armistice in 1953, peacetime operations were resumed and UDT ONE was redesignated as UDT ELEVEN on 8 February 1954. Team ELEVEN returned to the Alaskan scene in 1954 for training exercises and also charted safe passage for the amphibious transport group during the evacuation of the Tachen Islands by the Nationalist Chinese in 1955.

During these peacetime years, the Underwater Demolition Teams continued to maintain a high state of readiness by participating in Pacific Fleet Amphibious Force Exercises, and regularly working with Allied Underwater Demolition Teams. With the development of SCUBA (self contained underwater breathing apparatus) and other underwater equipment, UDT assumed still another mission of underwater sneak attacks against ships, docks, etc. Team ELEVEN also began Airborne Training in 1960 and by 1964, 90% of the Team was Airborne qualified, making UDT men some of the few personnel in the U.S. Military Forces eligible for double hazardous duty pay (parachute and demolition).

Stateside peacetime operations have included the exacting and quite necessary job of spacecraft recovery, diving research (Sealab), search and recovery of drowning victims, lost aircraft and anchors, and public relations demonstrations.

In 1963, UDT ELEVEN came under a new administrative staff with the disestablishment of Underwater Demolition Unit ONE and the Commissioning of Naval Operations Support Group, Pacific, with headquarters at the U.S. Naval Amphibious Base, Coronado, California. President John F. Kennedy's emphasis on Guerilla warfare prompted the formation of Seal Team ONE in January of 1962 and quite naturally it was UDT who was called on to supply rugged, well trained and self reliant individuals capable of tackling any job. This brought a new emphasis on the inland reconnaissance and demolition raid capabilities of UDT which had emerged during the Korean War. The fine record of the Seals in Vietnam is yet another example of UDT's flexibility and willingness to take on any job or mission.

Since the Tonkin Gulf incident in August 1964, UDT operations have stepped up considerable and once again entire UDT Teams are being deployed to the Western Pacific to meet the many operational commitments of our U.S. Naval Amphibious Force. Since hostilities began in Vietnam, UDT ELEVEN and TWELVE

have reconned over 200 miles of Vietnam coastline.

In addition, Team ELEVEN was called upon to set up a special surveillance/ambush group in the Rung Sat Special Zone in support of Operations Jackstay in March of 1966. For their outstanding achievement while acting as a blocking force in these operations, personnel from UDT ELEVEN were awarded the following: Two Bronze Stars with the Combat "V"; Seven Navy Unit Commendation Medals; Twelve Letters of Commendation; and the entire Team was awarded the Navy Unit Commendation.

Training Amidst War

Even though war places great demands upon Frogmen, UDT ELEVEN members continued training and acquired new skills during their 1967 WESTPAC deployment.

Three officers and four enlisted men established a recent first for UDT. They graduated from the HALO School operated by the U.S. Army's 1st Special Forces Group ABN, on Okinawa. HALO stands for: "High Altitude-Low Opening" parachuting. HALO might be compared with sport parachuting or sky diving... But this intense training has solid military application. With the ability to exit an aircraft many thousands of feet above the ground...loaded with full combat equipment...the parachutist will free-fall unseen by the enemy until that last safe moment for his parachute to deploy. His close proximity to the ground enables pin point accuracy in landing, with the entire group assembled in scant minutes and combat ready.

Frogmen also established another UDT ELEVEN first. They served as instructors in Basic Airborne Training with the 1st Special Forces Group on Okinawa. The few remaining "Legs", or non Airborne types, were pulled from the far flung UDT ELEVEN detachments and assembled in Okinawa. Instructors and trainee alike, all agree that UDT oriented Basic Airborne Training makes the graduate feel head and shoulders above the normal "Airborne Trooper."

Navymen of UDT ELEVEN also completed a special Guerilla Warfare School conducted by U.S. Marines at Camp Hansen, Okinawa, and completed "Hard Hat", or Second Class Divers School at Subic Bay, Philippines.

Thirty-six UDT ELEVEN Frogmen transferred to SEAL Team ONE during this deployment. Eventually, 48 fresh graduates of UDT Training classes were assigned to UDT ELEVEN to bolster the depleated ranks.

Operating primarly out of Subic Bay, Philippines, UDT ELEVEN Frogmen broke up into several detachments for further deployment. Their operations included:

..River surveys for the Coastal Surveillance Forces in the Mekong Delta; ...Underwater demolitions in the Da Nang area; submarine operations and coastal recons aboard the USS BASHAW (AGSS-241) and USS TUNNY (APSS-282); UDT support for Amphibious Ready Group operations in Vietnam; joint Philippine-American operations and exercises in the southern Philippine Islands; and embarkation aboard the USS WEISS (APD-135) and USS COOK (APD-130) for many of the above deployments.

WARRANT OFFICER Jerry L. TODD
UDT-11 Apollo Recovery Team: Swim Team #3 leader

Jerry L. TODD, son of Mr. and Mrs. Wayne TODD of Sturgis, Michigan was born on February 1, 1940. He attended Sturgis High School, where he earned varsity letters in football, basketball and baseball. He graduated in 1959 and immediately entered the Navy, reporting to the USS LOOKOUT (AGR-2) in Newport, Rhode Island for his first tour of duty.

After two years aboard the USS LOOKOUT, WO-1 TODD commenced Underwater Demolition Team Training in January 1961 at Little Creek, Virginia. He was assigned to Underwater Demolition Team 21 in May; in his two years with UDT-21 he made two Caribbean deployments, and one Mediterranean deployment, and was a member of the Gemini 8 Recovery Team.

In February 1963, WO-1 TODD was assigned to SEAL Team 2, where he remained until August 1970. During his time with SEAL 2 he made three deployments to the Republic of Vietnam, serving with detachments in My Tho, Nha Be, Can Tho, Song On Doc, and the Mekong Delta.

On June 15, 1970, WO-1 TODD was sworn in as a Warrant Officer, and he joined UDT-11 the following September. Since joining UDT-11, WO-1 TODD has served as Air Operations Officer and Asst. Ordnance Officer.

WO-1 TODD has earned the following medals:

TWO Bronze Stars
TWO Navy Commendation Medals
TWO Purple Hearts
TWO Presidential Unit Citations
Combat Action Ribbon
Vietnamese Service Medal with 4 Stars
Vietnamese Campaign Medal
Vietnamese Cross of Gallantry
National Defense Medal
Navy Expeditionary Medal
Expert Pistol Ribbon
Expert Rifle Ribbon
Three Good Conduct Medals

WO-1 TODD presently resides with his wife Florence and seven year old son Jerry Jr. at 1232 First Street, Chula Vista, California.

RADIOMAN Roy Alan BUEHLER
UDT-11 Apollo 15 Recovery Team: Swim Team #3

Toy Alan BUEHLER, son of Mr. and Mrs. Roy BUEHLER of Carrollton, Missouri was born on November 6, 1949 in Columbia, Missouri. He attended high school in Carrollton, where he participated in track, dramatic arts, and was editor of the Yearbook. Upon his graduation in 1967, he attended the University of Missouri, where he majored in fine arts.

