

Robert Anderson Elected Executive Vice President

Robert Anderson, president of North American Rockwell's Commercial Products Group and a vice president and director of the corporation, has been elected executive vice president of the company by the board of directors. The announcement was made this week by W. F. Rockwell, Jr., chairman of the board.

In the newly created post, Anderson will assist J. L. Atwood, president and chief executive officer, in directing the company's rapidly expanding corporate and organizational development.

Anderson is now located at



Robert Anderson

the Commercial Products Group headquarters in Pittsburgh, and in his new position will be located at the General Offices in El Segundo, Calif. His promotion is effective immediately. Until a successor is named, he will continue to be responsible for the Commercial Products Group.

"Bob Anderson's long and varied experience in major manufacturing and his fine record as head of the company's Commercial Products Group make him ideally suited for this responsibility," Rockwell said.

"One of Bob Anderson's principal purposes in his new position will be to facilitate the

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VETERAN SPACEMEN—Apollo 10 astronauts Gene Cernan, left, John Young and Tom Stafford are shown during practice leading to eight-day lunar orbit flight scheduled to begin Sunday from NASA's Kennedy Space Center. Trio will be first "all-veteran" crew to carry out mission in manned Apollo program.

'ROUGHNECK' SUBMERGES 2,096 FEET OFF CATALINA ISLAND

Mark IV Meets or Exceeds Specifications

North American Rockwell's "yellow submarine"—the five-man, 24-foot long Beaver Mark IV—moved toward the head of its class of America's submersibles with completion of an extensive test program which met or exceeded all design specifications.

Today, the Beaver — nicknamed the "Roughneck" for its underwater versatility—was returned to the Space Division's Ocean Systems Operations assembly facility at Seal Beach where it will be outfitted for its next phase of testing—the capability of mating with a sea-floor capsule.

Beaver Chief Test Pilot Joe Thompson and Pilot Ed Krueger last week maneuvered the 27,640 pound submersible to a depth of 2,096 feet off Catalina Island, climaxing the dive test program.

During the underwater test,

the "Roughneck" spent nearly 50 hours at various depths during 18 dives. The first portion of the test program placed the Beaver through comprehensive surfaced operations checking out all of the systems and structures.

This was followed by 13 shallow-water dives to depths of 200 feet. In mid-April, the Beaver, with Thompson and Krueger at the controls, was first taken to a depth of 400 feet, then 800, 1,200, 1,600, and then last week to its designed requirement of 2,000 feet.

Project Engineer Bill Calloway was elated with the performance of the Beaver—"for a first craft, the test program with only minimal problems was a most unusual achievement. Possibly the success of this test dive program has not been accomplished before," Calloway said.

All Systems 'Go' for Lift-Off of Apollo 10

Countdown in Final Phase for Lunar Orbit Mission

The countdown is entering its final phase for the Apollo 10 mission that will take man the closest he has ever been to another celestial body.

Astronauts Tom Stafford, John Young and Gene Cernan are scheduled to lift off from NASA's Kennedy Space Center Sunday at 9:48 a.m. California time on a flight that will be a dress rehearsal for the planned mid-July lunar landing.

Spacecraft 106, which will carry the crew to and from the moon, is the fourth division-built manned spacecraft used in the Apollo program. The Saturn S-II-5 stage, which will power Apollo into orbital altitude, is the third S-II to be used in a manned flight.

All aspects of the eight-day lunar orbit flight will duplicate as closely as possible the conditions of Apollo 11—the sun angles at Apollo Site: 2, the planned lunar landing site; the out and back flight path to the

(Continued on Page 2, Column 4)

FIRST 'ALL-VETERAN' CREW SCHEDULED TO FLY APOLLO 10

Apollo 10 will have the first "all-veteran" crew to fly in the Apollo program.

Tom Stafford, flight commander, and command module pilot John Young will be making their third flights and lunar module pilot Gene Cernan his second. Stafford flew in Gemini 6 and 9, Young in Gemini 3 and 10, and Cernan aboard Gemini 9.

The trio also served as the backup crew for Apollo 7, the first manned Apollo flight.

Stafford took part with Wally Schirra in the first rendezvous in the Gemini program (with Gemini 7) and was the pilot for the Gemini 9 flight that included another rendezvous and extra-vehicular activity by Cernan.

