Writer

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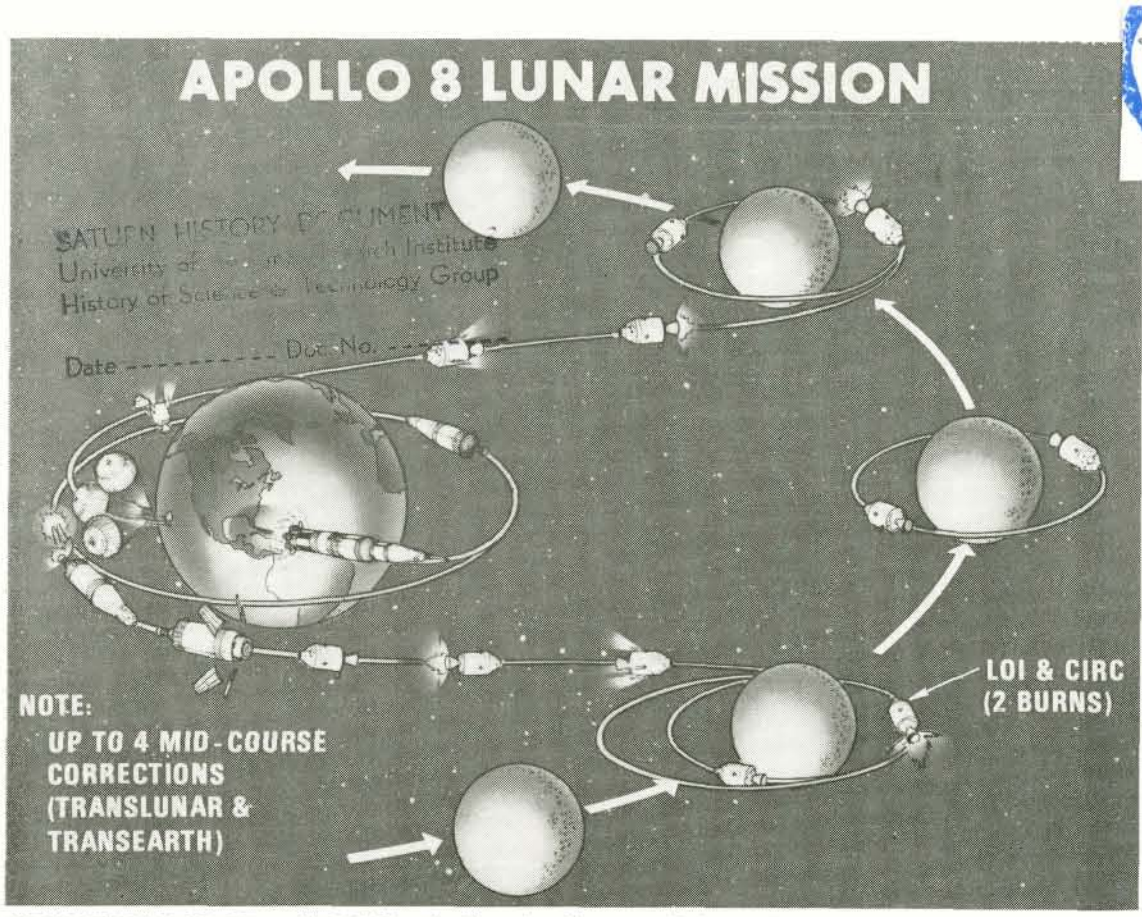


CHRISTMAS TALE — If NASA decides Apollo 8 will be a lunar orbital flight, the events depicted above will take place. Astronauts arriving in the lunar vicinity will trigger a lunar orbital insertion burn (loi), place themselves in an elliptical orbit, burn the Service Propulsion System engine a second time to circularize their orbit, orbit the moon 10 times then head earthward on Christmas Eve. Astronauts will splash down in the Pacific Ocean on December 27.

Countdown Trials Start for Launch

Tests for Holiday Mission Begin Preparing for Dec. 21 Liftoff

Apollo 8 Command and Service Modules are now in Countdown Demonstration Tests (CDDT) at NASA's Kennedy Space Center, being prepared for a Dec. 21 launch which may place astronauts in lunar orbit Christmas Eve.

The "wet" CDDT (with propellants but without astronauts) began Wednesday, is to be completed Tuesday and will be followed by the astronauts conducting a one-day "dry" CDDT (with oxydizers drained) Wednesday. The CDDT basically is a practice mission countdown, without any firings.

The actual countdown is to begin Dec. 16, leading to launch aboard a Saturn V from KSC's Launch Complex 39A two weeks from tomorrow.

Crewmen for the Apollo 8 mission are Commander Frank Borman, command module pilot James A. Lovell, Jr., and lunar module pilot William A. Anders. There will be no lunar module on this mission, but Anders will fly in the position reserved for the lunar module pilot on fully configured Apollo missions to be flown next year.

NASA has pointed out that the mission will be an "open ended" mission to be conducted in steps referred to as "plateaus" or "commit points."

Each plateau includes a thorough check of crew, system and equipment operations. Only when all conditions are satisfactory will the decision be made to commit to the next plateau. Commit points in the Apollo 8 mission are: 1) prelaunch checkout, terminating in launch; 2) earth parking orbit, which would end with translunar injection, and, 3) translunar coast, which would precede lunar orbit injection.

NASA explained that conducting Apollo 8 in this manner provides for various alternate

(Continued on Page 2, Column 5)

Deep Ocean Oil Plans Promise Bright New Era

Key elements of a major deep-ocean oil production program, signalling a new era in petroleum and natural gas recovery, were revealed today by Mobil Oil and North American Rockwell (NR) corporations.

The joint disclosure was made by Dr. Dayton H. Clewell, Mobil senior vice president of research and engineering, New York, and John R. Moore, president of NR's Aerospace and Systems Group.

They said the program has far-reaching implications for the future of the petroleum industry and for the world's present oil reserves, which are being depleted at the rate of 38 million barrels a day.

The two companies signed the agreement to develop the total system for offshore petroleum recovery in February, 1967, and a contract to build a prototype system is expected soon.