SN BUEHLER entered the Navy in January 1970 and underwent his Basic Recruit Training at the Naval Training Center in San Diego, California. After Recruit Training, he attended Radioman "A" School prior to commencing Basic Underwater Demolition/Seal Training at the Naval Amphibious Base, Coronado, California in September 1970. SN BUEHLER completed BUD/S training in February 1971 and was assigned to Underwater Demolition Team ELEVEN, where he has been working in the Intelligence Department. He attended Basic Airborne School at Fort Benning, Georgia in March, and was named the Distinguished Honor Graduate of his class.

SN BUEHLER has earned the following awards:

National Defense Medal
Expert Pistol Medal

SHIPFITTER THIRD CLASS Frank S. SCHROEDER
UDT-11 Apollo 15 Recovery Team: Swim Team #3

Frank S. SCHROEDER, son of Mr. and Mrs. John H. SCHROEDER of 5 Indian Way, Malvern, Pennsylvania, was born on September 3, 1949 in Bryn Maur, Pennsylvania. He attended the Phelps Preparatory School where he participated in wrestling, soccer, and track, and was co-president of his senior class. Upon his graduation in May, 1967, SCHROEDER attended Lamar Junior College in Lamar, Colorado where he was on the wrestling team.

SF3 SCHROEDER entered the Navy in February 1969, undergoing his Basic Recruit Training at the Naval Training Center, San Diego, California. He attended Shipfitters "A" School following his competion of Recruit Training and commenced Basic Underwater Demolition/Seal Training in September 1969.

SF3 SCHROEDER completed BUD/S Training in February, 1970, and was assigned to Underwater Demolition Team ELEVEN. He immediately deployed to the Republic of Vietnam and served with UDT detachments in Danang and the Phillippines, in addition to undergoing Airborne Training at the Army Special Forces Jump School, Okinawa.

SCHROEDER was promoted to 3rd Class Petty Officer in June 1971. He has earned the following medals:

National Defense Medal
Vietnamese Service Medal
Vietnamese Campaign Medal
Combat Action Ribbon

LIEUTENANT (JUNIOR GRADE) Jonathan SMART
UDT-11 Apollo 15 Recovery Team: Swim Team #1 leader

Jonathan SMART, son of Mr. and Mrs. Charles E. SMART of 96 Somerset Street, Belmont, Massachusetts, was born on March 21, 1947. He attended Belmont High School, where he was President of his Freshman, Sophmore, and Junior Classes, and played hockey, baseball and track, while captaining the soccer team in his senior year.

He graduated in June 1965 and attended Harvard College in Cambridge, Massachusetts, graduating in June 1969 with a Bachelor of Arts degree in Economics. While at Harvard LTJG SMART, was a member of Lowell House, the Hasty Pudding Institute 1770, the Harvard Varsity Club, and he crewed on the lightweight crew. He was also a member of the Naval ROTC Program, from which he was commissioned in Ensign directly upon his graduation.

LTJG SMART commenced Basic Underwater/Seal Training at the Naval Amphibious Base, Coronado, California in September, 1969. Upon completion of training in February, 1970, he was assigned to Underwater Demolition Team ELEVEN and immediately deployed to the Republic of Vietnam. While deployed LTJG SMART served as Assistant Platoon Commander with UDT detachments in Korea, Okinawa, the Philippines, and aboard the USS GRAYBACK (LPSS-574) in addition to undergoing Airborne Training at the Army Special Forces Jump School, Okinawa.

Since his return in September, LTJG SMART has served as Platoon Commander, SDV Officer and Diving Officer.

LTJG SMART has earned the following medals:

National Defense Medal
Vietnamese Service Medal
Vietnamese Campaign Medal

BOILERMAN THIRD CLASS Roderick T. YONKERS
UDT-11 Apollo 15 Recovery Team: Swim Team #1

Roderick T. YONKERS, son of Mr. and Mrs. Clement YONKERS of Brookfield, Connecticut was born on September 27, 1950. He attended Brookfield High School where he played soccer. He graduated from high school in June 1968 and worked in the YONKERS Polyclean Center in Brookfield until he entered the Navy the following October.

BT3 YONKERS first tour of duty was aboard the USS PRICHETT (DD-561) for 9 months, part of which time was spent deployed to WESTPAC. In September 1969, YONKERS commenced Basic Underwater Demolition/Seal Training at the U. S. Naval Amphibious Base, Coronado, California. Upon completion of training in February 1970 he was assigned to Underwater Demolition Team ELEVEN and immediately deployed to the Republic of Vietnam. He underwent Airborne Training at the Army Special Forces Jump School, Okinawa in April, and worked with UDT Swimmer Delivery Vehicle detachments in the Philippines and aboard the USS GRAYBACK.

Since his return from WESTPAC in September, BT3 YONKERS has been working with Swimmer Delivery Vehicles, including participation in a series of diver cold water endurance tests in Keyport, Washington in February-March 1971.

BT3 YONKERS has earned the following medals:

National Defense Medal
Vietnamese Service Medal
Vietnamese Campaign Medal
Armed Forces Expeditionary Medal

SHIP'S SERVICEMAN SECOND CLASS William RAMOS-FLORES
UDT-11 Apollo Recovery Team: Swim Team #1

William RAMOS-FLORES, son of Mr. William RAMOS-FUSSA and Mrs. Anna LOUISA-FLORES of Bayaman, Puerto Rico, was born on April 16, 1947 in Santurce, Puerto Rico. He attended Bayaman High School, where he participated in the Deca Program.

Upon graduation from high school in May, 1965 he entered the Navy, reporting the following August to the USS HAVEN (AN-12) at Long Beach, California for his first tour of duty. After a 12 month tour with the USS HAVEN, SH2 RAMOS-FLORES reported to the Naval Support Activity, Danang, RVN, during which time he was promoted to 3rd Class Petty Officer. RAMOS-FLORES was later transferred to Fleet Air Control and Surveillance Facility, NAS North Island in February, 1968.

In March, 1969 William RAMOS-FLORES commenced, Basic Underwater/Seal Training, at the Naval Amphibious Base, Coronado, California. Upon his graduation in September 1969, RAMOS-FLORES reported to Underwater Demolition Team ELEVEN, being promoted to 2nd Class Petty Officer at the same time. He immediately underwent airborne training at Fort Benning, Georgia, successfully completing the course just prior to his deployment to WESTPAC. RAMOS-FLORES served with detachments in Nam Can and Can Tho.

SH2 RAMOS-FLORES has earned the following medals:

Good Conduct Medal
Combat Action Ribbon
Navy Unit Commendation
Vietnamese Cross of Gallantry
Vietnamese Service Medal
Vietnamese Campaign Medal
National Defense Medal

He is currently residing with his wife, Elsie, and 6 month old son Carlos at 521 Dahlia Street in Imperial Beach, California.

YEOMAN THIRD CLASS Rudy R. DAVIS
UDT-11 Apollo 15 Recovery Team: Swim Team #2

Rudy R. DAVIS is the son of Mr. and Mrs. Quentin R. DAVIS of Piketon, Ohio. He was born on December 4, 1946 at Ashland, Kentucky, and attended Piketon High School in Piketon, Ohio, where the was active in sports, lettering in baseball, track and football. He was also the school yearbook sports editor, a member of the Future Teachers of America, De Molay, and the 4-H Club.

