NEWS RELEASE LOG

[illegible]	TITLE	RELEASE DATE
70-1	Sigurd Sjoberg named Director of Flight Operations	1/2/70
70-2	AC Electronics Division contract	1/6/70
70-3	Boeing Company contract	1/6/70
70-4	Raytheon Company contract	1/6/70
70-5	Astronauts Bean, Cunningham, and Kerwin groundings	1/6/70
70-6	Hamilton Standard contract	1/7/70
70-7	Release of Apollo 12 samples to Principal Investigators	1/7/70
70-8	Dale D. Myers named Associate Administrator for Manned Space flight	1/8/70
70-9	Rescheduling of Apollo 13 to April 11.	1/8/70
~~70-10~~	Release of Surveyor III parts for study	1/16/70
70-11	Announcing Itek contract	1/26/70
70-12	ALSEP 1 Systems Status report	1/23/70
70-13	Panel discussion, "On the Role of Clinical Pathology in Manned Exploration of Space"	1/26
Hqs.	Dr. von Braun transferred to Headquarters	1/27
70-14	Release of water bag to be used on Apollo 13	1/28
70-15	Organizational changes in S&AD	1/28
70-15 16	U.N. Committee on Peaceful Uses of Outer Space	1/28
70-17	Borman's leaving active duty at NASA	1/29
70-18	Accident report on Rainey	1/29
70-17a	STC contract release	1/29
~~70-19~~	ALSEP 1 status report	2/2

NEWS RELEASE LOG

[illegible]	TITLE	RELEASE DATE
70-20	Extension of Zia contract at White Sands	2/4
70-21	Extension of fuel cell operating life (by Allis-Chalmers)	2/5
70-22	Award of Service Technology corporation contract	2/6
70-23	Release of study to prepare space environments	2/10
	ALSEP Systems status report	* 2/10
70-24	Apollo 12 lunar sample distribution	~~2/12~~ 2/13
70-25	Announcement of establishment of Space Shuttle Program Ofc.	2/13
70-26	Announcement of damage done to Surveyor III by LM	2/13
70-27	Lunar eclipse announcement	2/17
[illegible]28	Viewing of solar eclipse in Mex. by MSC personnel	2/20
	AAP changed to Skylab	2/24
	White Sands on stand-by status	2/25
DRAFT	Apollo 11 lunar material missing from display	3/1
70-29	Dr. Berry's participation in international medical conference	3/9
70-30	Initial complement of personnel assigned to Space Shuttle Program Office didn't go out	3/9
70-31	GE contract for Spacecraft Checkout, Reliability and Quality	3/9
70-32	Subsystem Test Bed (STB) Test	3/10
70-33	Return of stolen lunar material to MSC	3/16
70-34	Naming of Apollo 15 Crew	3/26
70-35	Announcing request of proposals by MSC for a feasibility and planning study of a lunar orbit station for 1980's.	3/27
[illegible]36	Retirement of Paul Purser	4/2

NEWS RELEASE LOG

NUMBER	TITLE	RELEASE DATE
		really no. 70-41
70-37	Contract award to Itek for multispectral photo equip	
70-38	Space tug release	4/7/70
70-39	Hycon camera release	4/8/70
70-40	Contract award to Fairchild Camera and Instrument Corporation for camera system to be used on future Apollos=	4/9/70
70-41	Contract award to Itek for multispectral photo equip	4/10/70
70-42a	Earth resources data of Texas areas presented to State Committee	4/22/70
70-42	Dr. Berry as President, ASMA	4/22
70-43	Astronaut Life Support Assembly	4/23
70-44	Wackenhut Services Contract	4/24
70-45	Boeing Contract in Support of Apollo	4/28
70-46	Ultraviolet Spectrograph Experiment on 5/26	5/8
HQS	Apollo 14 Landing Site & launch slip	5/7
70-47	Request for proposals for shuttle cryo system study	5/12
70-48	Lockheed contract for space station solar array evalua	5/13
70-49	~~Skiyks~~ Skylab launch site changed	5/15
70-50	Invitation for proposals for development of a light-weight intravehicular space suit	5/15
70-51	Invitation for bids for a reusable space shuttle	5/15
70-52	Announcement of Neil Armstrongleaving astro. program	5/18
70-53	Drop tests on MSC 12.5K Space Orbiter Shuttlecraft at White Sands	5/20
70-54	1970 Census release	5/24
70-55	Req. for proposals for computer study for space station	5/21

NEWS RELEASE LOG

NUMBER	TITLE	RELEASE DATE
		5/21
70-56	TRW, Inc. contract	5/26
70-57	Dunn F. Eisele release	
70-58	Microorganism found in Surveyor III TV camera	5/22
70-59	Discovery of 4.6 billion year old moon rock from A12	5/26
70-60	NR contract for Phase A lunar orbit station study	5/27
70-60	Hodge release	5/26
70-61	NAR contract for Space Tug	6/4
70-62	Supplemental agreement w/NAR for Skylab program	6/4
70-63	ILC contract for space suits	6/4
70-64	simulator for Skylab Contract w/GE and Link for development of crew training	6/5
70-65	Contract w/Lockheed for rescue and safety techniques	6/5
70-66	Contract w/Pratt&Whitney Div. and Direct Energy Conversion Businsee Sec	6/9
70-67	Phase A study ~~w/~~ contract w/Grumman, Lockheed,and Chrysler	~~X~~ 6/15
~~70-68~~ 70-68	Grumman contract for operating tech. for space station	6/17
70-69	300 proposals for analysis of lunar samples	6/18
	Hqs release on contract w/Honeywell	6/22
70-70	GE release microwave radiometer-scatterometer/altimeter	6/22
70-71	LRRR release	
Hqs.	Cooper resignation	6/23
70-72	Service medals	
70-73	Modified contract with Bendix	6/25

NEWS RELEASE LOG

NUMBER	TITLE	RELEASE DATE
70-73a	Modified contract w/NAR	6/25
Hqs.	~~NASA~~ Apollo 14 not before 1/31/71	6/30/70
70-74	Texas Tech contract to develop new type electrode for Skylab	7/1 ~~6/30~~/70
70-75	Supplemental Agreement with Grumman for changes on Apollo LM contract	7/1/70
70-76	ITT-FEC contract extension	7/1/70
70-77	GSFC lunar sample missing	7/1
70-78	UNIVAC contract	7/2
70-79	MSC celebration of anniversayr of moon landing	7/10
Hqs.	RFP's for ground facilities for space shuttle	7/13
Hqs.	RIF	7/15
70-80	Remote sensing aircraft aiding Peruvian government	7/15
70-81	Fairchild Corp contract for food system for space station	7/15
70-82	Naming ~~Discovery~~ of new mineral (Armalcolite) in Apollo 11 samples	7/16
70-83	Apollo CSM Contract Modification	7/29
70-84	Apollo LM Modification Contract	7/29
70-85	Earth resources aircraft flying over Peru	7/31
70-86	Cullen-Hammer contract	8/4
Hqs.	RCA contract for Rover on Apollo 16	8/5
Hqs.	Peru photos	8/6
Hqs.	Alternative plans for Apollo	8/11
Hqs.	NR contract for CSM mods.	8/12
70-87	MSC open house visiting hours	8/13