Ernest H. Manuel, vice president and general manager of NR's Ocean Systems Operations, Long Beach, where part of the work is being performed, said the production concept combines "the unique capabilities of the human observer and helper" with an otherwise completely automatic system. It will be useful in any location and at depths substantially below present Continental Shelf limits.

New Plans Would Set Three Experiments Up on Moon

NASA has announced that plans now call for the first United States astronauts to land on the moon to place three scientific experiments on the lunar surface.

This is in addition to carrying out their primary tasks of photography and collecting samples of the lunar soil and rocks, all of which will be returned to earth for detailed scientific analysis.

The scientific experiments were listed as a passive seismometer, a laser ranging retro-reflector and a solar wind composition measuring device. These experiments are in accord with NASA's desire to obtain maximum scientific return consistent with the primary purpose of the first manned lunar landing mission.

On this first landing, plans call for the astronauts at one point to leave the lunar module and spend up to three hours on the lunar surface. During this time they will make observations, take photographs, collect samples and deploy the experiments.

The astronauts will perform their tasks in order of increasing complexity. At each level of activity, scientific and medical data on astronaut energy expenditure will be gathered. This will insure adequate monitoring of the astronauts' ability to perform in the vacuum, extreme temperature and one-sixth gravity of the moon. It also will provide vital data to be used in planning longer and more complex future missions.

The passive seismometer is a self-contained 100-pound seismic station with its own moon-earth communication link. It will be powered by solar cells and may be provided with radioisotope heaters to enable it to withstand the extremely cold lunar nights for up to a year, providing data on the internal activity of the moon.

If the moon is seismically active, information concerning its structure may be obtained. These data will assist in determining validity of current concepts about the moon and its origin and, perhaps, lead to new concepts.

The laser ranging retro-reflectors which will serve as a target for earth-based laser systems. It weighs 70 pounds. Data obtained will help make more precise measurements of the earth-moon distance and the fluctuation of the earth's rate of rotation. The theory of intercontinental drift may be tested by direct measurements from different continents.

The solar wind composition experiment is designed to entrap the noble gases (Helium, Neon, Argon, Krypton, Xenon) in the solar wind. This one-pound device consists of a sheet of aluminum foil which is placed across the solar wind. It will be retrieved before the astronauts leave the moon and will be returned to earth for analysis.

In the second manned lunar landing, NASA plans to have the astronauts deploy a full geophysical station or Apollo Lunar Surface Experiments Package (ALSEP) and conduct detailed field geology investigation.

Leonard Tinnan Named to Apollo Application Post

Leonard M. Tinnan has been appointed Program Manager, Apollo Applications Program, Division President William B. Bergen has announced.

Tinnan will report to the president and will serve as a member of Management Council.

In this position, he has overall responsibility for the planning and direction of the activities leading to modifications and alternate uses of the Apollo command and service modules for extended space missions.

Tinnan has devoted nearly 17 years to the aerospace industry and the U.S. Air Force, providing extensive technical and top level management direction in research and development of advanced spacecraft, missile and aircraft systems. He joined the company in 1958.

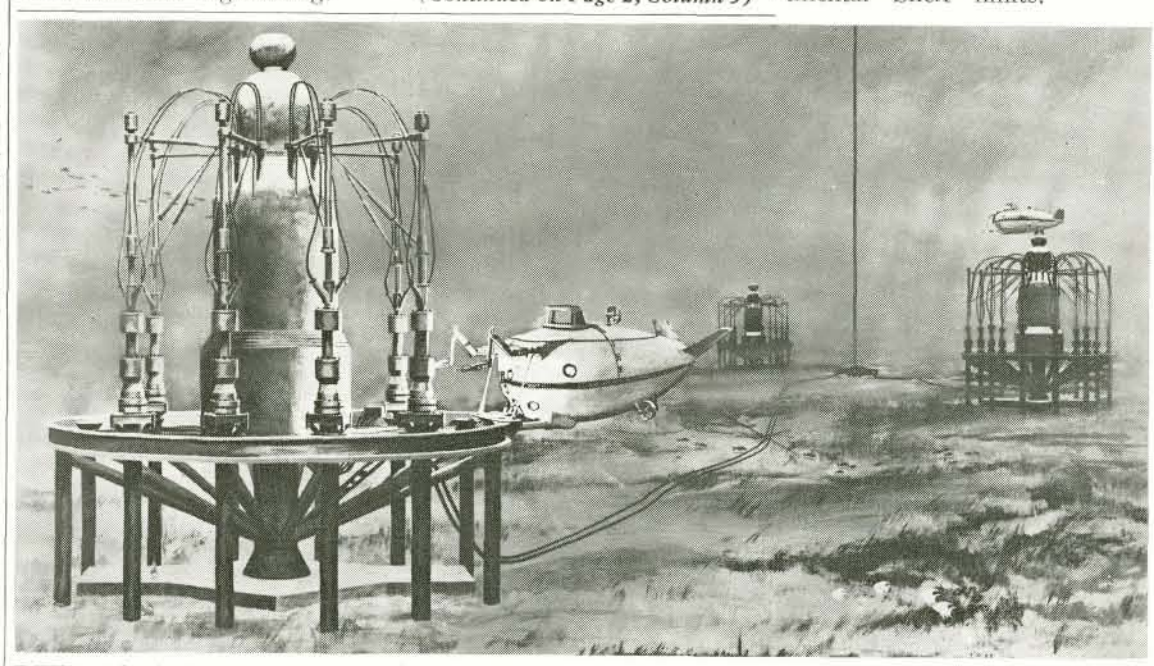
He holds BS and MS degrees in aeronautical engineering.

ANNUAL CHRISTMAS PARTY TOMORROW

The annual Christmas Party for children of all Space Division employees will be held tomorrow, 10 a.m. to 1 p.m., at the Downey Recreation Center, 12145 S. Woodruff, Downey.

Santa and his helpers will visit the Recreation Center to distribute Christmas stockings to children 8 years and under. Free refreshments will be served.