Rudy R. DAVIS attended college at Morehead State University, Morehead, Kentucky, and majored in Health, Physical Education and Recreation. He received a varsity letter in soccer and swimming, was a sports editor of the yearbook, and a member of Delta Gamma Phi Social Fraternity, the Varsity Letter Club and the Cosmopolitan Club.

He entered the United States Navy on February 12, 1969. In November of 1969, Rudy R. DAVIS began his career in Navy Special Warfare. Upon graduation from Basic UDT/SEAL Training at USNAB, Coronado, California, he was assigned to Underwater Demolition Team ELEVEN, Coronado, California. During the 1970 WESTPAC deployment, he attended Airborne Training at Army Special Forces Jump School, Okinawa, and served with UDT detachments in Vietnam at Nha Be, Ben Luc, Tra Cu, Tuyen Nhon, and Cambodia.

YN3 DAVIS was also a member of the Apollo 14 Recovery Team, and was one of his command's representatives at a Naval Special Warfare Careers Planning Conference with the Chief of Naval Operations in Washington D. C. in June.

He has been awarded the following medals:

Combat Action Ribbion
Vietnamese Service Medal
Vietnamese Campaign Medal
Expert Rifle Ribbion
Expert Pistol Ribbion

Rudy R. DAVIS presently resides with his wife, Cathy at 1520 First Street Coronado, California.

QUARTERMASTER FIRST CLASS William C. JAKUBOWSKI
UDT-11 Apollo 15 Recovery Team; Swim Team #2

William C. JAKUBOWSKI, son of Mrs. John W. JAKUBOWSKI and the late John W. JAKUBOWSKI of Lackawanna, New York, was born on July 25, 1946. He attended Lackawanna Senior High School where he was a member of the swimming team. Upon his graduation in June 1964, QM1 JAKUBOWSKI entered the Navy and spent his first tour of duty aboard the USS LOFBERG (DD-759).

In June of 1965, QM1 JAKUBOWSKI commenced Basic Underwater Demolition/ Seal Training at the U. S. Naval Amphibious Base, Coronado, California, graduating in March, 1966. He was immediately assigned to Underwater Demolition Team TWELVE, and earned a position on the U. S. Navy Penthathlon Team at the International Council of Military Sport (CISM) Games in Greece that summer. Upon his return from the CISM Games in September, QM1 JAKUBOWSKI underwent Airborne Training at Fort Benning Georgia, deploying to the Republic of Vietnam with UDT-12 shortly thereafter. During the deployment he served as primary cartographer for the team.

QM1 JAKUBOWSKI was assigned to Underwater Demolition Team ELEVEN during the summer of 1968 and made another WESTPAC deployment in September of that year serving with UDT detachments involved in Swimmer Delivery Vehicle operations in the Republic of Vietnam. He has just recently concluded his third WESTPAC deployment in September 1970, serving with UDT detachments engaged in Swimmer Delivery Vechicle operations on the USS GRAYBACK (LPSS-574). Since his return, QM1 JAKUBOWSKI has been involved in a series of diver cold water endurance tests at Keyport, Washington.

QM1 JAKUBOWSKI has earned the following medals:

National Defense Medal
Vietnamese Service Medal
Vietnamese Campaign Medal
Navy Unit Commendation
Meritorious Unit Commendation
Good Conduct Medal

LIEUTENANT (JUNIOR GRADE) Fred W. SCHMIDT
UDT-11 Apollo 15 Recovery Team; Officer in Charge/Swim Team #2 Leader

Fred W. SCHMIDT is the son of Mr. and Mrs. Fred H. SCHMIDT, 2240 White Oak Drive, Northbrook, Illinois. He attended high school at New Trier High School, Winnetka, Illinois, and was captain of the swimming team his senior year. He competed in Amateur Athletic swimming meets since the age of 8, and set a World Record in the 100 meter butterfly his senior year in high school.

In 1961, he entered Indiana University, Bloomington, Indiana where he majored in political science and minored in psychology. He is a member of Phi Kappa Psi Social fraternity and Blue Key National Honor Fraternity. During college Fred W. SCHMIDT continued his swimming career winning numerous NCAA and national AAU championships in the butterfly events. In 1962 at the Pan American Games in Sao Paulo, Brazil, he won a silver and gold medal in the 200 meter butterfly and 400 meter medley, respectively. In 1964 he was a member of the 1964 Olympic Team winning a gold medal in the 400 meter medley relay, and a bronze medal in the 200 meter butterfly.

Upon graduation from college in 1965, Fred W. SCHMIDT entered Northwestern University Law School, Chicago, Illinois and received an LLB degree in June of 1968. In October of that year he was admitted to the Bar of the State of Illinois. Prior to his entry into the U. S. Navy, he practiced law with the law firm of McDonald, Schmidt, and Baker, Chicago, Illinois.

Upon graduation from Officer Candidate School, Newport, Rhode Island, he volunteered for Basic UDT/SEAL Training, USNAB, Coronado and on March 15 1969 Fred W, SCHMIDT was assigned to Underwater Demolition Team ELEVEN, Coronado, California. He underwent airborne training at the Army Special Forces School, Okinawa. He has made one deployment to the Republic of Vietnam, and has served as assistant platoon commander, legal officer, training officer, assistant operations officer, and public affairs officer. Fred W. SCHMIDT was also a member of the Apollo 14 Recovery Team, serving as swim team leader of the primary swim team. He has been awarded the following medals:

Combat Action Ribbon
Vietnamese Service Medal
Vietnamese Campaign Medal
National Defense Medal

Brigadier General Frank K. Everest, Jr.
Commander
Aerospace Rescue and Recovery Service

Brigadier General Frank K. Everest, Jr., is Commander of the Aerospace Rescue and Recovery Service with headquarters at Scott Air Force Base, Ill. He is responsible to the Commander of Military Airlift Command for maintaining a highly trained and professional rescue force, ready at all times to go to the aid of military crews and other persons in distress.

General Everest was born in Fairmont, W. Va., on August 10, 1920. After graduating from high school in 1937, he attended Fairmont State College for one year. He later studied engineering at West Virginia University to prepare himself for a flying career.

He entered Army Air Force pilot training in November 1941, was graduated and received a commission in July 1942. After P-40 training, he was sent to North Africa and flew 94 combat missions in Africa, Sicily, and Italy. During this tour, he shot down two German aircraft and damaged another. Then he was assigned to a fighter squadron at Venice, Fla., as an instructor. He asked for combat duty again and was assigned to the China-Burma-India Theater.

The General commanded the 17th Fighter Squadron of the 5th Fighter Group, Chihkiang, China, flying an additional 67 combat missions. When his plane was shot down by ground fire in May 1945, he was captured and remained a Japanese prisoner until the end of hostilities. Prior to being shot down he had destroyed four Japanese aircraft.

Following a rest leave, General Everest was assigned to the Flight Test Division at Wright Field, Ohio as a test pilot. He took part in many experimental tests of the Bell X-1, and established an unofficial world altitude record of 73,000 feet.