NEWS RELEASE LOG

NUMBER	TITLE	RELEASE DATE
		8/19
70-88	RIF Announcement	8/23
70-89	DEATH OF JOE KOTANCHIK	8/24
70-90	RESTRUCTURE OF SUPPORT S.E.U. CONTRACT	8/24
70-91	1969 FEDERAL WOMAN'S AWARD	8/25
70-92	CRISP flight on or about Aug 27, '70	8/26
70-93	National Fire Fighters Organization	8/31
HQS	Modifications to the Command & Service Module	9/2
70-94	Bed rest & centrifuge test for Apollo shuttle program	9/2
70-95	LTV & McDonnell Douglas contract for development of non-metallics on shuttle	9/4
70-96	Lunar Science	9/8
70-97	"Project Albacore Dive"	9/8
HQS	"Satellite for Corn Blight Help	9/8
70-98	Research Announcement Release	9/9
70-99	Flight Controllers	9/9
70-100	Earth Resources Laboratory	9/15
70-101	Contract to Singer-General	9/16
70-102	Mockups & Power Simulation	9/22
70-103	Landing of balloon [redacted]	
70-104	Pre-launch quarantine	9/24
70-105	Black Brant VC from Brazil 9/25 & 30	9/24
70-106	RCA Communications contract	

NEWS RELEASE LOG

NUMBER	TITLE	RELEASE DATE
		9/28
70-107	Fireproofing release	9/28
70-108	Richard Johnson, Dep. Dir. Biomed-etc	9/29
70-109	Service Contract of Nasa	10/1
70-110	Contract with Lockheed	10/1
Hqs	Site selection for Apollo 15	10/7
70-111	Agreement with Grumman Corp	10/1/70
70-111a	Background on landing sites	10/9/70
70-112	Northrop contract for gyros	10/9/70
70-113	Release on Halter on ecology	10/12/70
Hqs	U.S.-Soviet meeting in Moscow 10/26-27/70	10/15/70
70-114	Warning Signal lights for Apollo 14	10/15/70
70-115	Simulations for Apollo 14	10/16/70
70-116	Science proj for schools	10/20/70
70-117	Dredging channel for Skylab parts	10/20/70
Hqs	Slowed down lunar samples by PO	10/23/70
70-118	Syberg's trip to Sweden	10/29/70
70-119	Rocket launch from White Sands	
	↓ This was released as MSC 70-118	
70-120	Skylab New Goods	11/4
~~70-121~~ Hqs	Non-Flight Division Flights	11/5
70-121	Recovery of water process from lunar samples	11/11

NEWS RELEASE LOG

NUMBER	TITLE	RELEASE DATE
Hdqs	Space Station	11-11-70
Hdqs	Nasa Awards	11-12-70
70-122	Photo Contract Ferricolor	11-13-70
Hdqs	Rover Vehicle G-1 Trainer	11-17-70
70-123	Brown & Root contract	11-23-70
70-124	STC contract	12-2-70
MSFC	Skylab Workshop shipment to MSC	12-2-70
70-125	Emergency Airtanks for apollo 14	12-7-70
70-126	NR Space Shuttle Contract	12-10-70
70-127	MSC Awards Ceremony	12-11-70
70-128	Nasa Balloon to Study Cosmic Ray	12-14-70
70-129	NAR (Studies of Modular Space St.	12-15-70
70-130	(GMCC) Emergency Control Center	12-16-70
70-131	Koone Manager (Payloads & Operations)	12-15-70
70-132	Rescheduled as 131 Rescheduled of ERIS	12-16-70
70-133	Bryan Erb Manager Science & Applications	12-17-70
70-134	Space Shuttle Proposal	12-24-70

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
MANNED SPACECRAFT CENTER
Houston 1, Texas

483-5111

MSC 70-1
January 2, 1970

HOUSTON, TEXAS--Sigurd A. Sjoberg was named Director of Flight Operations of the Manned Spacecraft Center effective December 28, 1969.

Sjoberg assumes his new duties after having served as Deputy Director, Flight Operations since October 1963. He succeeds Dr. Christopher C. Kraft, Jr., who was recently appointed Deputy Director of MSC.

Since joining MSC in October 1959, Sjoberg has held successively responsible operations positions. He joined NACA (National Advisory Committee for Aeronautics), NASA's predecessor in 1942 as an aeronautical engineer.

As Director, Sjoberg will be responsible for the management and direction of four organizational divisions within FOD. This directorate is responsible for mission planning and for overall direction of flight control and recovery activities associated with all NASA manned space flight activities.

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Sjoberg was born in Minneapolis, Minnesota in 1919. He holds a BS degree in Aeronautical Engineering from the University of Minnesota, 1942. He received the MSC Superior Achievement Award, November 1966; NASA Exceptional Service Medal, January 1969; and NASA Exceptional Service Medal, October 1969.

He is a member of the American Institute of Aeronautics and Astronautics and is the United States representative to Federation Aeronautique Internationale (FAI), Paris, France.

Sjoberg is married to former Elizabeth Jane Ludwig. They have three children: Eric Sigurd, 21; Stephen Lee, 19; and Robert John, 15. The Sjobergs reside in Seabrook, Texas.

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NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

MANNED SPACECRAFT CENTER

Houston 1, Texas

483-5111

January 6, 1970
MSC 70-2

HOUSTON, TEXAS--The National Aeronautics and Space Administration has awarded a letter contract to AC Electronics Division of General Motors Corporation to provide for primary navigation, guidance and control system support for the Command Modules and Lunar Modules for the Apollo Program.

The contract was effective January 1, in the amount of $3 million to be definitized by April 30, 1970. A cost-plus-award-fee definitive contract is contemplated.

Under the proposed contract, AC Electronics will be responsible for analysis of Guidance and Navigation Hardware and Software problems, perform any required retrofit and/or modifications; manage and operate the Guidance and Navigation Labs at the various field sites; perform a complete checkout and test for all Primary Navigation, Guidance and Control Systems; and analyze, repair, and test failed Guidance and Navigation Airborne Hardware and Ground Support Equipment.

This is a continuation of the services previously performed for the Manned Spacecraft Center by AC Electronics Division in connection with the manufacturing and testing of Primary Navigation, Guidance and Control Systems Hardware.

