Brown & Root/NORTHROP

HOME-AWAY-FROM-HOME FOR APOLLO 11 ASTRONAUTS -- NASA's Lunar Receiving Laboratory, staffed by scientists of Brown and Root/Northrop, will be used to quarantine the world's first men to set foot on the moon. The astronauts, and the samples of lunar material they bring back, will be isolated at the Houston, Texas, facility for preliminary examination. Personnel of Brown and Root/Northrop, a joint-venture company, provide scientific and technical support to this laboratory as well as four other facilities at the Manned Spacecraft Center.

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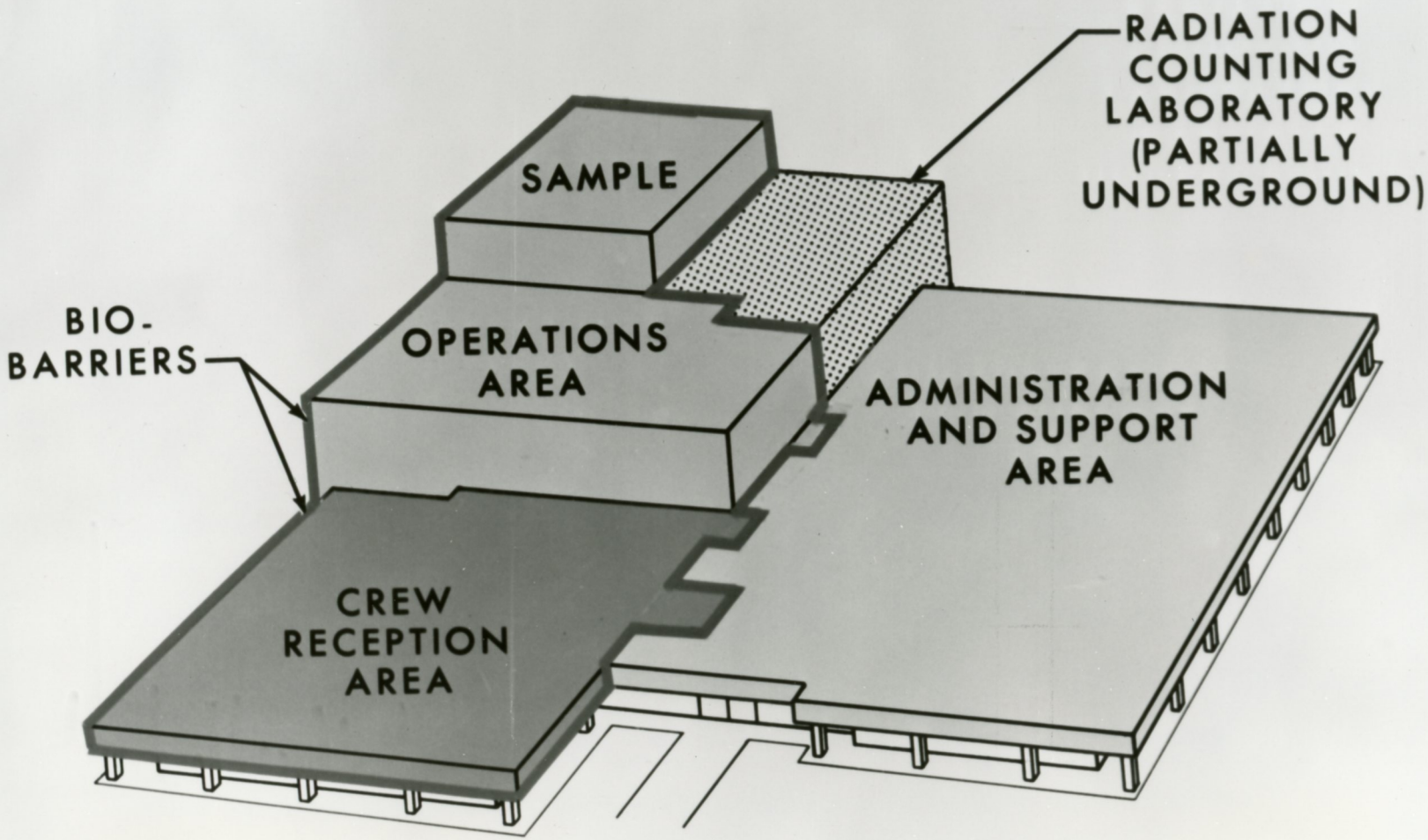
LRL FUNCTIONAL AREAS



QUARANTINE BUILDING FOR APOLLO 11 CREW -- The first men to return from the moon will undergo quarantine in NASA's Lunar Receiving Laboratory at the Manned Spacecraft Center. In this view the four key laboratory areas are shown. Personnel of Brown & Root/Northrop, a joint venture firm, provide scientific and technical support to the laboratory located in Houston, Texas.