Young flew with Virgil (Gus) Grissom in the first manned Gemini flight. He later was the pilot for the Gemini 10 mission that included rendezvousing with two targets and a space walk by Mike Collins, now a member of the Apollo 11 prime crew.

Five Selected to View Launch from Kennedy Space Center

Five special Space Division employees will be among the thousands of persons watching the launch of Apollo 10 Sunday morning at NASA's Kennedy Space Center.

The five, Agnes Welsh, Larry Englehart, Helen Hempel, Joel Estes and Donna Sabin, were selected through the division PRIDE program to represent their fellow employees at

the launch. Mrs. Sabin is from Florida Launch Operations, Mrs. Welsh and Mrs. Hempel are from Downey, Englehart from Seal Beach, and Estes from Mississippi Test Operations.

As guests of the division and NASA, they will be honored at a reception, see the launch from a VIP viewing area, and be given

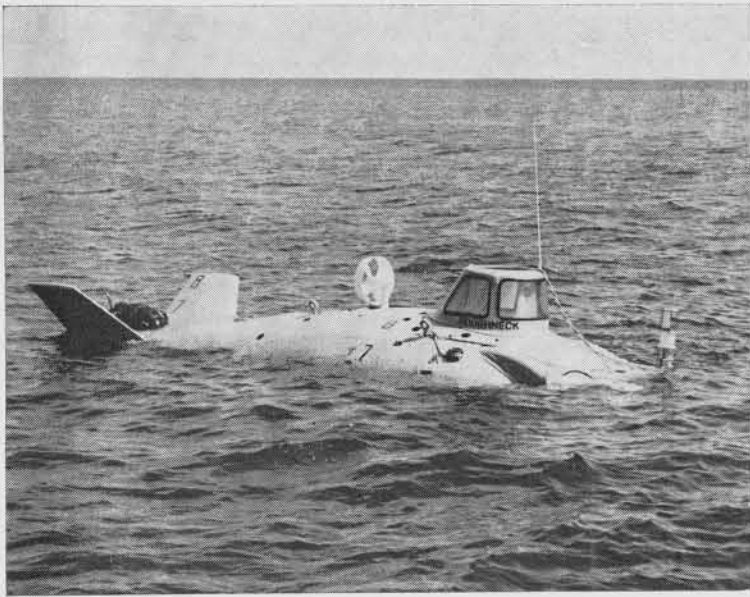
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FLORIDA BOUND—Five division employees, selected through PRIDE program on basis of outstanding workmanship, will represent fellow workmen at launch of Apollo 10. In photo at left, Agnes Welsh, John Englehart and Helen Hempel discuss flight with Executive Vice President Joe McNamara. At right,



Joel Estes in congratulated on being named for honor by Charles Allen, director of division's Mississippi Test operations. Donna Sabin of Florida Launch Operations was not available for photograph. Employees will view lift-off from VIP area, be feted at reception, and have tour of Kennedy Space Center.



READY FOR DIVE—Ocean Systems Operations' Beaver Mark IV—the "Roughneck"—prepares for dive off Catalina Island. Beaver's deep water dive program to depths of 2,000 feet are completed. Next test of the versatile workboat is to check its underwater mating capabilities with work stations on the seafloor.

Roughneck . . .

(Continued from Page 1, Column 4)

Manuel concurred, pointing out that it was a combination success—the men who designed and built the Beaver and the dedicated 11-man test crew all should share the spotlight for the achievement.

Last weekend, John Enroth of the American Bureau of Shipping was a participant in a certification dive in the Beaver preparatory to the submersible receiving its ABS certificate.

Beaver Program Manager George Tuttle praised the test crew—not only pilots Thompson and Krueger, but also Test Conductor Tony Anstead and the engineer-diver-technicians Gene Raquepaw, Bob Jayne, Lorin Myrick, Akio Nitta and Tim Mitchell.

Wes Wright, with the assistance of Jack Harris, is base administrator of the test site at Fisherman's Cove on Catalina Island. Quality Control's Bill Pinneo rounded out the 11-man test crew who were praised by Manuel and Tuttle for their dedication to the program.

Five Selected . . .

(Continued from Page 1, Column 5)

Mrs. Welsh, a special clerk in Graphic Data Systems, is responsible for the internal audit of documentation reliability in her organization. She was commended for her excellence in her work and for her assistance in meeting scheduled objectives.