The majority of the work will be performed by AC Electronics at their Milwaukee, Wisconsin facility.

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NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
MANNED SPACECRAFT CENTER
Houston 1, Texas

483-5111

January 6, 1970
MSC 70-3

HOUSTON, TEXAS--The National Aeronautics and Space Administration has awarded a letter contract to The Boeing Co. to provide Systems Engineering and Assessment for the Apollo Spacecraft Program.

A letter contract was awarded to The Boeing Co. effective January 1, 1970 in the amount of $3 million to be definitized by March 31, 1970. A cost-plus-fixed-fee definitive contract is contemplated.

Under the proposed contract, Boeing will provide an integrated assessment of spacecraft and subsystem flight readiness to the Apollo Spacecraft Program Manager, related special studies, and safety engineering analysis of manned spacecraft subsystems and hardware, including modifications to Apollo type hardware utilized in extended Command and Service Module and Lunar Module Missions (CSM's through 119 and LM's through 15).

The majority of the work will be performed by The Boeing Co. at their Houston, Texas facility.

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NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
MANNED SPACECRAFT CENTER
Houston 1, Texas

483-5111

January 6, 1970
MSC 70-4

HOUSTON, TEXAS--The National Aeronautics and Space Administration has awarded a letter contract to the Raytheon Co. to provide 250 Fixed Memory Modules to be used in the Guidance Computer of the Command Module and Lunar Module in support of the Apollo Program and Apollo Applications Program.

The letter contract was effective January 1, 1970 in the amount of $1,000,000 to be definitized by April 30, 1970. A cost-plus-incentive-fee definitive contract is contemplated.

Each guidance computer, located in each spacecraft contains six fixed memory modules. The fixed memory modules are fabricated to the specific requirements of each mission, and therefore each set of modules is unique.

The majority of the work will be performed by the Raytheon Co. at their Waltham, Massachusetts facility.

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NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
MANNED SPACECRAFT CENTER
Houston 1, Texas

483-5111

January 6, 1970
MSC 70-5

HOUSTON, TEXAS--Three astronauts have been grounded from aircraft flying for 30 days for violations of NASA flying regulations. The groundings were ordered by Donald K. Slayton, Director of Flight Crew Operations.

The astronauts are Alan Bean, Walter Cunningham and Joseph Kerwin.

On December 16, through a communications misunderstanding, Bean took off from Ellington Air Force Base, Texas without a departure release, although he thought he was cleared for takeoff.

On December 17, Cunningham and Kerwin, in separate flights from Ellington, violated a regulation requiring them to list a suitable departure alternate airport before takeoff.

The groundings are normal action taken by all flying organizations in such cases.

They will be returned to flight status January 23.

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NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

MANNED SPACECRAFT CENTER

Houston 1, Texas

483-5111

January 7, 1970
MSC 70-6

RELEASED BY NASA HEADQUARTERS

The National Aeronautics and Space Administration has signed a supplemental agreement with Hamilton Standard Division, United Aircraft Corporation, Windsor Locks, Connecticut valued at $5,461,203 for changes in the Apollo portable life support system (PLSS) contract.

The agreement formally incorporates into the contract changes permitting the PLSS to accept an improved communications system supplied by NASA. The communications system was developed under a separate contract with the Radio Corporation of America to permit two astronauts to work simultaneously outside the spacecraft on the lunar surface.

The contract provides for addition of a carbon dioxide sensor to the portable life support system beginning with the Apollo 14 mission. It also incorporates previous modifications to ground support equipment and requalification of the system completed prior to Apollo 11 for increased vibration and thermal conditions.

The Apollo portable life support system is built by Hamilton Standard at its Windsor Locks facility. The supplemental agreement increases the total estimated value of the Hamilton Standard PLSS contract to $53,172,186.

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NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

MANNED SPACECRAFT CENTER

Houston 1, Texas

483-5111

January 7, 1970
MSC 70-7

HOUSTON, TEXAS--The Interagency Committee on Back Contamination informed the National Aeronautics and Space Administration today that the Apollo 12 lunar samples and Surveyor parts may be released to principal investigators.

Lifting of quarantine was effective at 11:00 a.m. CST. The first release of samples to Apollo 12 principal investigators is expected to begin about the first week of February. The Lunar Sample Planning Team will meet next week and prepare a distribution plan for the Apollo 12 samples.

The Surveyor camera parts will first undergo radiation and biological testing at the Lunar Receiving Laboratory at the Manned Spacecraft Center before they are released next week to scientists at the Jet Propulsion Laboratory.

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NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

MANNED SPACECRAFT CENTER

Houston 1, Texas

483-5111

January 8, 1970
MSC 70-8

RELEASED BY NASA HEADQUARTERS

HOUSTON, TEXAS--Dale D. Myers, vice president and general manager of the Space Shuttle Program at North American Rockwell Corp., has been appointed Associate Administrator for Manned Space Flight of the National Aeronautics and Space Administration.

He succeeds Dr. George E. Mueller who left NASA December 10 to become a vice president of General Dynamics Corp. in New York City.

Myers will be responsible for the planning, direction, execution and evaluation of NASA's overall manned space flight program. These functions include management authority over the George C. Marshall Space Flight Center, Huntsville, Alabama; Manned Spacecraft Center, Houston; and the John F. Kennedy Space Center, Florida.

Myers has been in charge of North American Rockwell's space shuttle program since June 1969. Prior to that he had been vice president and general manager of the Apollo Command and Service Module work since February 1968 and vice president and Apollo Program Manager since April 1964.

He joined North American Aviation in June 1943 as an aeronautical engineer and was project aerodynamicist on the F-82, XSNJ and XFJ-1 airplanes. He developed the basic methods used by the company for stability and control analyses, including the effects of aeroelasticity on both dynamic and static stability.

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In 1946 he became supervisor of Applied Aerodynamics, a post which included responsibility for all phases of supersonic aerodynamics and thermodynamics concerned with the NATIV missile and other early long-range missile studies. He developed the use of the supersonic canard configuration that since has been utilized extensively on missiles and aircraft.

Myers later became assistant chief and then chief of the Aerodynamics Section. He became chief of Aerodynamics and Flight Test in 1950, with the added task of developing an organization capable of performing all phases of missile flight testing, including flight test planning, instrumentation, and operations. Early in 1954, he was named assistant director of the Aerophysics Department and was responsible for engineering and management of all phases of the NAVAHO program.

Myers was appointed chief engineer of the company's new Missile Development Division (predecessor to its Space Division in 1956). In this position he managed all engineering and flight test phases for the NAVAHO and for other advanced missile studies.