In September 1951, he was transferred to the new Air Force Flight Test Center at Edwards Air Force Base, Calif., and became the chief Air Force test pilot as head of the Flight Test Operations Division. During his stay at Edwards, General Everest tested the X-1, 2, 3, 4, and 5; XF-92; and XB-52. He also took part in test programs for the F-100, 101, 104, and 105; the B-52, 57 and 66. On October 29, 1953, he established a world speed record of 755.149 m.p.h. in a North American YF-100.

In December 1954, General Everest test-flew the Bell X-1B to a speed of Mach 2.3 (2.3 times the speed of sound), making hime the second fastest man in the world. Later flights in the Bell X-2 rocket plane established him as "the fastest man alive" when he attained a new unofficial speed record of 1,957 m.p.h. or Mach 2.9.

He was transferred to Hahn Air Base, Germany, in 1957, serving as Commander of the 461st Fighter (Day) Squadron of the 36th Fighter Wing. From Germany he was assigned to North Africa, as a Group Commander and later became Deputy for operations at Wheelus Air Base, Libya. Upon return to the United States he became Director of Operations, 401st Tactical Fighter Wing, England Air Force Base, La.

General Everest next commanded the 4453rd Combat Crew Training Wing at MacDill Air Force Base, Fla., and in June 1964 he transferred with the unit to Davis-Monthan Air Force Base, Ariz. In May 1965, he was transferred to Nellis Air Force Base, Nev., to become Commander of the 4520th Combat Crew Training Wing.

He also served as Director of Aerospace Safety and later as the Assistant Director for Operational Test and Evaluation for Defense Research and Engineering, Office of the Secretary of Defense, before becoming ARRS commander.

A Command Pilot with more than 8,000 flying hours, the General is also a graduate of the Army parachutist school at Ft. Benning, Ga.

Among his decorations are the Legion of Merit with one Oak Leaf Cluster; Distinguished Flying Cross with two Oak Leaf Clusters; Air Medal with seven Oak Leaf Clusters; Air Force Commendation Medal with one Oak Leaf Cluster; Purple Heart; and the Chinese Aviation Award.

In addition to these and other military honors, General Everest has been recognized repeatedly for his contributions to aerospace progress. He was chosen as one of 1955's "Ten Outstanding Young Men" by the U. S. Chamber of Commerce. In 1956 the U.S. Chamber of Commerce named him one of the Nation's "Greatest Living Americans." A year later he was awarded both the Harmon trophy and the Octabe Chanute trophy.

General Everest married the former Avis Mason of Fairmont, W. Va. They have three children: Victoria, Cynthia, and Frank III.

AEROSPACE RESCUE AND RECOVERY SERVICE

The Aerospace Rescue and Recovery Service (ARRS) is responsible to the Military Airlift Command (MAC) for locating and recovering downed airmen on a global basis, locating and assisting astronauts who land outside planned splashdown areas, directing the joint military aircraft hurricane evacuation plan and conducting the inland portion of the National Search and Rescue Plan.

ARRS personnel serving in Southeast Asia are among the most highly decorated members in the American armed services. Since December 1964, nearly 11,000 decorations have been awarded to ARRS personnel for duty in SEA. These decorations include one Medal of Honor, 20 Air Force Crosses, 262 Silver Stars, 6 Legion of Merits, 1,346 Distinguished Flying Crosses, 60 Airmen's Medals, 422 Bronze Stars, 7,336 Air Medals, 24 Purple Hearts, one Joint Service Commendation Medal and 1,176 Air Force Commendation Medals.

ARRS also operates a school located at Eglin AFB, Fla., to provide specialized training for aircrew support personnel in the peace and wartime missions of search, rescue and recovery.

Both overseas and in the United States, ARRS forces are assigned to Air Force bases in varying strength. Besides the headquarters at Scott AFB, Ill., ARRS has one Rescue and Recovery group, one center, three wings and 19 squadrons which provide rescue coverage for large areas the world over. One of the five ARRS Reserve squadrons, the 305th ARRSq, was called up in response to the Pueblo crisis in January 1968.

Small detachments are located at 74 bases to provide a variety of rescue activities, including local base rescue and combat aircrew recovery.

Within the United States, ARRS search, location and recovery (SAR) operations for all aircraft, civilian and military, are conducted under plans developed in cooperation with state and area officials.

In its 22-year history, ARRS has rescued more than 14,000 people while providing help for nearly 55,000 persons involved in accidents or incidents.

In all, 140,000 separate missions were involved, requiring a million flying hours. The missions ranged from escorting aircraft to locating lost hunters and hikers, boarding stricken ships at sea and helping in natural disasters such as earthquakes and floods.

For five years ARRS has been carrying out its wartime role in Vietnam. From December 1964 to July 1970, more than 3,000 American or allied personnel have been saved. Of these, more than 2,100 were rescued under combat conditions, where hostile fire was encountered. The rest were noncombat saves, including many Vietnamese civilians.

One of ARRS' prime responsibilities is support of national space programs. Manned space flights in the Mercury and Gemini series have been widely supported by ARRS. In Project Apollo, ARRS forces have supported both manned and unmanned launches from Cape Kennedy and assisted in subsequent search, location and recovery operations down range. Helicopters and conventional aircraft provided launch area coverage, while farther down range, other ARRS forces prepared for spacecraft landing, in either planned or unplanned areas.

Unmanned space operations also receive ARRS support. The Discoverer satellite series, the Titan and Saturn missile research programs and recovery of casettes (instrument packages), capsules and re-entry vehicles have been part of the command's mission. A new development in this field has been the perfection of the mid-air "snatch" recovery technique, whereby objects are recovered while descending on parachutes.

Pararescuemen, PJs for short, have played key roles in many rescues. PJs are qualified parachutists, SCUBA divers, mountain climbers, medical technicians and experts on survival. To train for these jobs, the PJ spend a full year in a variety of specialized military schools. The elite corps number fewer than 300 people, all qualified to wear the coveted maroon beret.

They have jumped into the sea to aid a man on a raft or secure a vital piece of space hardware. They have parachuted into trees, landed on mountains or in swamps to aid downed airmen or to help injured civilians.

Their varied qualifications have led PJs to perform not only in their combat roles, but also to make a contribution to the welfare of civilians. In their spare time in Vietnam, the PJs assist in local Medical Civic Action Programs.

Besides treating the injuries and diseases of civilians, the PJs teach elementary sanitation and dietary courses and provide other information designed to assist the Vietnamese in caring for themselves.

HC-130 HERCULES

The Air Force Aerospace Rescue and Recovery Service (ARRS) has been involved in America's space program since the Discoverer series in the early sixties. The Apollo 11 launch will mark the seventh time ARRS has not had more than one type of fixed wing aircraft supporting contingency recovery operations.

The aircraft selected by ARRS for contingency recovery operations is the Lockheed HC-130. Incorporating the latest mechanical and electronic equipment, it is the first aircraft to be specifically designed for rescue and recovery requirements.

The HC-130, nicknamed "Hercules", has a range of 4,500 nautical miles. Therefore, it would be possible for the Hercules to fly 2,000 miles, orbit over a position for more than three hours while recovery operations are underway, then return to its home station.