Englehart, of Saturn S-II Engineering, was commended for his consistently outstanding performance in his assignment as being responsible for the review, evaluation and coordination with NASA of S-II Interface Control Documentation.

An assembler in Apollo Electrical Panel and Package Fabrication, Mrs. Hempel is involved in the assembly of power distribution boxes, control units and reaction control boxes.

In S-II Test Operations at MTO, Estes serves as a duty test conductor and is qualified as a static firing test conductor.

Mrs. Sabin was named for the honor because of her efficiency and effectiveness in the performance of her duties at Launch Operations as head of the Records and Documentation unit in Material Control. Her leadership of the unit was cited as being instrumental in obtaining a key contractual objective.

Anderson . . .

(Continued from Page 1, Column 1)

transfer of technology between the Aerospace and Systems Group and the Commercial Products Group. He understands the vital importance of this process to the company's competitive position and growth plans, and he has already played a key role in our transfer successes to date."

Anderson was named president of the Commercial Products Group in 1968.

Booklets Revised

Copies of revised booklets covering pay policies and other benefits and services will be mailed to the homes of all employees next week. These booklets reflect changes which have occurred since the booklets were last printed in 1967.



CLASP OF SUCCESS—Beaver Mark IV Chief Test Pilot Joe Thompson, second from left, receives congratulations of division President William Bergen for successful dive of submersible. Ernest Manuel, left, division vp and Ocean Systems Operations general manager, and project engineer Bill Galloway, second from right, beam their approval. On ladder is Beaver pilot Ed Krueger. Test program met or exceeded all requirements.

S-II Second Stage To Help Boost Apollo 10 to Orbital Altitude

The Saturn V launch vehicle for Apollo 10 includes an S-II second stage that has the power of 40 million horses and a speed 18 times that of a rifle bullet.

With its five Rocketdyne J-2 engines developing a total of more than a million pounds of thrust, the Seal Beach-built S-II is the most powerful hydrogen-fueled stage built.

When fueled, the stage weighs about 500 tons and has approximately 40 horsepower per pound. This compares with the average US-built car which weighs about two tons and, with

300 horsepower, has about one-tenth horsepower per pound.

The 81½-foot tall, 33-foot diameter stage is big enough to be used for a garage for five large moving vans.

During its turn at boosting the Apollo spacecraft to orbital altitude, the stage initially will be travelling about seven times as fast as a .22 rifle bullet—which has a speed of about 1,220 feet per second or 830 miles an hour. After its 6½ minutes of firing, the S-II will be travelling approximately 18 times the speed of the bullet.

APOLLO 10 TV TRANSMISSIONS

Twelve spacecraft-originated television transmissions, almost all in color, are programmed in the Apollo 10 flight plan. The decision on making the telecasts and the exact times will depend on crew activities.

Scheduled TV dates and local times are:

Sunday, 12:49 p.m.—15-minute transmission following spacecraft separation from the Saturn V third stage, followed by 10-minute telecast.

Monday, 1:04 p.m.—Enroute to the moon.

Tuesday, 3:49 p.m.—Enroute to the moon.

Wednesday, 10:09 a.m.—Just before lunar orbit insertion.

Wednesday, 6:34 p.m.—During second orbit of moon.

Thursday, 12:02 p.m.—Following undocking of command/service modules and lunar module in moon orbit.

Friday, 10:24 a.m.—Following jettison of lunar module.

Friday, 4:09 p.m.—During 26th revolution of moon.

Saturday, 3:34 a.m.—After transearth insertion to head for home.

Saturday, 6:24 p.m.—On way back to Earth.

Monday, 4:39 a.m.—Before final midcourse correction for Earth entry.



CHARLIE BROWN—Apollo 10 "Charlie Brown" command/service modules craft watches "Snoopy" lunar module descend to altitude of 50,000 feet over moon's surface. Mission will bring man closer to another celestial body than at any other time.

Countdown in Final Phase . . .

(Continued from Page 1, Column 4)

moon, and the time line of mission events, said NASA. Apollo 10 differs from Apollo 11 only in that no landing will be made on the lunar surface. Instead, Stafford and Cernan will spend more than eight hours in the lunar module in a flight that will take them twice to within 10 miles of the moon—the closest approach of any manned crew.

The flight is designed to provide vital operational experience for crewmen, for the spacecraft and for NASA mission support facilities during a simulated lunar landing.