He was named weapon system manager of the Hound Dog program in 1957, and was appointed division vice president of Engineering in 1960. In December of the same year he became vice president of the Hound Dog program, and served in that capacity until being named vice president and Apollo program manager.

Myers was graduated from the University of Washington in 1943 with a bachelor of science degree in aeronautical engineering. He is married and has two daughters.

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NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

MANNED SPACECRAFT CENTER

Houston 1, Texas

483-5111

January 8, 1970
MSC 70-9

RELEASED BY NASA HEADQUARTERS

HOUSTON, TEXAS--The National Aeronautics and Space Administration announced today that the Apollo 13 manned lunar landing mission scheduled for launch March 12 has been rescheduled to April 11.

The Fra Mauro highland area located at 17 degrees, 35 minutes, West and 3 degrees, 48 minutes, South, remains as the primary landing site.

The landing sites and mission objectives of the Apollo Program are inter-related, with each mission playing a vital role in the accomplishment of the overall goal of lunar exploration. With the prospective of lowering the rate of Apollo flights, the movement of Apollo 13 to April allows additional time for more detailed analysis of specific mission plans. Follow-on launches beyond April 13 are being analyzed to optimize the interval between launches for both operations and scientific return.

Apollo 14 manned lunar landing mission scheduled for July will be rescheduled for the fall of 1970.

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NEWSREL EASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

MANNED SPACECRAFT CENTER

Houston 1, Texas

483-5111

January 13, 1970

RELEASED BY NASA HEADQUARTERS

At President Richard M. Nixon's suggestion, the three Apollo 12 astronauts will brief former president Lyndon B. Johnson on their Nov. 14-24 lunar landing mission at a private session tomorrow at the LBJ ranch in Texas.

Navy Captains Charles Conrad, Richard F. Gordon, Jr., and Alan L. Bean will be accompanied by their wives, who were invited by Mrs. Johnson.

Following the briefing and lunch at the Johnson City ranch, the astronauts and their wives will return to their Manned Spacecraft Center, Houston, home base.

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NEWS RELEASE

TIONAL AERONAUTICS AND SPACE ADMINISTRATION

MANNED SPACECRAFT CENTER

Houston 1, Texas

488-5111

January 16, 1970
MSC 70-10

Houston, Texas --- Surveyor III spacecraft parts, returned to earth by NASA Apollo 12 astronauts, were released today from the MSC Lunar Receiving Laboratory here for detailed study to determine effects of $2\frac{1}{2}$ years of exposure to the environment of the moon.

Scientists and engineers at JPL, Pasadena, California, and Hughes Aircraft Company, Culver City, California, and other institutions will study the effects of prolonged exposure to radiation, thermal cycling, vacuum environment, and micrometeorites on the moon.

After the initial survey of the samples is complete, system performance tests of the electrical and mechanical parts of the Surveyor III TV camera will be conducted. If the electrical systems are operational, the circuits will be examined for physical or electrical performance changes.

The microcircuitry will be examined by Hughes Aircraft for evidence of change in color, electrical performance, and corrosion. If electrical systems are not operational, the specific failures will be identified. This task will be performed by the Jet Propulsion Laboratory. Soil mechanics tests will also be conducted.

Both metallic and nonmetallic materials will be investigated to determine what changes have taken place during the $2\frac{1}{2}$ years exposure to the lunar environment. Metallic and nonmetallic materials will be investigated to determine the source (radiation, heat, vacuum, or a combination) of changes, if any,and the mechanisms by which it occurred.

Such information is necessary in predicting the behavior of these materials for longer periods of lunar exposure as well as possibly predicting the behavior of other materials in the same environment. The TV camera will be among the items used for the Hughes test. Thermaloptics measurements will be reviewed for evidence of molecular change. Other spectroscopic techniques, such as infrared and supplementary visible and ultra-violet also may be necessary. This task will be performed by Hughes Aircraft Company under contract to MSC.

Before disassembling, the TV camera and the camera case will be tested to determine performance of the seals and be examined for evidence of cold molecular welding, sputtering, and general surface changes. Sputtering and micrometeoroid impact can be identified by examining the surfaces microscopically. An indication of the importance of cold molecular welding may be obtained by comparing the torque necessary to remove selected screws or bolts on various items to original specification values. An examination of the metal fastner surfaces should also determine whether cold molecular welding is important. Dimensional measurements of selected items such as magnesium, zinc, or other materials that may be volatile in a thermal vacuum environment will be made.

The camera lens will be examined to determine degradation, if any, in its optical properties as a result of the extended exposure to the lunar environment. The test will consist of visual inspection for gross changes and measurement of transmissibility for more subtle effects.

The painted aluminum tube, a portion of the Teflon obtained from Surveyor III, and selected TV camera parts will be tested to provide information for the design of future spacecraft. The test will include:

a. All external thermal control coating surfaces

(1) Inspection (portable devices for emittance, absorptance) measurements to establish the range and contours of the thermal property characteristics of the parts.

(2) Spectral reflectance and/or transmittance of selected parts from all surfaces from 0.25 to 25 microns. This is the spectral range of interest for thermal properties.

(3) Visual and scanning electron microscopic examination of all exterior surfaces for exposure effects including meteoroid impact, sputtering, and lunar debris adhesion.

b. Mirrors, Teflon, and Kapton

(1) Specular and diffuse reflectance 0.25 to 25 microns

(2) Spectral transmission as appropriate, (i.e., if metallized surface is absent), and possibly determination of optical constants such as index of refraction.

c. Section of polished metal tube

Extensive reflectance measurements of selected areas to establish the magnitude and nature of surface errosion.

d. TV camera, TV support tube supporting experiments will be required to determine the nature and magnitude of atmospheric bleaching (if any) of white paint.

A micrometeoroid investigation will examine the flux, composition, mass, velocity, and similar properties of primary particles and secondary ejecta associated with the lunar environment. Photographs of the particle accumulation on Surveyor Pad III, the Klystron Power Supply, and top of compartments A or B or the TV mirror will be analyzed for data on the ejecta formation rate and size distribution.

Surfaces of the unpainted aluminum tubing and the TV camera will be optically scanned at MSC at a 20K magnification to permit a mapping or crater distribution study for sizes down to 50 microns. Areas showing particular impact evidence will be examined at a 200X magnification to note sizes down to 5 microns.

The TV camera has been forwarded to Hughes Aircraft for subsequent disassembly and distribution. If craters with indications of impact residue have been detected in the unpainted aluminun tubing, selected craters will be sectioned from the tubing in the Meteoroid Science Branch, and the other portions of the tubing distributed to JPL and to the MSC Geology Branch. The undistributed sections will be retained for electron-microprobe or neutron activation analysis.