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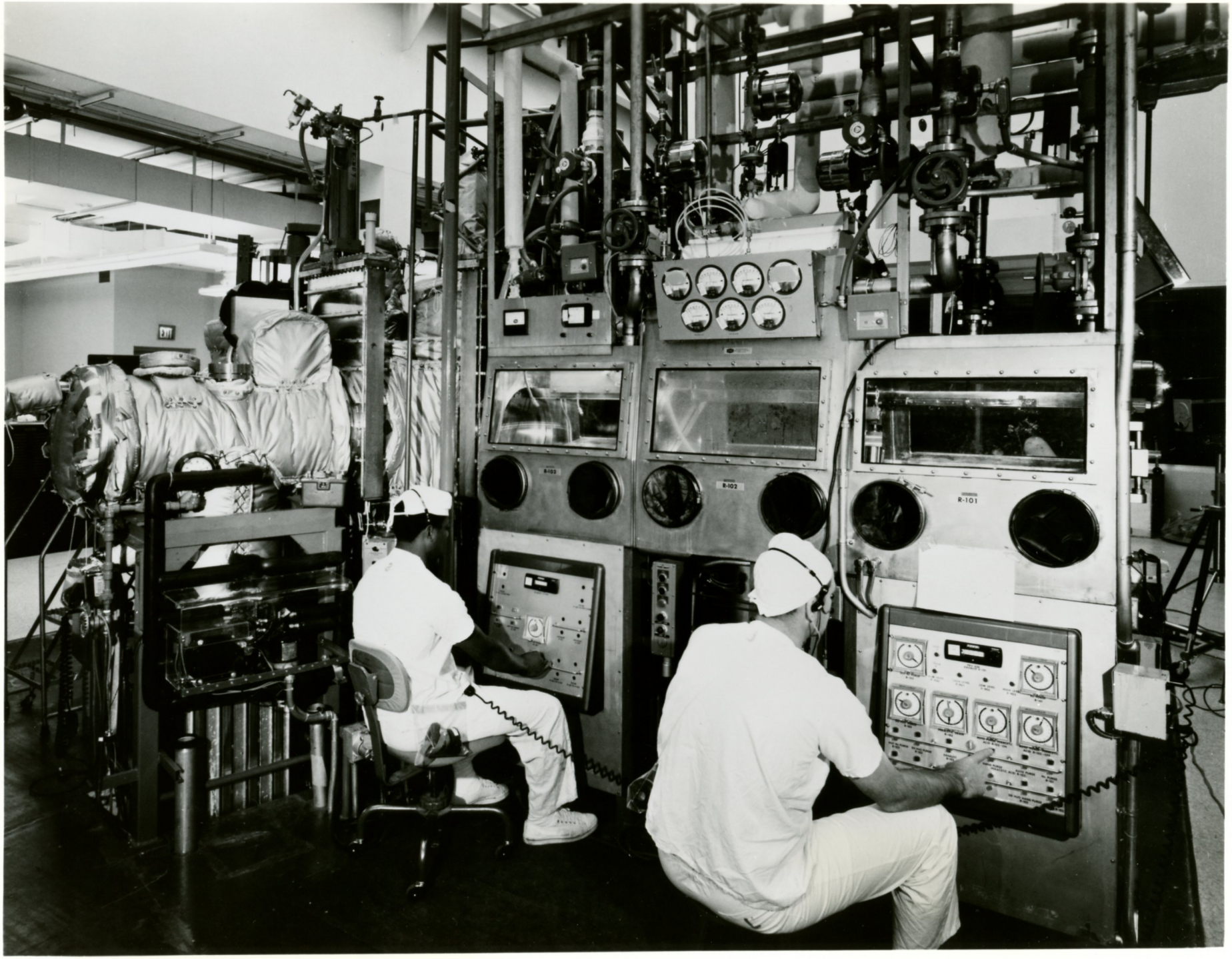
EXIT
R-103
R-102
R-101

EXTRATERRESTRIAL SAMPLES gathered by the crew of Apollo 11 will be processed and distributed to scientists around the world from the Vacuum Laboratory at NASA's $15-million Lunar Receiving Laboratory, Houston, Texas. The laboratory is manned by scientists and technicians of Brown & Root/Northrop, a joint-venture company. Sample containers will enter the sterile airlock, left, where they undergo decontamination by ultraviolet light before moving to the center cabinet for an acid bath. Hot sterile nitrogen is used at the last station to dry the boxes before they are opened.