It also will result in more space navigational experience and knowledge of the lunar gravitational effect which, coupled with added landmark tracking of the surface, will aid in further refining NASA's Manned Space Flight Network, said the space agency.

(See Mission Highlights on P-3)

Apollo 10 will begin its three-day, approximately quarter-million-mile journey to the moon about two and one-half hours after launch from Kennedy Space Center. The Saturn V's third stage is scheduled to restart to power the spacecraft into translunar trajectory as the combined vehicle passes over Australia midway through its second revolution of the Earth.

Code name for the command/service modules during the flight will be "Charlie Brown," while the lunar module will be called "Snoopy," both after characters from the "Peanuts" comic strip.

About an hour after translunar injection, Charlie Brown will separate, turn around and dock with Snoopy, and then both will leave the third stage. The stage later will be placed in a "slingshot" trajectory to go into solar orbit.

As the spacecraft approach the moon and round its backside out of sight of the Earth, Charlie Brown's service module engine will be ignited for a critical burn that will slow the craft into an initial 69 by 195-mile

elliptical orbit. The orbit will be circularized to 69 miles by another burn two revolutions later.

Stafford and Cernan will enter the lunar module during the tenth revolution to check out and prepare Snoopy for the simulated lunar landing.

The two astronauts will leave Young and Charlie Brown in circular orbit to begin a flight of more than eight hours. During this time they will sweep twice to within 50,000 feet of the lunar surface to thoroughly investigate and study Apollo Landing Site 2, one of the prime targets for the Apollo 11 landing.

The flight of Snoopy will take it as far away as 400 miles from Charlie Brown as Stafford and Cernan thoroughly wring out the lunar module systems. They also will test the lunar module rendezvous radar and the backup VHF ranging device being flown aboard Charlie Brown for the first time.

During the second low pass over the moon, Snoopy will begin an important phasing maneuver that will simulate liftoff from the lunar surface and position the lunar module for rendezvous and docking with Charlie Brown.

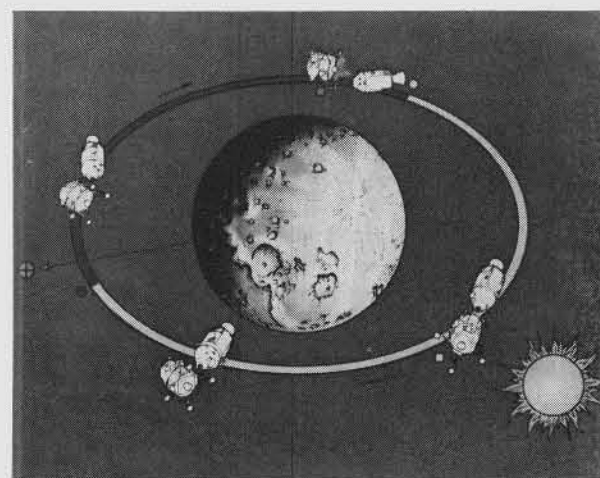
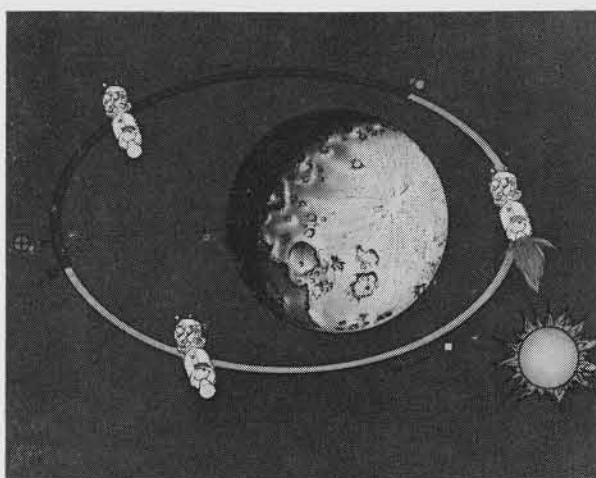
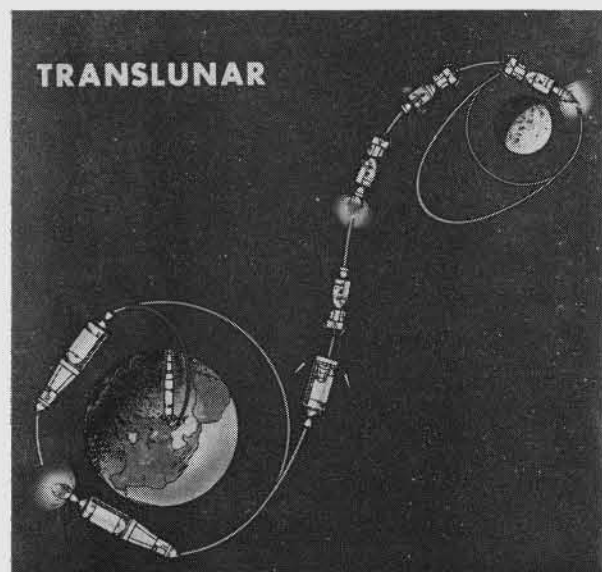
Stafford and Cernan will rejoin Young in Charlie Brown after the delicate docking maneuver. The lunar module then will be jettisoned, and its ascent engine burned to propelant depletion, placing it in solar orbit.