PRIDE ZERO DEFECTS



DEEP-OCEAN OIL — Concept shows sea floor petroleum production system developed by Mobil Oil and NR. Called "satellites," several production stations serve as central collection and maintenance points for groups of wells that are automatically serviced through legs of structures.

MISSISSIPPI TRAVELER — Bascule Bridge at NASA's Mississippi Test Facility is opened to permit passage of S-II-7, after the stage's 4,000-mile journey from Seal Beach. S-II-7 is due for static test firing at MTF in January, for shipment to Cape Kennedy in March. S-II-5 is scheduled for shipment to the Cape tomorrow; S-II-6 is scheduled to be shipped to KSC Jan. 24.

OPTIMISTIC OUTLOOK

NASA Official Notes Change in Attitude of All Who Work on Apollo

Optimism, appropriate to the holiday season, was reflected in an interview between John D. Hodge, manager, Advanced Missions Program Office, NASA Manned Spacecraft Center, and *Roundup*, MSC's newspaper.

"One of the things most noticeable to me when I first began to look at future programs some four or five months ago was a pervading sense of pessimism," Hodge recalled. "One heard of a lack of public interest, a declining budget, and a general uncertainty about where we are going. The facts, in proper context, do not warrant such pessimism.

"I think, the outlook for MSC in design work is very fruitful. I think we are looking toward a new generation spacecraft to be designed for flying in the time period of the mid-70s. And when you think in terms of five years of development, that means that very shortly we'll be getting into that business."

In what he described as a "new start for the mid-70s," Hodge said that NASA studies are underway for a sort of junior space station for the purpose of learning more about long-duration missions and for resupply and relief manning with reusable logistics vehicles.

"Decisions made now will help us make those programmatic decisions of the future. For example, a large space station that survives for two or three years in earth orbit is part of solving the problems of going to Mars, since manned Mars missions will last about that long."

Hodge's group was described as looking beyond Apollo's first lunar landing and beyond the earth orbital Saturn S-IVB stage workshop of the Apollo Applications Program. Under scrutiny is a step-by-step increase in stay-time on the lunar surface, the Roundup reported.

An advanced logistics vehicle reportedly under study would have onboard checkout equipment to eliminate elaborate launch complexes and would have the capability to make land landings.

Some study contracts already have been let. Additional study contracts for extended lunar exploration in the mid-70's are expected to be let next year, Hodge added.

PRIDE ADMINISTRATOR

Dwayne Gray Named Assistant to Q&RA Vice President McDermott

Appointment of Dwayne Gray as assistant to the vice president has been announced by Tom McDermott, vice president of Quality and Reliability Assurance.

One of Gray's primary responsibilities in his post will be the administration of the division PRIDE program, said McDermott.

Prior to joining the division last August, Gray was with the Martin Marietta Corp. for 10 years. Earlier, he served as chief of Flight Test at Fairchild Stratos.

At Martin Marietta, Gray was one of the originators and manager of the Zero Defects program. His responsibilities included the organization, planning, and implementation of the program which has since been adopted by more than 12,000 industrial organizations and government agencies throughout the world. He also served as a consultant of the Department of Defense on Zero Defect type programs.

Gray completed his formal education at Centenary College of Louisiana, is a graduate of the Industrial College of the Armed Forces, and has completed a number of postgraduate studies in management and engineering.

He holds a number of honors, the highest of which is the Department of the Army's Patriotic Civilian Service Award, given for outstanding contributions in management and quality control. Gray is a member of the American Society for Quality Control, the Board of directors of the American Society for Zero Defects, and the Army Material Command Consultant Staff for Zero Defects.

Explorers Post No. 562 Elect 1969 Officers

Executive Committee of the North American Rockwell-sponsored Special Interest Explorers Post 562 has selected new officers for 1968-1969.

A. C. Van Leuven has been named executive officer, R. F. Littlejohn, chairman, R. T. Hurteinne, advisor and R. L. Bliss, program chairman.

The Committee is planning a program of science lectures, tours, and fields trips for Explorer Post 562, which is comprised of top science students from nearby high schools and colleges.

'LOG OF APOLLO 7' ON AIR TUESDAY

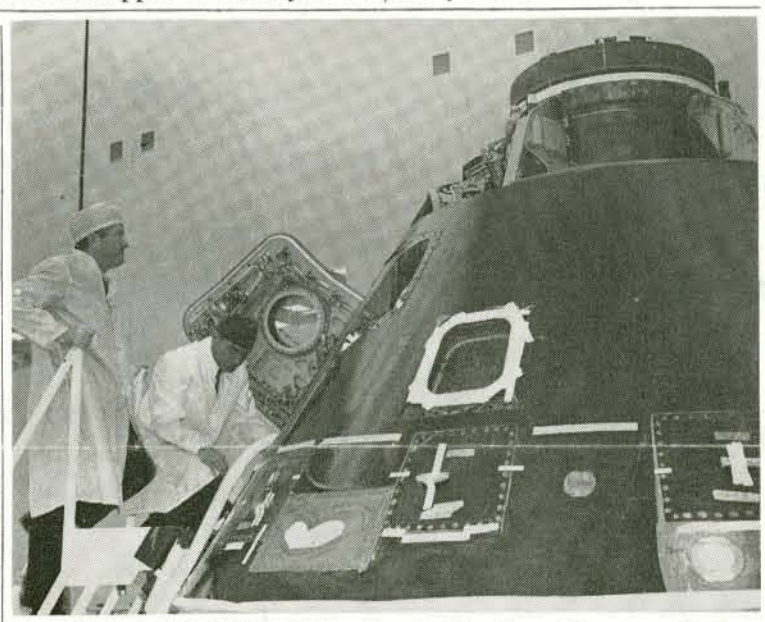
A comprehensive television program, "Log of Apollo 7" will be telecast over KCET Los Angeles (Ch. 28) Tuesday, beginning at 8:30 p.m. and will be repeated Sunday, Dec. 15, beginning at 9:30 p.m.