Employing the unique surface-to-air recovery system, the HC-130 could recover personnel and/or space hardware weighing up to 500 pounds in emergency conditions.

During all Apollo launches, the HC-130 will carry a crew of 11, including a pilot, co-pilot, navigator, radio operator, two flight mechanics, two loadmasters, and three pararescuemen.

Qualified for day or night all-weather operations, the Hercules is equipped with new complex spacecraft tracking, navigational and communications systems in addition to automatic flare launchers, and an overhead delivery system for deploying equipment, modified equipment bins for specialized rescue and recovery gear and special compartments for crew rest on extended missions.

New Allison T56-A-15 engines, plus two 1,800 gallon fuel tanks enable the Hercules to stay aloft for more than 18 hours. Whereas in the past, ARRS was called upon to provide 400 personnel and 25 or more fixed wing aircraft for contingency operations, these numbers have been cut in half due to the presence of the "Hercules".

PARARESCUE OPERATIONS

Pararescuemen of the Aerospace Rescue and Recovery Service (ARRS) are among the most highly trained, dedicated professionals in the armed forces.

They are precision parachutists, skilled medical technicians and experts in survival. They are highly trained in SCUBA diving, mountain climbing and tree jumping. In short, they are well equipped with the techniques they need to do their job - save lives.

Pararescuemen (called PJs, for short) are all volunteers dedicated to serve the ARRS motto - That Others May Live.

The history of pararescue began in August 1943 when 21 people bailed out of a disabled C-46 over an uncharted jungle near the China-Burma border. So remote was the site that the only way to get there was by pararchute. Lieutenant Colonel Don Flickinger, a wing surgeon, and two medical corpsmen volunteered for and made the jump. For a month these three, aided by natives, cared for the injured until the party was brought to safety.

Commentator Eric Sevareid was one of the survivors. He later wrote of the men who had risked their lives to save his: "Gallant is a precious word; they deserve it."

The most recent development in the list of pararescue skills is the combination of SCUBA with parachuting. For jumping into the sea a PJ carries a set of modified SCUBA tanks and regulator, two parachutes, a rubber dinghy, a medical kit, a weight belt, a diving knife, rubber swim fins and boots, a rubber hood, a face mask, a diver's watch, a compass and a depth gauge.

For Apollo missions he carries an accessory kit containing a radio, snorkel, flashlight and Apollo interphone (a slelf-energized telephone used for contacting the astronauts before the hatch is opened.)

Pararescuemen assigned to spacecraft recovery duties undergo many hours of specialized, exacting training. Under NASA guidance they learn to attach flotation devices to a variety of space hardware, practicing until they work as a smooth, efficient, three-man team.

For Apollo missions, PJs will be deployed around the world in selected locations in Bermuda, the Azores, Maurtiius Island in the Indian Ocean and Hawaii. They will be aboard HC-130 aircraft and HH-3E and HH-53C helicopters - the ARRS aircraft which are making history in daring jungle rescues in Southeast Asia.

One HH-3E and two HH-53C helicopters stand by near the Cape Kennedy launch site; three pararescuemen aboard each helicopter are ready in case the mission is aborted from the pad or within the first seconds after launch.

If there is an abort from the pad, the Apollo-Saturn's launch escape tower would fire, lifting the command module away from the rest of the launch vehicle. The helicopters would follow the astronauts to splashdown in the Atlantic and, within minutes, come to a hover 10 feet above the floating spacecraft.

Three pararescuemen and the flotation collar drop through the helicopter's door into the sea. The PJs attach the collar and check the astronauts' condition. The HH-53C helicopter has the capability of lifting the command module, with the astronauts inside, and flying to the beach.

The recovery is much the same if the mission is aborted just seconds after launch when the spacecraft is farther downrange.

When the launch vehicle functions correctly, inserting the command/service modules into earth orbit, the helicopters are released and the Rescue HC-130 aircraft take over the contingency recovery responsibility.

A contingency landing could be made for a number of reasons involving dangerous malfunctions in the spacecraft systems after orbital insertion, resulting in the spacecraft landing outside planned recovery zones.

If this were to occur, the HC-130 aircraft nearest the landing area has the initial responsibility to track and locate the spacecraft.

With the spacecraft in sight the HC-130 deploys the PJs and the Air Delivered Drift Reduction System (ADDRS).

This new system consists of two packages connected by 600 feet of buoyant line. One package is a flotation collar, the other is a collar bag containing parts of an MA-1 survival kit. The packages are delivered from an altitude of 300 feet using the HC-130's overhead delivery system. They land downwind of the drifting module.

The packages on either end of the line act as anchors, allowing the drifting spacecraft to catch up with and snag the line. The astronauts lower a small, collapsible grappling hook to snag the line should the spacecraft ride over it.

Once the spacecraft catches the ADDRS, the HC-130 flies over again, this time at 1,000 feet, and one PJ jumps into the sea. After swimming to the ADDRS, he attaches his reserve parachute to the command module to slow the drift rate further.

Then the HC-130 flies by once again, dropping the two other pararescuemen, and continues to orbit the area to maintain communications with the PJs and with surface vessels enroute to the scene.

The pararescuemen attach the flotation collar, inflate the six-man raft which is part of the ADDRS and help make the astronauts comfortable until a surface craft arrives.

SHIPS USED IN SPACE PROGRAM

	Atlantic
MA-1	USS Hailey (DD-556)
	USS Power (DD-839)
	USS Vesole (DD-878)
	USS Manley (DD-940)
	USS McCard (DD-822)
	USS Casa Grande (LSD-13)
	USS Escape (ARS-6)
MR-1A	USS Valley Forge (CVS-49)(PRS)
	USS Conway (DDE-507)
	USS Cony (DD-508)
	USS Waller (DDE-466)
	USS Eaton (DDE-510)
	USS Bache (DDE-470)
	USS Beale (DDE-471)
	USS Murray (DDE-576)
	USS Perry (DD-844)
	USS Escape (ARS-6)
MA-2	USS Donner (LSD-20)(PRS)
	USS Greene (DDR-711)
	USS Bordelon (DDR-881)
	USS Joseph P. Kennedy (DD-850)
	USS Borie (DD-704)
	USS Opportune (ARS-41)
MR-2	USS Donner (LSD-20)(PRS)
	USS Manley (DD-940)
	USS Ellison (DD-864)
	USS Cone (DD-866)
	USS McCard (DD-822)
	USS Warrington (DD-843)
	USS Borie (DD-704)
	USS Opportune (ARS-41)
MA-3	USS Greene (DDR-711)
	USS Gyatt (DDG-1)
	USS Furse (DDR-882)
	USS Basilone (DDE-824)
	USS Steinaker (DDR-863)
	USS Joseph P. Kennedy (DD-850)
	USS Purdy (DD-734)
	USS Hyman (DD-732)
	USS Beatty (DD-756)
	USS Bristol (DD-857)
	USS Donner (LSD-20)
	USS Chukawan (AO-100)
	USS Recovery (ARS-43)