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ROWN&ROOT
NORTHROP

HOME FOR APOLLO ASTRONAUTS -- NASA's $15-million Lunar Receiving Laboratory, staffed by scientists of Brown & Root/Northrop, will be used to quarantine the world's first men to set foot on the moon. The astronauts, and the samples of lunar material they bring back, will be isolated for approximately 21 days while undergoing preliminary examinations. Shown here is the combination kitchen, dining room and recreation area within the 83,000 square foot biological barrier. Personnel of Brown & Root/Northrop, a joint-venture company, provide scientific and technical support to this laboratory as well as four other facilities at the Manned Spacecraft Center, Houston.

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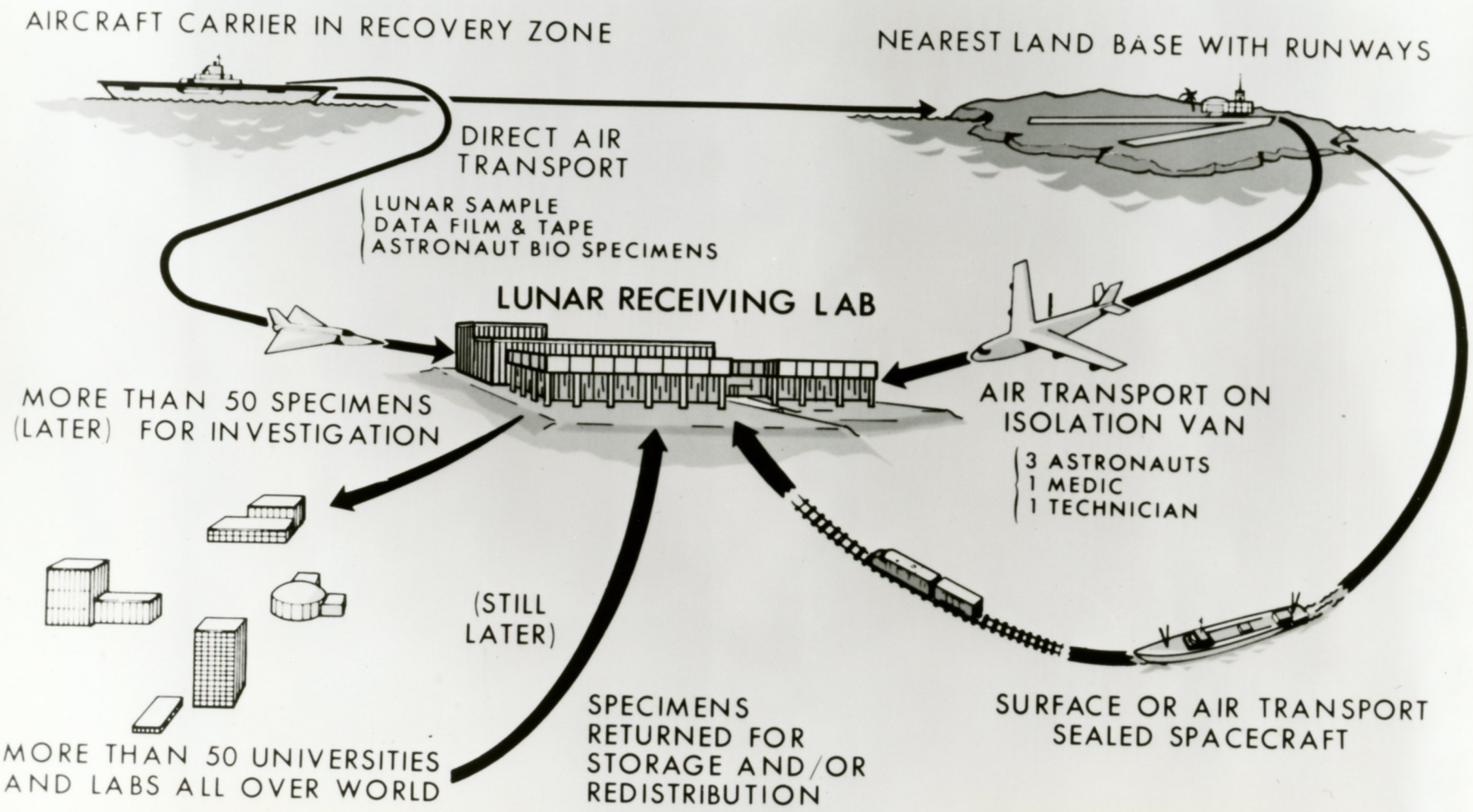
TRANSPORTATION TO AND FROM LRL