The unpainted and the painted aluminun tubing will be used for a solar wind composition investigation. Extensive measurements of noble gas ions with solar wind velocities have shown that aluminum and aluminum oxide give very high and reproducible trapping efficiencies.

The material is to be heated and melted, releasing the embedded solar wind and solar flare gases. These gases are to be purified and separated into five fractions: Hydrogen (for the tritium measurement); HeNe; Ar; Kr; and Xe.

A surface radioactivity investigation will examine the $2\frac{1}{2}$ year accumulation of surface radioactivity on the Surveyor III spacecraft to obtain information on radon concentration in the lunar atmosphere, rates of diffusion of radon from the lunar surface, and average uranium concentration integrated over a large area of the lunar surface.

A sample will be placed in a small vacuum chamber, facing a gold-silicon alpha-particle detector. The sample will be kept at room temperature and at approximately a 1-micron pressure. Depending on the level of activity, a period from a few hours to a few days may be required to complete the measurements.

A soil mechanics investigation to be conducted is restricted to the soil remaining in the Surveyor III scoop. Objectives include comparison of soil mechanical properties, particle size, and albedo with measurements made during actual Surveyor III operations on the same material. These comparisons will aid in understanding these properties and in evaluating techniques used for remote measurements in future unmanned space probes.

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NEWS RELEASE
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
MANNED SPACECRAFT CENTER
Houston 1, Texas
488-5111
January 20, 1970

RELEASED BY NASA HEADQUARTERS

HOUSTON, TEXAS--Nonflammable and fire-resistant materials developed as part of the nation's space program will be reviewed for industry and government agencies by the National Aeronautics and Space Administration at a safety conference to be held early in May at NASA's Manned Spacecraft Center, Houston.

Many of these materials are the products of technologies that resulted from NASA-sponsored research to reduce fire hazards in the Apollo spacecraft following the launch pad fire in which three astronauts died in January 1967.

During the two day conference NASA engineers and fire safety experts will describe the use of such materials as nonflammable paper and paper laminates, glass fiber Beta fabric, flame resistant Velcro, and fireproof and fire resistant synthetics such as Viton, Fluorel, Teflon, Nomex, Kapton, PBI and others

One of them, Fluorel, can be fireproofed against temperatures up to 2,200 degrees Fahrenheit in pure oxygen. It can be foamed, molded, or extruded into structural shapes or can be painted or sprayed on paper, fabrics, wood, flooring, and other materials to fireproof them.

The compound was developed by the Minnesota Mining and Manufacturing Co. under the direction of engineers at the Manned Spacecraft Center.

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Other fire-resistant products to be discussed were developed by the DuPont Co., the Owens Corning Fiberglas Corp., the Scheufelen Paper Co. of Germany, and the U. S. Air Force.

Speakers at the conference will also discuss NASA's flammability testing, materials control techniques and test criteria. The available data sources that NASA has developed for dissemination of information on these programs will be outlined for the future use of attendees.

Other subjects will include problems of toxicity, odor and capability of various materials that have been developed and used in the space program. Some specific applications that NASA has made of these materials will be discussed as well as potential commercial and military applications.

Representatives of domestic and foreign airlines, the Air Line Pilots Association, Air Transport Association, Federal Aviation Administration, aerospace companies, professional societies, industry associations and others that may be able to use the results of NASA work will be invited to the Houston conference.

The conference, covering work throughout NASA, is being organized by the Manned Space Flight Safety Office, NASA Headquarters, which expects the reports to include many applications to provide greater fire protection in everyday living as a result of research done in the nation's space program.

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NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

MANNED SPACECRAFT CENTER

Houston 1, Texas

488-5111

January 26, 1970
MSC 70-11

HOUSTON, TEXAS--The National Aeronautics and Space Administration, Manned Spacecraft Center, has awarded a $5.1 million contract to Itek Corporation, Lexington, Massachusetts for high resolution panoramic cameras to be used for lunar photography on future Apollo missions.

The cameras are planned as part of the orbital experiments package for Apollo missions 16, 17, and 18. They will be used to obtain pictures of potential lunar landing sites and exploration areas, and to provide detailed maps of areas which were not covered in high resolution Lunar Orbiter photographs.

Under the contract Itek will supply six 24-inch-focal-length "optical bar" panoramic cameras designed for automatic, remote operation in an equipment bay of the Apollo service module. Four of the six cameras will be flight qualified. Two will be used for development and qualification testing. In addition, Itek will provide two mockups and three training models of the camera.

The camera will take nearly 1,500 stereographic or conventional photographs on a roll of film. The individual photographs will be about 4.5 inches high and almost four feet long, covering a field of view 108 degrees wide. It is expected that photographs taken 60 miles above the moon will show surface features as small as 54 inches in diameter.

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Since the camera will be carried in the Apollo service module it will be necessary for one of the astronauts to go outside the command module and retrieve the film magazine before the spacecraft modules separate for earth entry.

A number of modifications must be made to the current production model of the Itek camera to adapt it to space use. Components will be upgraded to withstand launch vibrations; thermal changes will be required to prevent the temperature extremes of space from damaging the film; other changes will make the camera compatible with the spacecraft and its electrical system; and the camera's film cassette will be modified to simplify retrieval.

The first flight qualified camera is scheduled for delivery in August, and the remaining three flight qualified units are to be delivered by the end of 1970.

Itek builds the panoramic camera at its Optical Systems Division in Lexington.

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NEWS RELEASE
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
MANNED SPACECRAFT CENTER
Houston 1, Texas

483-5111

January 23, 1970
MSC 70-12

HOUSTON, TEXAS--The ALESP 1 system continues its satisfactory performance, after more than 64 days of uninterrupted operation. Scientific data is being transmitted continuously from the seismometer, the magnetometer, the suprathermal ion detector, and the solar wind spectrometer experiment sensors. Engineering data is being transmitted from the central station and all experiments are indicating operational status within expected limits.

Power from the radioisotope source remains constant at 74 watts. To date, 1977 commands have been transmitted to and implemented by ALSEP 1 since being deployed on the lunar surface.

The Passive Seismic Experiment recorded an episode of large tilts on the long-period horizontal sensors lasting approximately one hour and coinciding with the third lunar sunrise at the ALSEP 1 site, which occurred on January 16, 1970.

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NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

MANNED SPACECRAFT CENTER

Houston 1, Texas

483-5111

January 26, 1970
MSC 70-13

HOUSTON, TEXAS--The National Aeronautics and Space Administration will conduct a panel discussion, "On the Role of Clinical Pathology in Manned Exploration of Space," on February 12 when the American Society of Clinical Pathologists meets at the Manned Spacecraft Center.