	Atlantic
MR-3	USS Lake Champlain (CVS-39)(PRS)
	USS Decatur (DD-936)
	USS Raleigh (DD-689)
	USS Rooks (DD-804)
	USS Abbot (DD-629)
	USS The Sullivans (DD-537)
	USS Newman K. Perry (DDR-883)
	USS Recovery (ARS-43)
	USS Ability (MSO-519)
	USS Notable (MSO-460)
MR-4	USS Randolph (CVS-15)(PRS)
	USS Cony (DDE-508)
	USS Conway (DDE-507)
	USS Stormes (DD-780)
	USS Lowry (DD-770)
	USS Alacrity (MSO-520)
	USS Exploit (MSO-440)
	USS Recovery (ARS-43)
MA-4	USS Plymouth Rock (LSD-29)(PRS)
	USS Decatur (DD-936) (Recovered)
	USS Glennon (DD-840)
	USS Lind (DD-703)
	USS Borie (DD-704)
	USS Cony (DDE-508)
	USS Sarsfield (DDE-837)
	USS Zellars (DD-777)
	USS Bigelow (DD-942)
	USS Escape (ARS-6)
MA-5	USS Lake Champlain (CVS-39)(PRS)
	USS Stormes (DD-780)(Recovered)
	USS Cone (DD-866)
	USS Chikaskia (AO-54)
	USS Fiske (DDR-842)
	USS Lowry (DD-770)
	USS Laffey (DD-724)
	USS Hawkins (DD-873)
	USS Witek (DDE-848)
	USS Perry (DD-844)
	USS Compton (DD-705)
	USS Bigelow (DD-942)
	USS Blandy (DD-943)
	USS Vogelgesang (DD-862)
	USS John Willis (DE-1027)
	USS Fort Mandan (LSD-21)
	USS Hoist (ARS-40)
	USS Fidelity (MSO-443)

	Atlantic	Pacific
MA-6	USS Randolph (CVS-15)(PRS)	USS Antietam (CVS-36)
	USS Noa (DD-841)(Recovered)	
	USS Stribling (DD-876)	
	USS Forrestal (CVA-59)	
	USS Norfolk (DL-1)	
	USS Chukawan (AO-100)	
	USS Blandy (DD-943)	
	USS C. S. Sperry (DD-697)	
	USS Barry (DD-933)	
	USS Kenneth D. Bailey (DDR-713)	
	USS Turner (DDR-834)	
	USS Goodrich (DDR-831)	
	USS Hugh Purvis (DD-709)	
	USS Glennon (DD-840)	
	USS Brownson (DD-868)	
	USS Cone (DD-866)	
	USS Stormes (DD-780)	
	USS Bearss (DD-654)	
	USS Witek (DDE-848)	
	USS Sarsfield (DDE-837)	
	USS Observer (MSO-461)	
	USS Exploit (MSO-440)	
	USS Recovery (ARS-43)	
MA-7	USS Intrepid (CVS-11)(PRS)	
	USS John R. Pierce (DD-753)(Recovered)	
	USS Robinson (DD-562)	
	USS Farragut (DLG-6)	USS Wren (DD-568)
	USS Barton (DD-722)	USS Remey (DD-688)
	USS Soley (DD-707)	USS Hunt (DD-674)
	USS English (DD-696)	
	USS Hank (DD-702)	
	USS Fred T. Berry (DDE-858)	
	USS Moale (DD-693)	
	USS Massey (DD-778)	
	USS Elokomin (AO-55)	
	USS Spiegel Grove (LSD-32)	
	USS Donner (LSD-20)	
	USS Dewey (DLG-14)	
	USS Swerve (MSO-495)	
	USS Sturdy (MSO-494)	
	USS Hoist (ARS-40)	

	ATLANTIC	PACIFIC
MA-8	USS Lake Champlain (CVS-39)	USS Kearsarge (CVS-33)(PRS)
	USS John Paul Jones (DD-932)	USS Epperson (DD-719)
	USS Barry (DD-933)	USS Radford (DD-446)
	USS Ingraham (DD-694)	USS Walker (DD-517)
	USS Haynesworth (DD-700)	USS Philip (DD-498)
	USS Hoist (ARS-40)	USS O'Bannon (DD-450)
	USS Affray (MSO-511)	
	USS Alacrity (MSO-520)	
	USS Decatur (DD-936)	
	USS Furse (DDR-882)	
	USS C. F. Adams (DDG-2)	
	USS Dyess (DDR-880)	
	USS Bordelon (DDR-881)	
	USS Kaskaskia (AO-27)	
	USS Norris (DD-859)	
	USS Sperry (DD-697)	
	USS Willard Keith (DD-775)	
MA-9	USS Wasp (CVS-18)	USS Kearsarge (CVS-33)(PRS)
	USS Adroit (MSO-509)	USS Thomason (DD-760)
	USS Stalwart (MSO 493)	USS Taussig (DD-746)
	USS Opportune (ARS-41)	USS Fletcher (DD-445)
	USS Hyman (DD-732)	USS Bold (DD-755)
	USS Beatty (DD-756)	USS Epperson (DD-719)
	USS M.C. Fox (DDR-829)	USS Lofberg (DD-759)
	USS Davis (DD-937)	USS Duncan (DDR-874)
	USS Compton (DD-705)	USS Dehaven (DD-724)
	USS Gainard (DD-706)	USS Mansfield (DD-728)
	USS Harwood (DD-861)	USS Chipola (AO-63)
		USS Kawishiwi (AO-146)
GT-1	NONE	USS Knox (DDR-742)
GT-2	USS Lake Champlain (CVS-39)(PRS)	NONE
	USS Agile (MSO-421)	
	USS Bulwark (MSO-425)	
	USS Paiute (ATF-159)	
	USS O'Hare (DD-889)	
	USS Holder (DD-819)	
	USS Vogelgesang (DD-862)	
	USS Putnam (DD-757)	
	USS Forrest Royal (DD-872)	
	USS E. A. Greene (DD-711)	

	ATLANTIC	PACIFIC
GT-3	USS Intrepid (CVS-11)(PRS) USS Swerve (MSO-495) USS Sturdy (MSO-494) USS Nipmuc (ATG-157) USS Sarsfield (DD-837) USS R. A. Owens (DD-827) USS Bigelow (DD-942) USS D. H. Fox (DD-779) USS R. L. Wilson (DD-847) USS Boston (CAG-1) USS Harwood (DD-861) USS Kankakee (AO-39) USS Rich (DD-820) USS Cony (DD-508) USS Ault (DD-698) USS H. J. Ellison (DD-864) USS John Paul Jones (DD-932) USS Mullinnix (DD-944) USS Vigilant (WPC-617) USS Diligence (WPC-616)	NONE
GT-4	USS Wasp (CVS-18)(PRS) USS Skill (MSO-471) USS Nimble (MSO-459) USS Hoist (ARS-40) USS Hawkins (DD-873) USS Barry (DD-933) USS C. S. Sperry (DD-697) USS Rich (DD-820) USS Furse (DD-882) USS Chukawan (AO-100) USS Blandy (DD-943) USS R. A. Owens (DD-827)	USS Mason (DD-852) USS Rupertus (DD-851) USS Orleck (DD-886) USS Higbee (DD-806) USS Goldsborough (DDG-20) USS Ponchatoula (AO-148)
GT-5	USS Lake Champlain (CVS-39)(PRS) USS Avenge (MSO-423) USS Exultant (MSO-441) USS Preserver (ARS-8) USS Dupont (DD-941) USS John W. Weeks (DD-701) USS New (DD-818) USS J. C. Owens (DD-776) USS Neosho (AO-143) USS Manley (DD-940) USS Waldron (DD-699)	USS Goldsborough (DDG-20) USS Taylor (DD-468) USS Mason (DD-852) USS MacKenzie (DD-836) USS Chipola (AO-63)