MOON-CONQUERING ASTRONAUTS TO USE SPECIAL FACILITY -- Astronauts of the greatest space adventure in history, Apollo 11, and the samples of lunar material will undergo quarantine in a special NASA facility at Houston, Texas. Called the Lunar Receiving Laboratory, the building is the last stop for men and materials after their 8-day voyage to the moon and back. Lunar samples will be distributed to universities and laboratories all over the world from NASA's Manned Spacecraft Center.

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NEWS

Brown & Root/NORTHROP
A JOINT VENTURE

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FIRST MEN TO RETURN FROM
MOON WILL SPEND TWO WEEKS
IN LUNAR RECEIVING LABORATORY

HOUSTON, Texas -- Astronauts Neil Armstrong and Edwin Aldrin, the first men to set foot on the moon, and Michael Collins, command module pilot, will undergo two weeks of rigid quarantine here, behind a biological barrier in the Lunar Receiving Laboratory.

Staffed by NASA and Brown & Root/Northrop scientists, the laboratory will be the home of the astronauts after they return from their eight day voyage into space. The samples of moon surface material they will gather from the western edge of the Sea of Tranquility also will be brought here for analysis.

Brown & Root/Northrop is a joint venture of Brown & Root, Inc., Houston, Texas, and the Northrop Corporation of Southern California. The organization provides technical support services for a number of Manned Spacecraft Center facilities.

Under supervision of the two directorates, Science and Applications and Medical Research and Operations, at the Manned Spacecraft Center, the astronauts will stay in quarantine to prevent possible contamination of the earth's atmosphere with potentially dangerous particles from the lunar surface.

(MORE)

The isolation or quarantine period is scheduled to last 21 days after liftoff from the lunar surface.

The $15-million laboratory will be the focal point where astronauts Armstrong, Collins, and Aldrin tell their story to the rest of the world. Here, also, the international scientific community will begin an intense study of the contents of the two boxes holding material from the moon's surface programmed to be collected by Armstrong and Aldrin.

While the three men are being carefully examined, the samples will undergo preliminary physical and chemical tests within a biological barrier much like the one surrounding the crew's area.

Heading the 180 man Brown & Root/Northrop effort in the Lunar Receiving Laboratory is Tom Slack. Reporting to him and scheduled to direct Brown & Root/Northrop efforts in the quarantined crew reception area, is Mel Graham, logistics operations officer and senior research analyst.

Quarantined with Graham and the three astronauts will be Laboratory Technologists John Potter, Jerry Terrell, Hank Knippa and Charles Gill, who are specialists in clinical chemistry, hematology, enzyme analysis and the immunology program. Each technologist is cross-trained in all biomedical requirements.

Also reporting to Graham is Chief Steward William Woods and Assistant Stewards Jessie Stewart and Bobby Lartigue. Rounding out the team is Harry Cantu, x-ray technologist.

(MORE)

FIRST MEN
3 - 3 - 3 - 3

Dr. Charles Truby, clinical biologist, will head the Brown & Root/Northrop scientists working on biological investigations of the lunar samples. This team will assist in conducting experiments which will provide a basis for decision upon any possible threat to earth life systems.

In the Physical Sciences Area, Dr. Leonard Jones will supervise the Brown & Root/Northrop group that will operate the equipment and do the initial handling of the returned moon samples as well as data collection.

Frank Fato is responsible for all Brown & Root/Northrop engineering and operations within the laboratories.

NASA personnel, including a flight surgeon, a clinical pathologist, a photographer, a public affairs officer, and a landing and recovery technician, will be quarantined with the astronauts.