The color presentation was produced and directed by George Van Valkenburg for public television under an educational grant by North American Rockwell Corp. It will be hosted and narrated by Dr. Albert Hibbs, senior staff scientist, Jet Propulsion Laboratories, who regularly hosts the KCET series, "R & D Review."

In what may be the most comprehensive video report on the October Apollo 7 mission, the program will include launch and inflight footage described by the astronauts, and an interview with Dr. Homer Newell, NASA associate administrator for space science and applications.

Following the Los Angeles airing, the program will be shown on some 70 educational television stations throughout the nation. Employees who wish to notify friends and relatives outside this viewing area may obtain listings for other area showings from Public Relations, Extension 6468.

After Jan. 1, 16mm color films of the program will be available from Public Relations for borrowing to show to civic groups.



EYEING THE FUTURE — South Carolina Governor Robert McNair receives an inside look at Apollo Command Module 109 as Warren McQuillin, manager, Final Systems Installations and Test, explains crew hatch quick-opening counterbalance system.

Tribute Paid to Frank B. Gilbreth, Time and Motion Study Pioneer

N. J. Ryker, vice president, Research, Engineering, and Test, this week paid tribute to the late Frank B. Gilbreth, pioneer in time and motion studies.

Ryker spoke in New York City Tuesday at a national meeting sponsored by the American Society of Mechanical Engineers.

"No greater honor can be shown an engineer for his work than evidence that the principles and methods he pioneered have been extended and increasingly utilized for new and changing technological problems," said Ryker of Gilbreth, whose life and ideas were noted in a book and motion picture, "Cheaper By the Dozen."

Ryker said that many of the Gilbreth principles of motion economy and associated methods were applied to the development of the Apollo Command and Service Modules.

Formerly associated with Apollo Engineering himself, Ryker explained that "Fundamentally, Gilbreth applied techniques that consisted of 1) collecting and analyzing comparative data on man's performance of various tasks; 2) selecting, synthesizing and testing these task performances to find a better way and better equipment to do the job; 3) documenting these improved methods and equipments, and, 4) training personnel in the improved methods.

"The soundness of the logic and philosophy of this approach have permeated modern engineering and industrial practice to such an extent that even those working on Apollo who were unfamiliar with the historical development of Gilbreth's techniques have been significantly influenced.

"This way of analyzing and improving human operations was applied both to the spacecraft design and to the planning for the assembly of the highly sophisticated Apollo machine. Indeed, Frank Gilbreth would have enjoyed working on the problems faced by the Apollo builders.

"The ultimate method for refinement of the spacecraft is the actual flight operational experience. We were gratified that astronaut Wally Schirra, during the recent Apollo 7 mission, termed the spacecraft 'a magnificent flying machine.' The preliminary data we've examined following October's Apollo 7 mission have been highly favorable.

Countdown . . .

(Continued from Page 1, Column 4)

missions, which include a low earth orbit flight similar to Apollo 7, a high apogee mission up to 60,000 miles, a circumlunar operation in which the spacecraft would go around the moon and head earthward without orbiting the moon, and, finally, the lunar orbit alternative.

Crew activities during lunar orbit would include navigation and landmark sightings and photography. After 10 trips around the moon (each orbit would last about two hours), the Service Propulsion System engine would be fired again to boost the spacecraft out of lunar orbit onto a trans-earth trajectory. The spacecraft would land in the Pacific Friday, Dec. 27.

In addition to the importance of the Apollo 8 Mission for the nation and the Free World, this next Apollo flight has a special interest for the company: It will be the first manned mission aboard a Saturn V launch vehicle, which would include, of course, the first use of a Saturn S-II second stage for a manned mission.

R. E. Greer, vice president and S-II program manager, said, "We've produced a good stage, one that has been thoroughly tested. All of us at Seal Beach are looking forward to the Mission with confidence."

Joe Cuzzopoli, assistant program manager for the Apollo 8 spacecraft, reported from Florida that "We're right on schedule, thanks largely to T. J. O'Malley (of Launch Operations) and his team, and the wonderful support we've received from the Downey Project Office, under Ed Smith."

TWO MANNED SPACECRAFT OPERATIONS

Command, Service Modules 106 Being Readied for Apollo 10

Apollo Command and Service Modules 106 are now in the Manned Spacecraft Operations Building at Cape Kennedy, being prepared for the Apollo 10 mission to be launched during the second quarter of 1969.

Meanwhile, SC103 is at Launch Complex 39-A undergoing vital tests for the Apollo 8 Dec. 21 launch, and SC104 is in the Vehicle Assembly Building being prepared for eventual movement to Launch Complex 39-B and the Apollo 9 Mission in the first quarter of 1969.

The Apollo 10 mission, for which SC106 is scheduled, is planned as NASA's second manned flight of the lunar module. Mission possibilities range from earth orbital operations to a lunar orbit flight.

If a lunar orbit flight is made, the crew could descend to about 50,000 feet above the lunar surface, closer to the moon than earthlings will have been.

NASA has assigned as prime crewmen for the Apollo 10 mission, Astronauts Thomas P. Stafford, John W. Young and Eugene A. Cernan, who together have a total of nearly 250 hours in space.

The SC106 Command and Services Modules, and the Launch Escape System, arrived at Cape Kennedy Nov. 25 via the Super-Guppy aircraft, after leaving Downey the day before.

R. L. Benner, assistant program manager for SC106, said that "106 is the first spacecraft completely configured for lunar landing mission operations, including having aboard the vhf ranging device for lunar orbital rendezvous with the lunar module. This is the base line vehicle for all future Apollo missions."

Prior to "Bud" Benner's reassignment from 2TV-1 to assistant program manager for SC106, R. E. Thomas, of Apollo CSM Engineering, served in this role.

W. D. McQuillin, manager, Final Systems Installation and Test, pointed out that "Tribute must be paid to all the personnel who contributed their individual talents together to form the varied teams that brought the success of the SC106 delivery to the NASA ahead of schedule. Limited space makes it impractical to mention all by name, therefore, the various functions and their department heads and management will be named."