	ATLANTIC	PACIFIC
GT-6	USS WASP (CVS-18)(PRS)	USS Cochrane (DDG-21)
SCRUBBED	USS Paiute (ATF-159)	USS Renshaw (DD-499)
	USS Fearless (MSO-442)	USS Rupertus (DD-851)
	USS Fidelity (MSO-443)	USS MacKenzie (DD-836)
	USS Basilone (DD-824)	
	USS Ingram (DD-938)	
	USS Massey (DD-778)	
	USS Aucilla (AO-56)	
	USS Stickell (DD-888)	
	USS Noa (DD-841)	
	USS R. E. Kraus (DD-849)	
GT-7	USS Wasp (CVS-18)(PRS)	USS Cochrane (DDG-21)
	USS Ability (MSO-519)	USS Renshaw (DD-499)
	USS Paiute (ATF-159)	USS MacKenzie (DD-836)
	USS Waldron (DD-699)	USS Rupertus (DD-851)
	USS Kennedy (DD-850)	USS Ponchatoula (AO-148)
	USS Aucilla (AO-56)	
	USS Meredith (DD-890)	
	USS Waccamaw (AO-109)	
	USS Power (DD-839)	
GT-6A	USS Wasp (CVS-18)(PRS)	USS Cochrane (DDG-21)
	USS Ability (MSO-519)	USS Renshaw (DD-499)
	USS Paiute (ATF-159)	USS MacKenzie (DD-836)
	USS Power (DD-839)	USS Rupertus (DD-851)
	USS Waldron (DD-699)	USS Ponchatoula (AO-148)
	USS Kennedy (DD-850)	
	USS Aucilla (AO-56)	
	USS Meredith (DD-890)	
	USS Waccamaw (AO-109)	
AS-201	USS Boxer (LPH-4)(PRS)	NONE
	USS Kankakee (AO-39)	
	USS Salinan (ATF-161)	
	USS Fidelity (MSO-443)	
	USS Beale (DD-471)	
	USS Waller (DD-466)	
	USS Bordelon (DD-881)	
	USS Kaskaskia (AO-27)	
	USS Turner (DD-834)	
	USS Wilson (DD-897)	
	USS Ingram (DD-938)	
	USS Waldron (DD-699)	

	ATLANTIC	PACIFIC
GTA-8	USS Boxer (LPH-4)(PSS)	USS Leonard Mason (DD-852) (Recovered)
	USS Fidelity (MSO-443)	
	USS Noa (DD-841)	USS Cochrane (DDG-21)
	USS Goodrich (DD-831)	USS MacKenzie (DD-836)
	USS C.P. Cecil (DD-835)	USS Hassayampa (AO-145)
	USS Caloosahatchee (AO-98)	
	USS M. C. Fox (DD-829)	
	USS Paiute (ATF-159)	
GTA-9A	USS Wasp (CVS-18)(PRS)	USS Epperson (DD-719)
	USS Papago (ATF-160)	USS Rupertus (DD-851)
	USS Nimble (MSO-459)	USS MacKenzie (DD-836)
	USS McCaffery (DD-860)	USS Hassayampa (AO-145)
	USS Bordelon (DD-881)	
	USS Wilson (DD-847)	
	USS W. C. Lawe (DD-763)	
	USS Chikaskia (AO-54)	
	USS Opportune (ARS-41)	
	USS Sabine (AO-25)	
GTA-10	USS Guadalcanal (LPH-7)(PRS)	USS Benjamin Stoddert (DDG-22)
	USS Sumner (DD-692)	USS DeHaven (DD-727)
	USS Norris (DD-859)	USS Collett (DD-730)
	USS W. C. Lawe (DD-763)	USS Kawishiwi (AO-146)
	USS Severn (AO-61)	
	USS Opportune (ARS-41)	
AS-202	USS Opportune (ARS-41)	USS Hornet (CVS-12)(PRS)
	USS J. C. Owens (DD-776)	USS O'Bannon (DD-450)
	USS R. A. Owens (DD-827)	USS Sproston (DD-577)
	USS Salamonie (AO-26)	USS Benjamin Stoddert (DDG-22)
	USS Chikaskia (AO-54)	
GTA-11	USS Guam (LPH-9)(PRS)	USS O'Brien (DD-450)
	USS Forrest Royal (DD-872)	USS Mansfield (DD-728)
	USS Lind (DD-703)	USS Chandler (DD-717)
	USS McCaffery (DD-860)	USS Kawishiwi (AO-146)
	USS Severn (AO-61)	
	USS Nipmuc (ATF-157)	
TITAN IIIC/HST		
	USS LaSalle (LPD-3)(PRS)	NONE
	USS Ft. Snelling (LSD-30)	
	USS Aucilla (AO-56)	

	ATLANTIC	PACIFIC
GTA-12	USS Wasp (CVS-18)(PRS) USS C. H. Roan (DD-853) USS J. P. Kennedy (DD-850) USS Lloyd Thomas (DD-764) USS Canisteo (AO-99) USS Preserver (ARS-8) USS Kankakee (AO-39)	USS Joseph Strauss (DDG-16) USS Hollister (DD-788) USS Ozbourn (DD-846) USS Kawishiwi (AO-146)
AS-204	USS Essex (CVS-9)(PRS) USS Cony (DD-508) USS Dupont (DD-941) USS Kankakee (AO-39) USS Lorain County (LST-1177) USS Salinan (ATF-161)	USS Kawishiwi (AO-146) USS Philip (DD-498) USS Radford (DD-446)
APOLLO 4	USS Austin (LPD-4) USS Sabine (AO-25) USS J. P. Kennedy (DD-850) USS York County (LST-1175) USS Hoist (ARS-40)	USS Bennington (CVS-20)(PRS) USS Carpenter (DD-825)
APOLLO 5	USS Paiute (ATF-159)	NONE
APOLLO 6	USS Austin (LPD-4) USS Chikaskia (AO-54) USS York County (LST-1175) USS Dupont (DD-941) USS Opportune (ARS-41)	USS Okinawa (LPH-3)(PRS) USS Carpenter (DD-825)
APOLLO 7	USS Paiute (ATF-159) USS Essex (CVS-9)(PRS) USS Cambria (LPA-36) USS Arneb (LKA-56)	USS Cochrane (DDG-21) USS Nicholas (DD-449) USS Ponchatoula (AO-148) USS H. W. Tucker (DD-857) USS Rupertus (DD-851)
APOLLO 8	USS Salinan (ATF-161) USS Guadalcanal (LPH-7) USS Rankin (LKA-103) USS Chukawan (AO-100) USS Sandoval (LPA-194) USS Francis Marion (LPA-249)	USS Yorktown (CVS-10)(PRS) USS Cochrane (DDG-21) USS Arlington (AGMR-2) USS Nicholas (DD-449) USS Rupertus (DD-851) USS Chipola (AO-63)
APOLLO 9	USS Paiute (ATF-159) USS Guadalcanal (LPH-7)(PRS) USS Algol (LKA-54)	USS Nicholas (DD-449) USS Cochrane (DDG-21) USS Leonard F. Mason (DD-852)