Approximately 450 clinical pathologists from the U. S. and Canada are scheduled to attend the afternoon panel discussion which will be held in the Building 1 auditorium. Dr. Craig L. Fisher, Pathologist and Chief Clinical Laboratories at MSC, is program chairman.

MSC doctors and the titles of their presentations are: Dr. C. L. Fisher, "Role of Clinical Pathology in the Manned Exploration of Space;" Dr. W. C. Alexander, "Organization and Functional Responsibilities of the Clinical Laboratories;" Dr. C. H. Walkinshaw, "Effects of Lunar Material on Selected Plant Systems;" Dr. N. D. Jones, "Effects of Lunar Material on Various Species of Animals;" Dr. S. L. Kimzey, "Advanced Technique for Retrospective Analysis of Blood Samples Acquired in Flight;" Dr. C. S. Leach, "Endocrinologic Consequences of Manned Space Flight;" Dr. C. L. Fisher, "Clinical Laboratory Findings - Projects Gemini and Apollo;" Dr. Tate Minckler, "Laboratory and Medical Data Management as Applied to the Manned Flight Program."

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NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

MANNED SPACECRAFT CENTER

Houston 1, Texas

483-5111

January 27, 1970

RELEASED BY NASA HEADQUARTERS

Washington, D. C.---Dr. Wernher von Braun, for a quarter of a century a leader in space rocket development, will head the National Aeronautics and Space Administration's planning effort for future U. S. space missions.

NASA Administrator Dr. Thomas O. Paine said today that Dr. von Braun, Director of the George C. Marshall Space Flight Center in Huntsville, Ala., would become Deputy Associate Administrator for Planning of the National Aeronautics and Space Administration. At present the position is not filled. He will be succeeded as Director at Huntsville by his long-time Deputy, Dr. Eberhard Rees.

Dr. von Braun joined NASA when the Army Ballistic Missile Agency development team at Huntsville, Ala., which he headed, was transferred to NASA in 1960. Since then he has been in charge of the Marshall Space Flight Center which put the first American satellite in orbit, and developed the world's largest rocket, the Saturn V, which carried men to the moon.

"It is essential that we bring NASA's best talents to bear on our future space planning," Dr. Paine said. "As we move from the accomplishments of the 1960's to the Post-Apollo programs of the 1970's, we must select our new space ventures with the best critical judgment and make every dollar count. Dr. Wernher von Braun has an unmatched

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record of looking to the future to choose the most promising avenues of technical advance. He brings to his new assignment sound vision, insight, and technical competence and we are delighted that he has agreed to accept this important post."

Dr. von Braun was born in Wirsitz, Germany on March 23, 1912. He received a bachelor's degree at the University of Berlin in 1932 and his doctorate in 1934.

He became a United States citizen April 14, 1955.

Dr. von Braun has been engaged in rocketry since 1930 when he joined a group of inventors who made up the German Society for Space Travel. In 1932 he joined the Ordnance Department of the German government and for the next 5 years was chief of a small rocket development station near Berlin.

He became technical director of the Peenemuende Rocket Center in 1937 which developed the German V2 rocket. In the closing months of World War II he led more than 100 scientists to the West and surrendered to the Allies.

Dr. von Braun and his colleagues came to the United States in September 1945 under contract to the U. S. Army, and he directed high altitude firings of the V2 at White Sands Missile Range. Later he became project director of guided missile development at Fort Bliss, Texas, along with 120 of his Peenemuende associates and in 1950 this group was transferred to Huntsville.

Among the U. S. rockets developed by von Braun and his team were the Redstone, Jupiter, Juno, and Saturn. The first U. S. satellites

were launched by the Jupiter C and Juno II.

Dr. Rees was born April 28, 1908, in Trossingen, Waerttenberg, Germany. He received his technical education in Stuttgart and at the Dresden Institute of Technology and gradudated in 1934 with the degree of master of science in mechanical engineering. He majored in thermodynamics, engine design (steam turbine, diesel engine, etc.) production engineering and technical plant management.

From 1934 until the outbreak of World War II Dr. Rees was assistant to the manager of a steel mill in Leipzig, Germany. During the war, he served as technical plant manager of the German Guided Missile Center in Peenemuende. He came to the U. S. with Dr. von Braun and has been associated with him since. Dr. Rees became a U. S. citizen in 1954.

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NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

MANNED SPACECRAFT CENTER

Houston 1, Texas

483-5111

January 28, 1970
MSC 70-14

HOUSTON, TEXAS--Astronauts James A. Lovell and Fred W. Haise, Jr., will have the "down to earth" luxury of a drink of water if they become thirsty while exploring Fra Mauro craters during Apollo 13 flight in April.

An eight ounce water bag will be attached to the inside of the helmet. A tube will be attached to the bag permitting the astronaut to take a drink just by moving his head and sipping on the water tube. The five by three inch plastic water bag will be filled with water from the Lunar Module prior to the start of the first extravehicular activity and then may be refilled upon the crew's return to the LM.

Apollo 12 astronauts Charles "Pete" Conrad and Alan L. Bean reported they became thirsty during their exploration of the Ocean of Storms last November. Conrad said they filled up on water before leaving the Lunar Module but they "got thirsty when we made our long run from Sharp Crater all the way up to Halo Crater."

Conrad suggested provisions be made for drinking water inside the Apollo pressure suit for future lunar exploration flights. Conrad said "the addition of a little water, which would not be much trouble on the suit, would take care of that point."

The Crew Systems Division at MSC developed the water bag concept. Whirlpool Corporation is fabricating the plastic water bags.

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The water bag will be mounted on the right-center front inside the ring of the extravehicular helmet. It will be attached by a Velcro fastner to the inside of the helmet neck ring.

Another change resulting from Apollo 12 comments is the addition of a sunshade in the middle portion of the helmet rim. Astronaut Conrad suggested the additional visor after experiencing difficulty with sun glare during his EVA.

The new visor is attached to outer portion of the Lunar Extra Vehicular Visor Assembly (LEVVA).

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NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

MANNED SPACECRAFT CENTER

Houston 1, Texas

483-5111

January 28, 1970
MSC 70-15

HOUSTON, TEXAS--Several organizational changes have been made within the Science and Applications Directorate to enhance the Manned Spacecraft Center's scientific research capability and improve the implementation of science programs.

Science Director Anthony J. Calio, in announcing the changes, said the realignment of the Directorate places increased emphasis on lunar science and earth resources. Included in the reorganization is the appointment of a Deputy Director, the establishment of three new offices: Lunar Missions Office, Earth Orbital Missions Office and Mission Scientists Office; and the realignment of two divisions: Earth Resources Division and Lunar and Earth Sciences Division.

Named to the post of Acting Deputy Director for Science and Applications is Robert O. Piland, 42. Piland, who has been with the NASA for 23 years and has held several management positions at MSC, has most recently been Chief of the Earth Resources Division.