McQuillin paid tribute also to J. H. Hoffman, Manager, Electrical Systems Fabrication and Installation; A. W. Colley, General Supervisor, Mockup and Major Harness Installation; A. W. Johnson, General Supervisor, Systems Assembly Support; M. J. Walsh, General Supervisor, Spacecraft Electrical Panels and Box Fabrication; J. W. Swofford, Manager, Manufacturing Programming; T. R. Phillips, General Supervisor, Project Coordination; O. R. Guillot, General Supervisor, Scheduling and Change Control; E. F. Woodward, General Supervisor, Integrated Cost Planning and Performance Analysis.

Also, K. A. Walker, Manager, Manufacturing Control; J. J. Davis, Chief, Manufacturing Order Planning; J. E. Wells, General Supervisor, Manufacturing Engineering; R. B. Henderson, General Supervisor, Final Assembly and Checkout Support; W. B. Smith, Manager, Structures and Subsystems Assembly; J. R. Adam, Subsystems Assembly, Tubing and Mockup; A. F. Ciotta, General Supervisor, Bonding Structures; J. L. West, Jr., General Supervisor, Structures Assembly; R. M. Hansen, Manager, Systems Installations; A. G. Maier, General Supervisor, Service Module Installations, and W. L. Hinze, General Supervisor, Command Module Installations.

Also, Sam Bohrer, Manager, Manufacturing Quality Assurance; R. D. Giovanine, Chief, CSM Structures & Test Cells, Rollie Jones, Jr., Chief, CSM Installation; M. P. Hogarty, Manager, Test Quality Assurance, J. H. Dunn, Chief, Test Inspection.

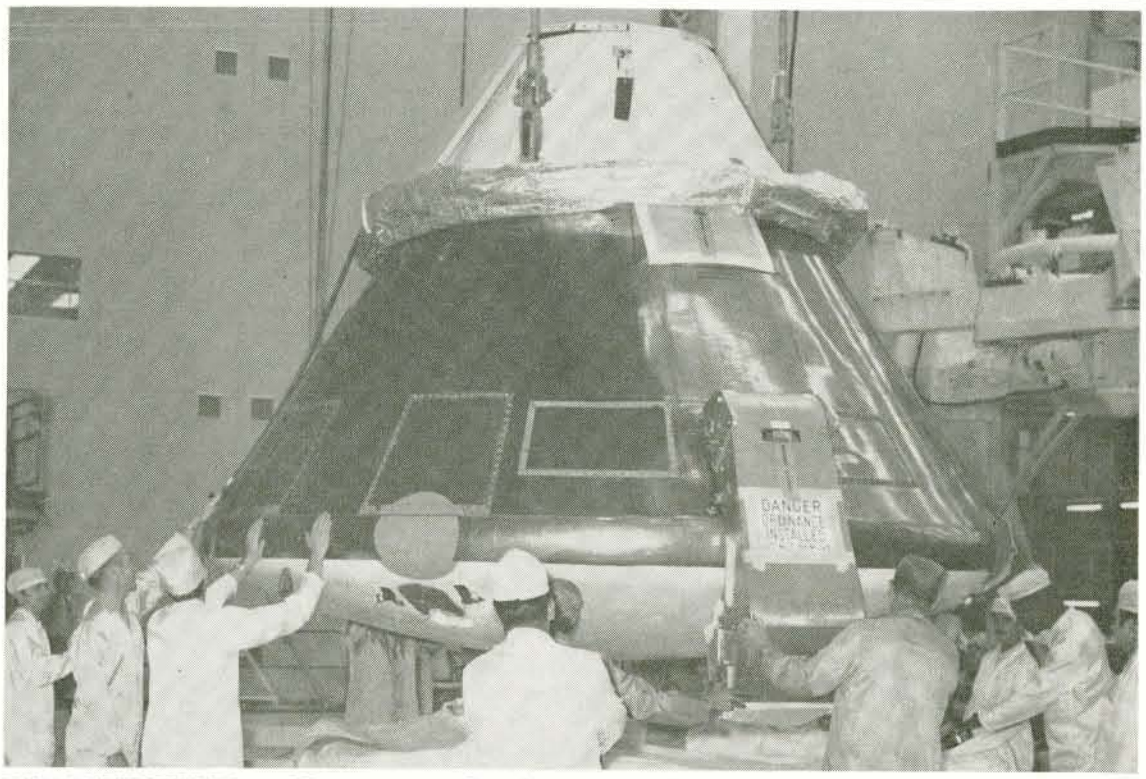
The Final Systems Installations was performed by General Supervisor, G. A. Huffman and team; the Pressure Test functions along with the Systems Test Laboratory activities was supported by General Supervisor, F. H. Beckman, Jr. and team.

J. M. Borger and D. A. Harn prepared the vehicle for the finishing touches for shipment while being supported by F. E. Underhill, Norm Little, N. E. Nelson and C. W. Leonard.

McQuillin said also that "The test and operations personnel as a team under the direction of R. G. Medina, senior test project engineer, performed successful individual systems tests, combined systems test and mission profile simulation, known as integrated systems tests.

Medina praised L. J. White, J. K. Arthur, R. A. Quinlivan, all test project engineers; L. F. Biondo, G. R. Kapin, and Ernie Johnson, all chief test conductors; Don May, Don Lovegren and John D. Ryan, all lead stack engineers; C. D. Caughren, Raymond Wilburn, and J. P. Casslo, checkout station supervisors.

McQuillin added that "The CSM project engineer from the NASA-Downey organization who supported the total phase was Wally Graves. The quality organization was supported by K. F. Jansen's group, also of NASA-Downey."



SC106 SHIPMENT — SC106 command and service modules slated for use on Apollo 10 Mission, were air-shipped from Downey Nov. 24, are now in Manned Spacecraft Operations Building at Cape Kennedy. Apollo 10 is to be launched in the second quarter of next year.

Sports Tickets Available

Both Downey and Seal Beach offices of Recreation & Welfare have for sale discount tickets to the Lakers (professional basketball) and Kings (professional ice hockey) games from December through March. Games are played at The Forum, Inglewood.