Even though the possibility of harmful germs or bacteria existing on the moon is considered remote, science--and these experts--are taking no chances. It is equally important that the returned lunar samples not be contaminated by earth organisms which, if such contamination occurred, might lead to false conclusions about the existence of living organisms on the moon.

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OPERATIONS AT NASA'S
LUNAR RECEIVING LABORATORY

Three years ago ground was broken for the Lunar Receiving Laboratory (LRL) where, within the month, American scientists will have their first look at samples of our nearest neighbor, the moon. The LRL will be the focal point where the Apollo 11 crew will tell the story of their lunar visit and the national and international scientific community will begin an intense investigation of moon material.

The Lunar Receiving Laboratory will be the final stop for Apollo crewmen following their lunar journey. For the samples of the moon brought back, it will be the first stop in a series of scientific investigations.

Staffed by personnel of Brown & Root/Northrop, a joint venture, the laboratory is under the supervision of the Science and Applications Directorate at NASA's Manned Spacecraft Center.

Main purposes of the multi-level research structure are:

..... Quarantine and testing for possible harmful organisms in the lunar samples, spacecraft, and crew.

..... Scientific sample investigations that must be accomplished within the quarantine period.

(MORE)

..... Repackaging and distribution of the lunar samples to scientists throughout the world for detailed investigation after the quarantine period.

NASA's Office of Space Science and Applications has selected 149 scientists to perform more than 120 experiments of varying scope and magnitude on the initial samples. Investigators from the United States were selected from 21 universities, two industrial firms, three private institutions and 10 government laboratories. Thirty-three experiments were awarded to 27 foreign scientists representing England, Germany, Canada, Japan, Finland, and Switzerland.

Astronauts returning from the moon will be transferred to the LRL following their recovery in the Pacific. The lunar samples--photographic film, tapes, and other flight items--will be flown by jet directly to the laboratory where they will undergo a battery of analytical processes.

The crewmen will return to the LRL in a specially designed quarantine facility unit which resembles a mobile home. They will enter it through a special airtight plastic transfer tunnel, after being brought aboard the recovery ship.

The astronauts, an MSC physician and a recovery technician, will remain in the mobile facility during the trip to Houston. In Honolulu, the unit will be transferred to dockside, then to an airport where it will be placed aboard a C-141 transport for the flight to Houston. It is anticipated the time from recovery to the time the mobile facility reaches the LRL will not exceed two days.

(MORE)

After the crewmen leave the Apollo spacecraft and enter the mobile unit, the command module will be resealed. It will be moved to Houston where it will be placed in separate quarantine, adjacent to the crew quarters. Access to the spacecraft interior will be permitted only after the 21-day isolation period is ended. It will, however, be available within this controlled area for inspection.

The Lunar Receiving Laboratory building consists of three adjacent and related functional areas--Crew Reception, Sample Operations, and Support and Administrative.

The Crew Reception Area will serve as quarters for the flight crew and attendant technicians for the period during which the three astronauts will be debriefed and examined. Among the 17 attendant employees (including 10 from Brown & Root/Northrop) will be medical doctors and technicians, housekeepers, and stewards. These rooms also have the capability to serve as a contingency quarantine area in the event it is necessary to place people from the Sample Operations Area in quarantine.

Like the Crew Reception Area, the Sample Operations Area is contained within a biological barrier system. This barrier is unique in that it will protect the gathered lunar surface samples from earth contamination as well as protect the outside world from possible contamination by lunar materials.

(MORE)

Studies of the returned material will be performed in the Sample Operations Area, which includes vacuum, magnetics, gas analysis, biological test and radiation counting laboratories in addition to the physical-chemical test area. The entire Sample Area, with the exception of the radiation counting rooms, is within a second biological barrier much like the one surrounding the crew's area.

Containers holding lunar samples first will be brought to the LRL vacuum laboratory. There they will be placed in the ultraclean vacuum system and opened by Brown & Root/Northrop technicians. After preliminary examination of the material, it will be divided, repackaged and transferred to the Biological Preparation and Radiation Counting Laboratories.

A Gas Analysis Laboratory is available to monitor amounts and types of gases given off by the lunar material and such gases that may be contained either within the sample or within the sample containers.

The major responsibility of the Biological Test Laboratory will be to determine if there is life in the material that may multiply on earth. This will be accomplished by the introduction of lunar surface samples into small, germ-free animals and plants.