The three astronauts will make about 15 more revolutions of the moon in Charlie Brown over an approximately 30-hour period.

After almost 62 hours in lunar orbit, Charlie Brown's service module engine will again be fired on the back side of the moon for the critical burn that will push the spacecraft on its course back to Earth.

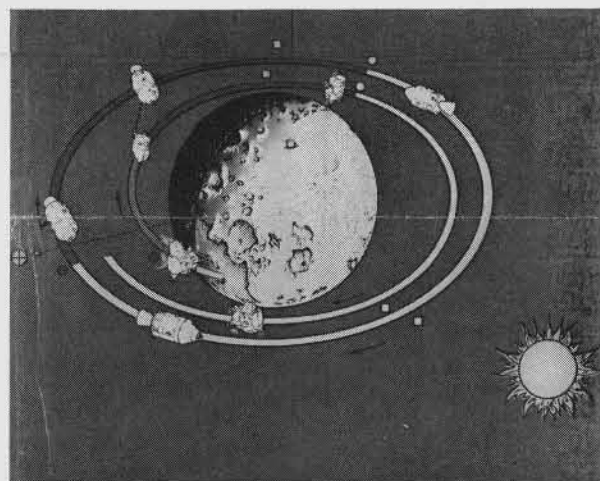
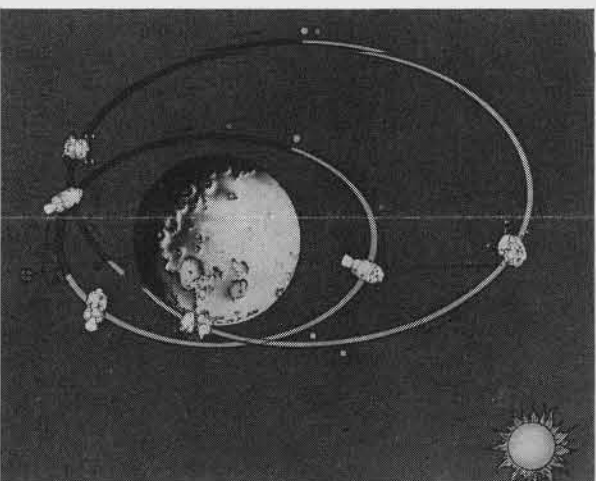
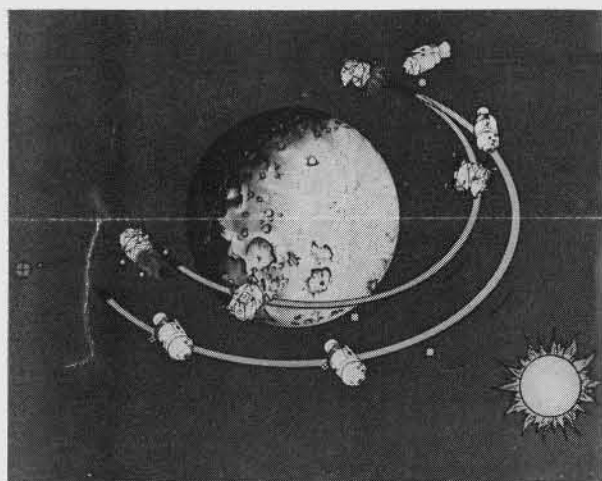
Apollo 10 is scheduled to touch down in the Pacific Ocean after a flight that will span a period of 192 hours.