Speed Called 'Big' Error

In fatal traffic accidents, the principal driving error is speed, according to the Greater Los Angeles Chapter of the National Safety Council. The Safety Council stresses that the speed involved is not necessarily the posted speed, but speed too fast for existing conditions.

MEDICAL DEVICE BORN OF TU PROGRAM GOES TO HOSPITAL

The first medical hardware produced by the division under the Technology Utilization Program was presented last week to Rancho Los Amigos Hospital, Downey.

Paul R. Schwemler, division head of Technology Utilization, presented two transducers to Daniel Antonelli, Hospital engineer, who said that the transducers would be used as a tool in helping to fit artificial limbs.

The presentation was made at the second 1968 Technology Utilization Awards ceremony, at which 82 employees were honored for their innovations. Last February, 89 employees were honored.

The transducers, developed by Robert R. Walker, supervisor, and Charles G. Wickham, member of the senior technical staff, Laboratories and Test, are used both at Downey and at NASA's Manned Spacecraft Center, Houston, to measure impact pressures on the Command Module during water landings. Smaller than a dime, and weighing less than an ounce, the devices are unaffected by temperature, stress and acceleration. As many as 30 of these transducers have been distributed over the surface of the Command Module during water impact tests.

In another Award, Division President William B. Bergen presented a NASA check for $400 to Ernest T. Hillberg, of Research, Engineering, and Test. Hillberg earlier had received a $100 company check for his development of a load cell protection device.

This device is used to determine the weight and center of gravity of the Apollo Command and Service Modules. It permits also additional load measurements to be taken without repositioning the spacecraft, thus saving significant amounts of time.

David J. McHaffie, senior design engineer, Saturn S-II Engineering, received a $50 check from Capt. William C. Fortune (U. S. Navy, ret.), NASA Seal Beach representative. McHaffie developed a cable retraction mechanism which protects electrical cables from tangling and chafing during S-II checkout operations.

Saturn History Research Begun

David L. Christensen, research associate with the University of Alabama, last week visited the Space Division under NASA sponsorship, seeking information for a history of the Saturn program.

Last May, NASA's Marshall Space Flight Center issued a 30 month contract to the University of Alabama for the preparation of a comprehensive history of the Saturn program. Emphasis is to be centered on the origin of the Saturn program at Redstone Arsenal, and will include the design evolution of propulsion, structural and guidance concepts leading to the manufacturing, testing and operational phases.

During his stay in Southern California, Christensen, a member of the staff of the University's Research Institute, visited Space Division facilities at Seal Beach and Downey, as well as Rocketdyne and McDonnell Douglas at Huntington Beach. The visit was to make a survey of what historical material is available.

UCLA's Ruby Named to Lunar Institute Post

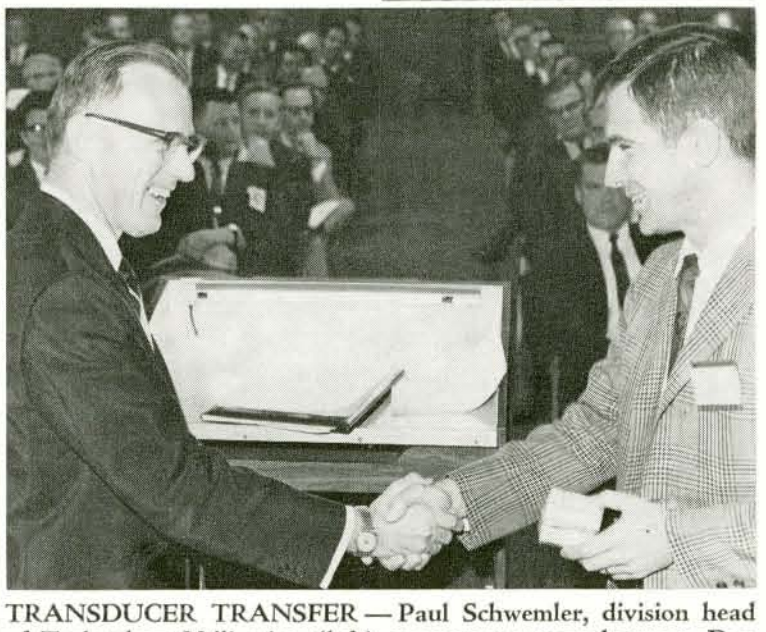
Dr. William W. Ruby, professor of Geology and Geophysics at the University of California at Los Angeles (UCLA), has been appointed director of the Lunar Science Institute in Houston, Dr. Frederick Seitz, president of the National Academy of Sciences, announced.

The Academy has accepted interim responsibility for operation of the Institute until a consortium of universities can be formed can assume direction.

Chief objective of the Institute is to provide a base for academic scientists participating in the lunar exploration program or who will be working in the Lunar Receiving Laboratory or using other facilities of NASA's Manned Spacecraft Center, Houston, devoted to study of the moon.

Lunar samples gathered by Apollo astronauts will be brought first to the Lunar Receiving Laboratory. The Institute also will serve as a center for the analysis and study of lunar data obtained as a result of NASA's unmanned missions, such as Surveyor and Orbiter.

YOU ARE THE "I" IN PRIDE



TRANSDUCER TRANSFER — Paul Schwemler, division head of Technology Utilization (left) presents two transducers to Dan Antonelli, engineer for Rancho Los Amigos Hospital, Downey. Hospital will use transducers to help fit artificial limbs.

OUTSTANDING — Lou Ranier, left, of Photographic, is congratulated on presentation of quarterly Cost Reduction "Outstanding Service" award by Sherman Ellis, vice president of Administration. Ranier was honored for his contributions to program and cost reduction efforts in his daily assignments.

Materials and Processes

Consolidation of Scattered Labs to Boost Capability

Improved capability will result from consolidation of 20 scattered Materials and Processes Laboratories into a unified area in Building 4, D. K. Bailey, manager, Laboratories and Test, said last week.