	ATLANTIC	PACIFIC
APOLLO 10	USS Ozark (MCS-2) USS Rich (DD-820) USS Salinan (ATF-161) USS Chilton (LPA-38)	USS Princeton (LPH-5)(PRS) USS Carpenter (DD-825) USS Arlington (AGMR-2)
APOLLO 11	USS New (DD-818) USS Ozark (MCS-2) USS Salinan (ATF-161)	USS Hornet (CVS-12)(PRS) USS Goldsborough (DDG-20)
APOLLO 12	USS Austin (LPD-4) USS Hawkins (DD-873) USS Escape (ARS-6)	USS Hornet (CVS-12)(PRS) USS J. Strauss (DDG-16)
APOLLO 13	USS New (DD-818) USS Escape (ARS-6) USS Bordelon (DD-881) USS Forrest Royal (DD-872) USS William C. Lawe (DD-763)	USS Iwo Jima (LPH-2)(PRS) USS Benjamin Stoddert (DDG-22) USS Kawishiwi (AO-146) USS Granville S. Hall (YAG-40)
APOLLO 14	USS SPIEGEL GROVE (LSD-32) USS HAWKINS (DD-873) USS PAIUTE (ATF-159)	USS NEW ORLEANS (LPH-11)(PRS) USS CARPENTER (DD-825) USS PONCHATOULA (AO-148)

GLOSSARY OF TERMS

SHIPS

PRS	Primary Recovery Ship
SRS	Secondary Recovery Ship
LPH	Helicopter Carrier designed as amphibious assault ship to support the Marine Corps vertical envelopment concept. Each carries an assault force of personnel, combat supplies, equipment and transport helicopters.
AO	Fleet Oiler. Used to refuel other ships at sea.
ATF	Fleet Ocean Tug. Heavy towing service with search and rescue as a secondary mission.
LPD	Amphibious Transport Dock. Designed to combine the functions of several amphibious ships -- the troop transport, attack cargo ship, helicopter carrier and dock landing ship. Can carry both combat troops and their heavy equipment to an enemy beach and land them by helicopter or pre-loaded landing craft.

AIRCRAFT

COD	Carrier Onboard Delivery. Provides delivery capability for personnel, film and data between aircraft/helicopter carriers and land bases, or carrier-to-carrier.
ARRS AIRCRAFT	Aerospace Rescue and Recovery Service HC-130H with long range electronic search and location capability. It carries pararescuemen swimmers for spacecraft collaring capability.
ARIA	EC-135 aircraft (Air Force Eastern Test Range) with telemetry and electronic search capability, provides "S" band, high frequency, tracking capability and can function as radio relay.
RECOVERY HELICOPTER	SH-3D "Sea King" built by Sikorsky; equipped with special SARAH radio beacon receivers. Provides homing capability for location of spacecraft, delivers UDT swimmers for collaring of spacecraft, provides medical personnel and assistance to astronauts as needed, transports astronauts to recovery ship.
PHOTO HELICOPTER	Carries NASA and Navy photographers, provides photographic documentation of recovery operations.
SWIMMER HELICOPTER	Recovery helicopter carrying UDT personnel who attach the sea anchor and flotation collar to command module.

MISCELLANEOUS

SPLINTER SHIELD (PACIFIC) Reserved air space for events such as spacecraft landing and air support operations.

HONEY BEE (ATLANTIC) Reserved air space for events such as spacecraft landing and air support operations.

SARAH — Search and Rescue Aircraft Homing. Electronic search and detection devices used in recovery aircraft for detection and location of command module at time of landing.

TACAN — Tactical Air Navigation. Electronic device in aircraft which uses signals emitted by ground stations to determine own distance and direction from the ground station.

SAR — Search and Rescue. Special Air Force and/or Navy units whose function is the airborne location of mission aircraft or spacecraft.

CM BEACON — Radio beacon transmitter in spacecraft activated by astronauts immediately prior to command module splashdown.

UDT — Navy Underwater Demolition Team swimmers who install flotation collar and assist astronauts upon splashdown.

CIC — Combat Information Center. On recovery ship provides central location for display of current operations information including radar. Permits commander to rapidly evaluate situations and take action.

RESCUE — Voice call of USAF Air Rescue and Recovery Service (ARRS) aircraft of HC-130 type. Carry Pararescuemen who perform same functions as UDT swimmers.

PRI-FLY — Primary Aircraft Launch and Recovery Control Center. Located in island structure of aircraft/helicopter carriers overlooking the flight deck.

SICK BAY — The medical center or hospital facility aboard Navy ships.

RCC — Atlantic or Pacific Recovery Control Center. A land based facility normally manned by the staff of the appropriate recovery force commander during space mission support operations. Provides central location for control communications, display of mission, and of task force recovery status and related operations.

HF BEARING — High frequency radio detection equipment in an aircraft or ship that indicates a compass direction from the aircraft to an emitting source (radio or radio transmitter) in another aircraft, ship or spacecraft.

CHOCK — A wood or metal block placed on either side of an airplane's tire to prevent it from moving.

DOLLY — The cradle on which the command module is placed once it is removed from the water after splashdown.

ISLAND — The superstructure area, above the flight deck, on the starboard (right) side of an aircraft/helicopter carrier.

LAUNCH ABORT AREA — The area in which the command module would land following an abort initiated during the launch phase of the flight, between approximately 90 seconds g.e.t. and earth parking orbit insertion.

SECONDARY LANDING AREAS — Those areas in which the probability of a command module landing is sufficiently high to require at least secondary recovery ship support.

CONTINGENCY LANDING AREA — The area in a band around the earth between 40 degrees North and 40 degrees South latitude that lies outside of the primary/secondary landing areas. Land based search and rescue aircraft support this landing situation.

PRIMARY LANDING AREA — That area where the probability of landing is sufficiently high to warrant the requirement for primary recovery ship support.

MULE — A towing tractor on an aircraft/helicopter carrier used to tow aircraft in the hangar bay and on the flight deck.

PJs — Air Force Pararescuemen

B AND A CRANE — Boat and Aircraft Crane. The primary Apollo command module crane used for retrieving the module from the water. For Apollo 13, 14 and again for Apollo 15, a specail NASA furnished winch and nylon line will be installed piggy-back on the B and A crane for lifting the command module out of the water.

BILLY PUGH NET — The rope cage in which the astronauts are lifted into the recovery helicopter from the life raft after getting out of the command module.

S BAND — Primary communications and tracking frequency band.

SCRUB — To cancel

TILLIE — A smaller crane onboard the PRS used as a secondary or backup for the B and A crane.

UP/DOWN — Navy jargon used to describe the working status of a piece of equipment. Up, meaning in working order, down the reverse.