The Lunar Missions Office will provide a project management and mission planning focus within the Center for lunar scientific investigations and experiments. John Zarcaro, formerly of the Apollo Spacecraft Program Office, has been named Manager of the Office.

The Earth Orbital Missions Office will be responsible for program management, mission planning and operations focused on near-earth scientific investigations. Allen H. Watkins, formerly with the Earth Resources Division has been named Manager of the Office.

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Add 1
MSC 70-15

Scientist astronauts will be assigned on a mission basis to the newly created Mission Scientists Office, working closely with the Center's scientific elements. The astronauts will represent the Science Director at meetings, planning sessions, etc., and will act on behalf of the Science Directorate. These assignments will be in addition to the astronauts' regularly assigned duties.

Scientist Astronaut Anthony W. England is assigned as Mission Scientist for Apollo 13 and Scientist Astronaut Philip K. Chapman, Mission Scientist for Apollo 14.

Research in the fields of geology, geochemistry and geophysics will be expanded in the realignment of the Lunar and Earth Sciences Division. To implement this program, Mr. Calio announced the appointment of Dr. Paul Gast to the position of Chief of the Lunar and Earth Sciences Division.

Dr. Gast, a leading lunar geologist and Professor of Geology at Columbia University, New York, has been a member of NASA's Lunar Sample Analysis Planning Team for Apollo 11 and 12. Dr. Gast will make significant contributions to the scientific planning of Apollo missions and will be responsible for carrying out a major portion of the Center's research in lunar sciences.

The Lunar Receiving Laboratory is now established as a separate organizational element. Through the Apollo 12 mission the LRL was a part of the Lunar and Earth Sciences Division. Bryan Erb who was Acting Manager is now Manager of the LRL.

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Add 2
MSC 70-15

The Earth Resources Division, which for the past several years has been conducting the aircraft survey program, has been redesignated the Earth Observations Division. Mr. Piland, while serving as Acting Deputy Director to Mr. Calio, will also temporarily serve as Chief of the Division.

NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

MANNED SPACECRAFT CENTER

Houston 1, Texas

483-5111

70-16
January 28, 1970

Houston, Texas---Representatives of the U.S. and 21 foreign countries which are members of the U.N. Committee on the Peaceful Uses of Outer Space will receive a briefing Thursday and Friday on NASA's Earth Resources Program at the Manned Spacecraft Center.

Ambassador Heinrich Haymerle of Austria, who is chairman of the U.N. committee, heads up the contingent of approximately 60 U.S. and foreign representatives. Accompanying the group will be Ambassador Charles W. Yost, U.S. permanent representative to the U.N., NASA Deputy Associate Administrator for Space Applications Leonard Jaffe, and NASA Assistant Administrator for International Affairs Arnold Frutkin.

The U.N. group, which includes 19 U.S. and foreign ambassadors, is scheduled to receive a review of the Earth Resources Program, a tour of the earth resources aircraft, data and research facilities at Ellington Air Force Base, Buildings 222 and 358.

The group is scheduled to land at Ellington about 12:00 noon aboard a U.S.A.F. aircraft. The briefings will begin at 1:00 p.m. and run through the remainder of the day, with side tours to the Mission Control Center and the Lunar Receiving Laboratory. Tours of flight and research facilities will begin at 9:00 a.m. Friday. The U.N. representatives are scheduled to depart for New York at 12:00 noon Friday.

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70-16
Add 1

Committee members tentatively scheduled to attend the 2 day briefing are Guillermo J. McCough, First Secretary, Argentina; Ambassador Patrick Shaw, Australia; Ambassador Haymerle, Austria; Counsellor Jean Debergh, Belgium; Ambassador Joso Augusto de Araujo Castro, Brazil; Ambassador Milko Tarabanov, Bulgaria; Mr. Rettie, Canada; Ambassador Bruno Bohiadi, Chad; Ambassador Zdenek Cernik, Czechoslovakia; Ambassador Armand Berard, France; Ambassador Karoly Csatorday, Hungary; Ambassador Samar Sen, India; Ambassador Piero Vinci, Italy; Mr. Hisashi Owada, Japan; Ambassador Edouard Ghorra, Lebanon; Ambassador Francisco Cuevas Cancino, Mexico; Ambassador Mangalyn Dugersuren, Mongolia; Mr. Mohamed Mahjoubi, Morocco; Ambassador Gheorghe Diaconescu, Rumania; Ambassador Sverker C. Astrom, Sweden; and Ambassador Abdullah El-Erian, United Arab Republic. Members of the U.S. mission to the U.N. in the party include, in addition to Ambassador Yost, Ambassador William Buffum, Ambassador Glen Olds, and Peter S. Thacher.

Members of the U.N. Secretariat staff and representatives of the U.S. State Department, Washington, and the U.S. mission to the U.N. are also scheduled to attend the briefings.

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NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

MANNED SPACECRAFT CENTER

Houston 1, Texas

483-5111

70-17
January 29, 1970

Houston, Texas---Astronaut Frank Borman, commander of Apollo 8, the first spacecraft to circle the moon, will leave active duty with the National Aeronautics and Space Administration July 1 to become an officer in an industrial firm and to assist in the establishment of a new foundation.

Since May 1969, Borman has been Field Director of NASA's space station effort.

Colonel Borman, assigned to NASA by the United States Air Force since 1962, will retire from the Air Force after 20 years of active duty. He will continue to serve NASA as a consultant on earth-orbiting space stations.

He will become Vice President of Electronic Data Systems, Inc., of Dallas, Texas. The computer services company is headed by Ross Perot.

Col. Borman and Mr. Perot will establish the American Horizons Foundation.

"In establishing the new foundation," Borman said, "it is our hope that through the use of mass media, particularly television, to fully inform the American people about our most pressing national problems and opportunities and to get the American people to actively participate in solving these problems.

"My experience in the space program has been the most rewarding of my life. This new opportunity will enable me to work with a major

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industrial firm, continue an association with the space effort and to devote a substantial amount of my time through the Foundation to many issues which have interested me for a long time."

NASA Administrator, Dr. Thomas O. Paine said, "It is almost impossible to measure Col. Borman's contributions to our national space effort. All of us vividly remember his Apollo 8 mission at Christmas 1968, but he meant much more to us as an inspirational leader, an engineer, and a planner. He has reached a turning point in his personal career and we wish him well, knowing that he will continue to contribute to this country."

Borman is also a director of Global Universal Sciences of Midland, Texas.

Prior to the historical Apollo 8 flight around the moon in December 1968, Col. Borman performed a variety of special duties, including backup command pilot for the Gemini 4 flight and member of the Apollo 204 Review Board.