The 200 Materials and Processes Laboratories personnel had been conducting their tests in seven widely separated buildings prior to consolidation. This latest move continues the division trend to consolidate most division laboratories into Bldg. 4, explained W. J. Leseman, Jr., director, Facilities and Industrial Engineering.

M&P Laboratories affected included those devoted to adhesives and coatings, analytical chemistry, brazing and soldering, chemical processes, elastomer seals and sealants, emission spectroscopy, fuels and lubricants, gas chromatography, gas and propellant analysis, heat treating, lead detection, plastics and bonding, mechanical properties, mechanical joining and fasteners, metallurgy, physical chemistry, spectrophotometry, thermal physical properties, welding, and X-ray diffraction.

D. P. Cooper, manager, M&P Laboratories, and H. L. Pontious, assistant manager, listed some of the areas of current engineering development activity:

- Boron epoxy composites for lightweight, high-strength vehicle applications;
- Graphite epoxy composite systems for special space applications;
- Super insulation for storage of fuel and cryogenic materials for Earth-orbital and interplanetary spacecraft;
- Effect of nuclear radiation on polyurethane foams and on boron and/or graphite epoxy systems;
- Boron and aluminum matrices for spacecraft structures;
- Bonded metal honeycomb fabrication and testing in support of future aerospace applications;
- Chem-milling of refractory metals for space engine applications, and,
- Utilization of magnesium for specific parts of unmanned satellite applications.

Relocation and consolidation of the various laboratories into the present area was completed in 65 days. Consolidation move coordinators were, William Sabo, Sr., of Materials and Processes, and, L. K. Smoot and P. E. Mallon, of Facilities and Industrial Engineering.

HOLIDAY SCHEDULE DATES ANNOUNCED

At Christmas, facilities will be closed Monday, Dec. 23, through Wednesday, Dec. 25. Regular work shifts will be in effect on Thursday, Dec. 26, 1968.

At New Year's the plant will be closed Tuesday, Dec. 31, and Wednesday, Jan. 1. Regular work shifts will be in effect on Thursday, Jan. 2, 1969.

Only employees needed for special assignments will work on the days the plant is closed. Those required to work will be so notified by their supervisors.

Employees will receive eight hours' pay for each of the five holidays, Dec. 23, Dec. 24, Dec. 25, Dec. 31 and Jan. 1, in accordance with existing policy.

Toastmasters Name Charles Yee President

Charles Yee, of Apollo Guidance and Control, has been elected president of the Downey Space Toastmasters, Club 513F, effective Jan. 1.

Others elected, also from Apollo Engineering, are, Bob Peercy, Jr., educational vice president; Will Tolles, secretary, and, Burt Rawding, treasurer.

In addition, Herb Seliger, was named administrative vice president, and John Zandovskis, sergeant-at-arms. Both Seliger and Zandovskis are from Downey Facilities and Industrial Engineering.

The speakers club meets at 5:30 p.m. Wednesdays at the Memory House Restaurant, Downey.

NewsWire

A new company, Gould Ionics, Inc., has been formed by Gould-National Batteries, Inc., and North American Rockwell Corporation to produce electrochemical timers and batteries incorporating solid electrolytes. The announcement was made simultaneously in the past week by William T. Ylvisaker, chairman of the board of Gould-National in St. Paul, Minn., and J. L. Atwood, president and chief executive officer of North American Rockwell.

Southern California Edison Company has joined the fast breeder nuclear reactor program under way at Atomics International, it was announced last week by John R. Moore, president of North American Rockwell's Aerospace and Systems Group.

Ground was broken Monday for Autonetics' 1,000,000 square-foot computer research and manufacturing center in south Orange County, to be the world's largest electronics manufacturing building.

Autonetics has begun production of the advanced avionic equipment for the U.S. Air Force's FB-111A strategic bomber. The first production system was delivered to General Dynamics, Fort Worth, Tex., last week. It will be installed in a production model of the aircraft. Production aircraft already are flying with development versions.

Two more hours of XB-70 flight experience are in the books following the program's 127th flight Tuesday forenoon. Primary purpose of the mission was to measure the aircraft's response to artificially induced and natural turbulence. Measurements were taken at Mach .9 and at Mach 1.6. Stability and control measurements were also obtained during the flight.

SPI Honors Ray Young, C.S. Cerquettini

Tony Cerquettini of Space Division' s Saturn S-II Manufacturing and Raymond Young of Tooling have been honored by the Society of the Plastics Industry's Plastic for Tooling Division.

Young was elected chairman of the organization, and Cerquettini won acclaim for his presentation of advanced vacuum tooling procedures used in the fabrication of the Seal Beach-built Saturn S-II stage.

Young has been active in the SPI for several years, participating on a national level. Last year he served as vice chairman and program chairman of the local division.

Both Young and Cerquettini have been instrumental in the growth of the annual SPI Plastics for Tooling Seminar held at Purdue University.

Kuenne Named Deputy Sheriff

Robert W. Kuenne, management system analyst, Program Planning and Controls, is serving as a Reserve Deputy Sheriff for Orange County and is a members of the Headquarters Reserve Unit.

Plans Announced for New Corporate Offices Building

North American Rockwell Corporation has announced plans to build a new $2.5 million corporate headquarters building in El Segundo to house the staff directing its domestic and international activities.

Plans call for an eight-story air conditioned building of reinforced concrete and solar glass which will contain approximately 100,000 square feet of floor space. It will have a rooftop heliport for use by the company's helicopters.

Welton Becket and Associates are in charge of architecture and engineering. They are nationally known as architects of such major projects as the Los Angeles Music Center, the Kaiser Center in Oakland, Xerox Square in Rochester, N.Y., Ford Division Headquarters in Dearborn, Mich., Humble Oil Building in Houston, Texas, and Prudential Square in Los Angeles. They also were master planners of Century City, Los Angeles.

The new structure will be located immediately west of the company's Aerospace and Systems Group Executive Office building, at 1700 E. Imperial Highway. Corporate headquarters have been temporarily located at 2300 E. Imperial Highway since North American Rockwell was created through the merger of North American Aviation, Inc., and Rockwell-Standard Corporation on Sept. 22, 1967.