This laboratory is equipped to do preparation and analysis of exposures to the lunar samples of germ-free and normal animals including mammals, fowls, and invertebrates, plus plants and tissue cultures, through histological, anaerobic, microbiological and biochemical techniques. Laboratory personnel also will perform studies of the crew microbiology, virology and clinical chemistry.

LUNAR LABORATORY - 5 - 5 - 5 - 5

A Radiation Counting Laboratory is located 60 feet underground. This lab will assay low background radioactivity of the samples and is located underground to shield samples from the effects of earth's natural radiation.

After the samples have been through the Vacuum System for examination and identification, they pass to the Physical-Chemical Test Laboratory. It is here that geochemists will test the lunar surface samples for reactions with atmospheric gases and water vapor. In addition, detailed studies of the mineralogic, petrologic and physical properties of the sample will be made.

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NEWS

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FACT SHEET

LUNAR RECEIVING LABORATORY

The $15-million Lunar Receiving Laboratory--a three-story, 83,000 square feet research facility located at NASA's Manned Spacecraft Center, Houston, Texas--is designed to provide biological containment of specimens, spacecraft, and personnel during the 21-day Apollo 11 quarantine period.

The laboratory is divided into three primary functional groups: Crew Reception, Sample Operations, and Administrative and Support.

CREW RECEPTION

This area is enclosed within its own biological barrier, consisting of sealed building construction, filtration of supply and exhaust air, and sterilization of all solid and liquid effluents. A slightly lower air pressure inside the room prevents outflow of any possible contamination.

Designed primarily as the quarantine section for the astronauts and spacecraft, the Crew Reception Area (CRA) is the actual living quarters for quarantined personnel. It includes bedrooms and offices for the astronauts and astronaut medical team, and a dormitory, lockers, showers and toilet facilities.

(MORE)

A closed circuit television and standard communications system connects the astronaut debriefing room with the press briefing room, allowing interviews of crew members by non-quarantined personnel.

The kitchen contains the latest in microwave and infrared cooking facilities. The dining room and lounge area has a television set and small library; and a room containing standard gym and exercise equipment allows the quarantined personnel to pursue a physical exercise program.

Complete medical examination rooms are enclosed within the biological barrier of the CRA, and include an audio booth, minor surgery room, microbiology and biomedical laboratories, x-ray facilities, and a computer room.

SAMPLE OPERATIONS

The Biological Test Laboratories are housed in this area. Their key purpose is to test returned lunar samples, spacecraft and crews for the possible existence of harmful moon organisms. All exhaust air passes through two absolute biological filters and is incinerated at 550° F. before it is released. The laboratory houses sterile atmosphere cabinetry with a leakage rate of less than .05 ounces of gas per year.

Steam ethylene oxide sterilizers, a phase contrast microscope and stereo microscope, and special grinding, pulverizing, and centrifugation equipment for preparation of samples are also included. This area also contains the vacuum pumps capable of producing pressures of 10^{-12} torr (approximately 1.5-million feet altitude), vacuum and magnetics lab, gas analysis chamber, and the radiation counting laboratory shielded by five-foot thick concrete walls and 26 tons of lead.

(MORE)

LABORATORY FACT SHEET - 3 - 3 - 3 - 3

ADMINISTRATIVE AND SUPPORT

Biological Support Laboratories are located adjacent to the Sample Operations Area to facilitate control, operation, and circulation of both personnel and materials.

The plant environment laboratory within this section contains four controlled environmental chambers utilized to obtain growth and development data on 21 plant species. It also houses an electron microscope capable of magnification to 80,000 x.

Brown & Root/Northrop, a joint venture of Brown & Root, Inc., and the Northrop Corporation, provides scientific services to NASA in the biological and physical sciences areas, as well as the crew area, of the Lunar Receiving Laboratory.

Mel G. Graham, senior research analyst at the LRL, will head a Brown & Root/Northrop team of x-ray and laboratory technologists, as well as three stewards, who will undergo quarantine with Apollo 11 astronauts Armstrong, Collins and Aldrin.

The firm also provides 180 technical personnel for the operation of the vacuum containment and lunar sample transfer system and the monitoring and verification of the biological containment barrier.

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FACT SHEET

BROWN & ROOT/NORTHROP

Brown & Root/Northrop, with its more than 800 employees, provides scientific and engineering support for NASA's Manned Spacecraft Center, Houston, Texas.