APOLLO 10 ROUTE TO THE MOON



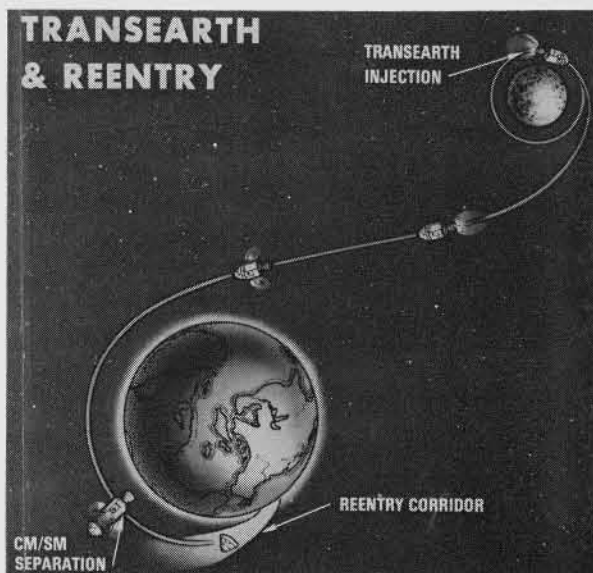
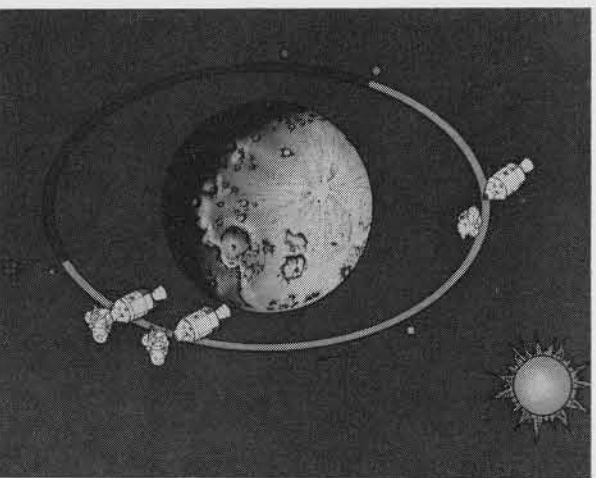
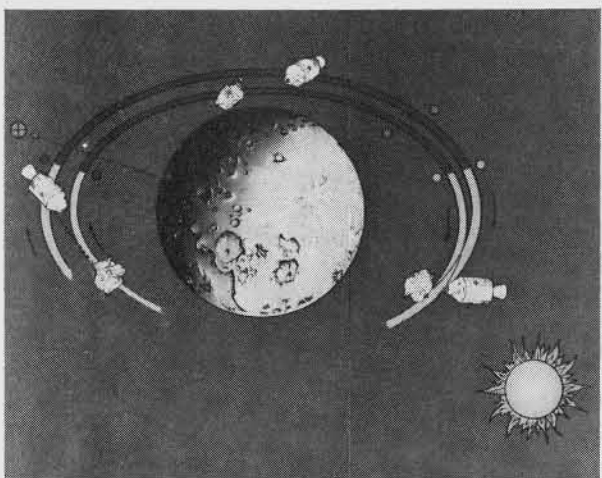
ROAD TO THE MOON — Astronauts Tom Stafford, John Young and Gene Cernan will be launched from NASA's Kennedy Space Center Sunday morning on 192-hour Apollo 10 lunar orbit flight that will take them closer to another celestial body than any other man. Major points of mission — after "Charlie Brown" command/service modules, and "Snoopy" lunar module enter lunar orbit — are shown. In center photo: during lunar orbit, Charlie Brown's service module engine will be fired behind moon in key burn to slow combined

command/service module craft into moon orbit. Craft will go into initial 69 by 195-mile elliptical orbit, then into circular orbit about 69 miles above moon. Position of Earth is indicated by light circle with cross, and sun is at lower right. At right, separation occurs when Charlie Brown, with Young aboard, and Snoopy, manned by Tom Stafford and Gene Cernan, will separate just as they come around back of moon into view of Earth. Snoopy will make its first separation about two miles from Charlie Brown.