R. K. Wilson, vice president —Facilities and Industrial Engineering, Aerospace and Systems Group, said planning and construction of the new building will be under the direction of H. G. Tibbett, director — General Services.

Louis Lavison of SD Named President of Credit Union Board

Louis E. Lavison of Space Divison, has been appointed president of the board of directors of the NAA Employees Federal Credit Union. Lavison, currently completing his 16th year as a director and Credit Committee member, will fill the unexpired term of Gerard A. Smith who has resigned from the company.

Merle Alexander, Rocketdyne Division, has been appointed board vice-president. Alexander has served a total of 19 years as a director.

Classified Ads

FOR SALE

AUTOS

'64 Vette F/B, 4 spd., $1,400, 596-4110.
'66 MGB, Wholesale + $50, 868-4024.
'61 Corvair, Stick, $300, 528-0829.
'59 Rambler Sta. Wag., OW 7-3359.
'62 Ford Conv., $295.
'66 Ford Galaxie, 4 dr., 941-7062.
'57 T-Bird, $1,995, 213/OX 3-1101.
'61 Comet, 6 cyl, stick, $125, 479-5229.
'64 Ford Club Wag. Camper, 714/530-2828.
'60 Chev. - 6, ½ ton, $500, 630-4880.
'64 VW, $950, 869-8474.
'68 VW Sq. back, $1,850, 213/634-7344.
'68 VW Sq. back, $1,900, 213/322-9242.
'64 Chev. Impala SS, air, pwr steering, brakes, $1400. Taylor (D), 674-7614.

MOTORCYCLES

'64 Honda 'Dream" 300, $350, 847-6379.
Suzuki, 120cc, 213/699-2833.
'66 Triumph TR6, 650cc, $895, 868-7463.

FOR SALE

HOMES

3 bdr., Townhouse, Norwalk, 868-4684.
3 bdr., Seal Beach, $30,000, 430-3066.
3 Bedroom House, 2100 sq ft. near schools, Hawthorne. Leone (D), 675-5694.

APPLIANCES

Hotpoint Frid., 12', $50, ME 4-2546.
Philco Frid., 12½', $65, 714/826-1396.

FURNITURE

Couch w/chair, 714/962-6465.

BOATS

18' Day Cruiser, 50 hp., Trailer/Bait Tank, $900, 213/374-8896.
23' Inboard Cruiser, $2,150, 772-3411.

REAL ESTATE

Lot, San Clemente, $5,200, 213/964-5823.

PETS

Cockerpoodle pups, blk., $5. 213/430-0330.
Chihuahua pups, min., AKC, 923-5714.
Dalmatian pups, AKC, Black/liver spots, 213/442-5457.
Cocker Spaniel, free, 927-9955.

MISCELLANEOUS

Two boys' bicycles, call evenings. Rollo, 784-3234.
Reclining Chair, 714/871-3469.
Wollensak Tape Recorder, 869-4324.
'61 Kencraft travel trailer, 25', 714/871-0516.
Schwinn Bike, boys, 3 spd., 861-1028.
21" color TV, $150, 537-4024.
Outboard motor, 5 h.p., 535-0531.
Spinet Piano, ED 3-0989.
18" beginners bike, w/train. whls., $15, 521-6488.
Curta Calculator, $100, 714/595-6436.
Lionel trains w/equip., 714/826-1396.
Canon Zoom 8 Camera, elect/wide ang. lens/case, 473-7010.
Bike, Girls w/training wheels, TE 1-2077.
HiFi, Audio Empire Turntable, 213/869-4011.
HiFi, Scott equip., components, 714/827-7534.
Boots, sz. 4 & 6, w/skis, 861-1028.
Skis, Head St'd, 6' 11", 255-6137.
Piano, maple, TO 6-2448.
Bolex, 16 mm, w/sound projector, 535-0531.
Baby Swing Set, $6, 866-1890.
Electric accordion, $300, 438-6409.
Shirts, new, tailor made, 15 - 32 white, drip-dry, 35% cotton, $4 each. McClure (D), 675-0626.
Saddle, plain, working western; 2 bridles, stand, $70. Hill (D), 547-1069.
Desk, Knee hole, $10. (2) wood cabinets sliding doors, 2' x 4' x 4½" high, $20 each. Susoeff (D), FR 8-1615.

WANTED TO BUY

Small home organ, reasonable, 869-8347.
Blue Chip Stamp Books, $1.50, 692-6462.
Honda 90, 772-3411.

RIDE WANTED/OFFERED

Telegraph, SFS, to B/3 Dny., 7:30 - 4:00, UN 4-5267.
Magnolia & Talbert, to S.B., (offered) 962-4139.

ODDS AND ENDS

Optimizer Tester, 7-in-1, $15, 330-8969.
Heath Grid Dipper, $15, 322-1938.
Green Mollies, 5/$1.00, 861-2473.
Mallory Ignition, Chry/440 eng., 866-2120.
Chrys. Marine Engine, $200, 772-3411.
Green Stamps for Blue Chip Stamps, 968-1185.

FOR RENT

House Trailer, 633-5022.
1-2 bdr., furn., $110 - 130, Pool, 862-1722.
Big Bear Cabn., $15/day, 430-3066.
1 bdr. Apt., partly furn., w/garage, GE 3-5321.
3 Bedroom Huse, fireplace, 2 children, no pets, $175 month. Ruthledge (D), 868-6160.

Manned Vacuum Test Completed; Will Assist in Lunar Missions

The Apollo Lunar Module successfully completed a manned vacuum chamber test in mid-November, helping to clear the way for manned missions with the vehicle.

Astronaut James B. Irwin, and Gerald P. Gibbons, a Grumman Aircraft Engineering Corp. consulting pilot, were crewmen for the final manned portion of the test, which simulated liftoff from the lunar surface and rendezvous with an orbiting command module.

The LM is due to be launched with the Apollo 9 mission, scheduled for the first quarter of next year.

SPACE DIVISION Skywriter

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