Brown & Root/Northrop, a joint venture of Brown & Root, Houston, and the Northrop Corporation of Southern California, was formed in 1964 for the purpose of joining the capabilities of the two companies to provide the specialized services required for the United States' massive space effort.

Northrop Corporation is a diversified, advanced technology company operating on a worldwide basis principally in aerospace, communications, and electronics. Brown & Root, Inc., a subsidiary of the Halliburton Company, is one of the largest engineering and construction firms in the world.

Services to NASA include operation and maintenance of the new $ 15-million Lunar Receiving Laboratory as well as the Space Environmental, Crew Systems, Thermochemical Test and Experimental Mechanics Laboratories.

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06069/dg

NOTE TO EDITORS: The following background material on Brown & Root, Inc., and the Northrop Corporation is supplied for possible editorial use. Further information may be obtained by contacting the companies concerned.

BROWN & ROOT, INC.

Brown & Root, Inc., a subsidiary of the Halliburton Company, is one of the largest engineering and construction firms in the world.

Employing some 20,000 persons, the Houston, Texas-based company has an annual sales volume that reaches several hundred million dollars. Its operations range throughout the free world.

In its Engineering Division, virtually every discipline is represented. The Division is, in effect, a great pool of experts supported by draftsmen and other technicians from which specialists are drawn, providing the flexibility needed to meet the vast scope of projects for which the company is retained. Services include feasibility studies, design, construction engineering supervision, project management.....and all the steps between.

Various projects engineered by the company include practically every kind of industrial facility on earth, including highways, dams, bridges, tunnels, power plants, pulp and paper mills, laboratories and test facilities, chemical process plants, offshore platforms, pipelines, and manufacturing plants.

Brown & Root's Marine, Oilfield and Pipeline Division is responsible for the company activities in working for those who explore for, produce and transmit oil and gas. The company was a pioneer in designing and building offshore platforms for the production of hydrocarbons and has built more than 6,000 miles of underwater pipeline. The oilfield department provides a variety of services including the building of canals and waterways for oilfield locations access and the development of marshland for commercial use.

(MORE)

Brown & Root has five construction divisions with worldwide activities. Ranging in scope from municipal paving to the building of multi-million dollar industrial and defense locations, Brown & Root is involved in almost every phase of today's industrial construction.

Included in the portfolio of Brown-built installations are projects in the following categories:

Aerospace	Steam and Electric Power Generation
Chemical Plants	Gas Compressor Stations
Bridges	Gasoline and Gas Treating Plants
Sulphur Plants	Pulp and Paper Plants
Airfields	Townsites, Community Projects
Dams	Research and Development Centers
Tunnels	Oil Field Construction
Mining	Marine Operations
Public Works	Steel Mills
Highways	Metal Forming Facilities
Streets	

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NORTHROP CORPORATION

Northrop Corporation today is a leading contributor to world technology in the areas of aircraft, electronics, communications, advanced weaponry, and space.

Founded more than 30 years ago, the company now has major engineering and manufacturing facilities in six states and the District of Columbia. The company is active in more than 50 countries. Nearly 24,000 men and women are presently employed in operations which are administered from Beverly Hills, California, and include four divisions and five wholly-owned subsidiaries, and a number of joint-venture companies.

(MORE)

NORTHROP CORPORATION - 2 - 2 - 2 - 2

Sales for the fiscal year ended July 31, 1968, were a record $486-million. Net earnings were $15.7-million, also a record.

Northrop expects sales to exceed $700-million by 1970. The company has set a goal of $1-billion in annual sales by 1973, evenly divided between defense and commercial programs. Greatest expansion is expected to come from growth in world transportation and communications.

Current major programs at Northrop include: construction of the main fuselage section for Boeing's 747 superjet, production of the F-5 Freedom Fighter, Doppler-Inertial Navigation System for the USAF/Lockheed C-5 cargo-transport, Omega navigation receivers for the U.S. Navy, and multi-national communications projects.

Northrop Corporation's Electro-Mechanical Division, headquartered at Anaheim, California, is the focal point for Support Operations Department activity which includes administrative interface with the Brown & Root/Northrop venture. More than 800 engineers and scientific personnel of Brown & Root/Northrop assist NASA in five laboratories at the Manned Spacecraft Center in Houston, Texas.

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