DESCENT — Behind the moon again, Snoopy will begin descent in egg-shaped orbit to pass twice within 50,000 feet of lunar surface over Apollo Site 2, planned target for lunar landing. Lunar module will thoroughly photograph and inspect landing area before descent engine is fired to kick Snoopy into elliptical phasing orbit of about 10 by 220 miles during second pass. Center, Snoopy will slow during phasing orbit to allow Charlie Brown to

pull ahead in its circular orbit and set up proper conditions for beginning intricate lunar module rendezvous. Snoopy's descent stage will be jettisoned during second close pass over moon, duplicating lunar module configuration following lift-off from surface in actual landing. At right, following simulated lunar lift-off, Snoopy's ascent stage engine will be fired for first time in series of burns to adjust the lunar module orbit in preparation for rendezvous with Charlie Brown.



FINAL APPROACH — Left photo, Charlie Brown and Snoopy begin their final approach in darkness, just before the two spacecraft go behind moon in 15th revolution. Two will approach to within 100 feet in same orbit, completing rendezvous leading to docking. At center, two spacecraft will fly in formation until reaching side of moon facing Earth. Final docking will be in sunlight, about 25 minutes after rendezvous and approximately 106 hours into flight. Stafford and Cernan will then rejoin Young in Charlie Brown, and the

lunar module ascent engine will be fired to propellant depletion to place Snoopy in solar orbit. In right photograph, astronauts will make about 15 more revolutions of moon, performing navigation and tracking chores and obtaining additional photos of Apollo landing sites. Approximately 137½ hours into flight, service module engine will be ignited for critical burn that will start Charlie Brown on its homeward journey. The splashdown, after successful test mission, will be in Pacific Ocean about 390 miles east of coast of American Samoa.

APOLLO 10 TO PROVIDE FIRST COLOR TV MOON, SPACE VIEWS

Television viewers are scheduled to have their first in-color look at space and the moon during the Apollo 10 flight.

NASA has announced that an experimental television system will be carried on the lunar orbit mission. Approximately 12 television transmissions are planned during the flight, all dependent on other programmed crew activities.

The color system will be carried aboard the division-built "Charlie Brown" command module in addition to a black and white TV camera. Designed and built by the Westinghouse Electric Corp., the system uses a camera that is about 18 inches long, including lens, approximately 4½ inches wide and 6½ high, and weighs about 12 pounds.

The system includes a three-inch television monitor which can be mounted atop the camera

or positioned in the command module to allow the astronauts a black-and-white look at the picture they are sending to Earth. The camera has a zoom-type lens which can be used for close-up or wide-angle views.

The system transmits a sequence of three black and white pictures, each seen through a different color filter, for every color frame. The sequence of pictures will be re-constituted by a converter at NASA's Manned Spacecraft Center into a color picture and then fed to commercial TV networks.

The Westinghouse camera, which is similar to the company's black and white lunar surface TV system, uses a color wheel process pioneered by CBS Laboratories. Color sensitivity is obtained by rotating red, green and blue filters sequentially between the lens and the camera tube.

Services Held for Employee Killed in Crash

Funeral services were held Wednesday for Merlin (Bill) Easton of Procurement Quality Control who was killed last week in an airplane accident in El Segundo.

Easton, 49, was on special loan to Autonetics at the time of the accident, which also claimed the lives of John W. Claghorn, Leland J. Christopher and Elmer R. Jezek, all of Autonetics. In his regular assignment, Easton worked with division Apollo and Saturn S-II program suppliers.

The aircraft Easton was piloting was a converted B-26 bomber being used in the flight testing of airborne electronic equipment. The aircraft crashed on takeoff from Los Angeles International Airport.

Easton had been with the company since 1947, with the exception of a period from 1950 to 1952 when he was recalled by the Air Force for a combat stint during the Korean Conflict. He is survived by his wife, Peggy, and daughters Peggy Jo and Vicki Kay.

YOU ARE THE "I" IN PRIDE

men in the Western states. The operation will be available to provide technical assistance to news media in California, Oregon, Washington, Nevada, Utah, Arizona, New Mexico and Colorado.

Division Experts To Provide Technical Support for Media

Division men will be providing technical support to news media from coast to coast to help explain to the public the role of Space Division-built hardware in the Apollo 10 mission.

Leo Krupp, Apollo chief research pilot, again will serve as a "stand-in" astronaut for CBS-TV, which will supplement its Kennedy Space Center and New York-based flight coverage with remote broadcasts from a studio at the division's Downey facility.

Research pilots Bob Rahn and Al Moyles will serve in a similar capacity with ABC and NBC, respectively.

Henry Kuznicki and Gene Nurnberg of Apollo Engineering at Launch Operations will work with the NBC network news crew during its Apollo 10 mission broadcast emanating from Kennedy Space Center, Fla.

Providing technical assistance to newsmen at Houston is Keith McClung of the division's Houston Office.

Buck Grover and S. I. (Jose) Jimenez of Apollo Logistics Training will work with Public Relations in a news desk based at Downey that will aid news-



AIAA CONFERENCE — Ken MacDowall, left, LA Division, shows piece of honeycomb section covered with fire-retardant Ladicote to William Bergen, right, Space Division president and Dr. Robert Stivers, also from Space, during AIAA symposium on Terrestrial Applications of the Space Program. Bergen, key luncheon speaker at last week's event, discussed Apollo 11 flight.

Bergen, Stivers Report Points to Untouched Earth Resources

An Apollo mission report and the vast promise of Earth resources programs were outlined last week by Space Division executives at a symposium sponsored by the Los Angeles American Institute of Aeronautics and Astronautics.

In his role as luncheon speaker, division President William B. Bergen underlined the value of camera experiments carried aboard the Apollo 9 mission and gave his audience a look at the Apollo 11 mission which is scheduled to have the first Americans back from the lunar surface in less than 10 weeks.

Dr. Robert Stivers, manager of Unmanned Systems in Advanced Programs, described "enormous benefits that are realizable from new approaches to the management of agriculture and forestry resources, geology

and mineral resources, geography and cartography, hydrology and water resources and oceanography, and meteorology."

Showing slides of photographs taken from space missions and airplane flights using visual, infra-red and microwave sensors, Stivers said that "The key element in these new approaches to resources management is the capability to remotely acquire resources data which could not be previously identified or in quantities and detail which could not permit assessment of their status."

Stivers pointed out that "the opportunities for the aerospace industry will indeed be many. The development of a total system approach for resources acquisition, transportation, storage and utilization will be necessary."



ASTRONAUT AWARD — Photographer Lou Ranier, left, beams as NASA astronaut Al Worden, member of Apollo 12 backup crew, pins on Snoopy astronaut personal recognition award. Ranier was nominated for award through division PRIDE program for his outstanding efforts and continued job excellence.

Aerospace Industry Chairman

PRESIDENT ATWOOD ACCEPTS U. S. SAVINGS BONDS POST

President J. L. Atwood has accepted — for the second year in succession — the national chairmanship of the Aerospace Industry Committee for the United States Payroll Savings Campaign.

His acceptance brought immediate thanks from Henry H. Fowler who had served as Secretary of the Treasury when Atwood was national aerospace chairman in 1968.

"I am delighted that you will continue to serve as a member of the U. S. Industrial Payroll Savings Committee and as chairman for the aerospace industry," said Fowler. "The committee has established an enviable record in the sale of U. S. Savings Bonds and Freedom Shares and in volunteer service in behalf of the nation."

NR DIRECTORS VOTE REGULAR DIVIDEND

North American Rockwell directors last week declared the usual quarterly dividend of 50 cents per common share. The dividend on the common shares will be payable June 9, 1969, to shareowners of record May 19, 1969, and the regular quarterly dividend of \$1.1875 per share of Series A preferred stock will be payable July 1, 1969, to shareowners of record May 29, 1969.

Closed Circuit TV Planned for Apollo Reports

Daily closed-circuit television and sound system programs will be broadcast throughout the Apollo 10 flight to keep division Southland employees informed of developments during the eight-day, lunar-orbiting mission.

Generally, the daily programs will be status reports shown at noontime for the first shift and at 8 p.m. for the second shift.

The special coverage began today with a program highlighting preflight operations and reviewing key phases of the mission. A recap program Monday will show Sunday's launch and bring employees up to date with the mission. It will be shown Monday morning and rebroadcast at 8 p.m.

Thursday's program will be timed to coincide with a live telecast from Apollo 10 that is scheduled for about noon local time to coincide with a live telecast from Apollo 10.



MOON HARDWARE — Seal Beach-built Saturn S-II stage for Apollo 12 mission is shown arriving at NASA's Kennedy Space Center. Stage will be included in Saturn V launch vehicle planned for second lunar landing flight. Crewmen are Charles Conrad, Dick Gordon and Alan Bean.