He was command pilot of the Gemini 7 mission, launched December 4, 1965, and participated in establishing a number of space "firsts"---among which are the first rendezvous of two manned maneuverable spacecraft---Gemini 7 and Gemini 6. He became an astronaut in September 1962.

Col. Borman entered the Air Force after graduation from the U. S. Military Academy and received his pilot training at Williams Air Force Base, Arizona.

From 1951 to 1956, he was assigned to various fighter squadrons in the United States and the Philippines. He became an instructor of

thermodynamics and fluid mechanics at the USMA in 1957, and subsequently attended the USAF Aerospace Research Pilots School from which he graduated in 1960. He remained there as an instructor until 1962. He has accumulated over 5,500 hours flying time, including 4,500 hours in jet aircraft.

Awards to Astronaut Borman include the NASA Distinguished and Exceptional Service Medals, Air Force Command Astronaut Wings, and Air Force Distinguished Flying Cross; recipient of the 1966 American Astronautical Flight Achievement Award and the 1966 Air Force Association David C. Schilling Flight Trophy; co-recipient of the 1966 Harmon International Aviation Trophy; the California Institute of Technology Distinguished Alumni Service Award for 1966; and the New York State Medal for Valor in 1969.

Col. Borman was born March 14, 1928, in Gary, Ind., and grew up in Tucson, Ariz. His parents, Mr. and Mrs. Edwin Borman, now reside in Phoenix, Ariz.

He received a Bachelor of Science degree from the USMA in 1950 and a Master of Science degree in Aeronautical Engineering from the California Institute of Technology, Pasadena, in 1957.

He is married to the former Susan Bugbee of Tucson. They have two children, Fredrick and Edwin.

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NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
MANNED SPACECRAFT CENTER
Houston 1, Texas

483-5111

January 29, 1970
MSC 70-17a

HOUSTON, TEXAS--The NASA Manned Spacecraft Center has extended its contract with Service Technology Corporation, Houston for facility support services at the Center.

The cost-plus-award-fee contract represents the third year of an approved 5-year program initially awarded to LTV Aerospace Corporation, Range Systems Division, Dallas, Texas.

The 1-year extension is valued at approximately $11.5 million and brings the total estimated value of the contract since December 1967 to $34.8 million.

Service to be performed includes operations, maintenance, repairs, alterations, minor construction, and engineering, and drafting services for the Manned Spacecraft Center. The contract provides facilities support to all administrative operations and research and development programs at the Center.

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NEWS RELEASE
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
MANNED SPACECRAFT CENTER
Houston 1, Texas

483-5111

70-18
January 29, 1970

Houston, Texas---A NASA accident investigation board has found that the pilot failed to lower his landing gear in a landing mishap that occurred August 25, 1969, at Ellington AFB.

NASA Staff Pilot Edwin Q. Rainey was not hurt in the incident. The T-33 jet aircraft he was flying received damages totaling about $24,000, but it was not repaired because of its reduced value.

Rainey had completed a functional check flight with the aircraft and a series of four touch-and-go landings and was preparing to make a fifth landing to a full stop when the Ellington control tower warned that his landing gear was not down.

Rainey advanced his throttle, retracted his speed brakes, and attempted to go around for another landing approach. However, his air speed was too low and the aircraft contacted the runway before the engine could accelerate. The go-around was aborted and Rainey shut down the engine, bringing the aircraft to a stop on its belly and wing flaps.

The investigating board, headed by Astronaut Paul J. Weitz, said a possible contributing cause of the accident was the pilot's pre-occupation with an up-coming precision landing coupled with a report from the Ellington tower of another aircraft in the vicinity which may have distracted the pilot and broken his normal habit pattern.

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The board said, however, that final responsibility for the safe and proper operation of an aircraft rests with the pilot, and it recommended that no changes be made in standard operating procedures or aircraft equipment.

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NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

MANNED SPACECRAFT CENTER

Houston 1, Texas

483-5111

February 2, 1970
MSC 70-19

HOUSTON, TEXAS--ALSEP 1 continues to transmit scientific and engineering data to Earth. The central station and experiments have now operated without interruption for over 1,948 hours since being deployed on the lunar surface by the crew of Apollo 12. Data being transmitted from the package indicates that the majority of temperatures are steadily decreasing as a result of the diminishing sun elevation angle. ALSEP 1 entered its third lunar night January 31. To date, 2,034 commands have been transmitted to and implemented by ALSEP 1 since becoming operational.

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NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
MANNED SPACECRAFT CENTER
Houston 1, Texas

483-5111

February 4, 1970
MSC 70-20

HOUSTON, TEXAS--The NASA Manned Spacecraft Center announced a one-year extension of its contract with the Zia Company of Las Cruces, New Mexico, for maintenance and operations support to NASA's White Sands Test Facility, Las Cruces, New Mexico.

The estimated value of the one year extension is $3,270,897 and brings the total value of the contract since November 1966 to about $17.9 million.

Under terms of the cost-plus-award-fee contract, the Zia Company is responsible for maintenance, repair and operation of buildings, equipment, and systems; emergency fire protection; medical services for employees; electrical and mechanical engineering support; altitude simulation system support; administrative support of supply, warehousing, transportation and heavy equipment operation; and minor construction and alteration of facilities.

The contract extension extends the Zia Company's period of performance through January 1971.

The White Sands Test Facility provides major support services to NASA's Manned Spacecraft Center, Houston, in testing Apollo spacecraft propulsion systems, components and materials.

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NEWS RELEASE
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
MANNED SPACECRAFT CENTER
Houston 1, Texas

483-5111

70-21
February 5, 1970

A study to extend the operating life of the fuel cell has been requested of the Allis-Chalmers Corporation (A-C), Milwaukee, Wisconsin, by the NASA Manned Spacecraft Center.

MSC has asked A-C to investigate the application of the fuel cell system as the primary power supply for several advanced space missions, as well as the auxiliary power system for lunar surface bases and Earth orbital space stations.

Primary objective of the $554,000 cost-plus-fixed-fee contract is to extend the lifetime of the fuel cell to a goal of 10,000 hours.

At the same time, the study will investigate ways to decrease system weight approximately 60 percent. Current fuel cells have a specific weight of 100 pounds per kilowatt hour. Reliable operation is between 1,000 to 1,500 hours. The study also calls for a system that can be re-used up to 100 missions.

In addition the system is to have stop and restart capability---in the event inflight maintenance is required.

The contact also calls for the fabrication and delivery of a small test module. Testing will be conducted at the Marshall Space Flight Center.

The study will run through July 31, 1970. It is monitored by MSC's Propulsion and Power Division.

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NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

MANNED SPACECRAFT CENTER

Houston 1, Texas

483-5111

February 6, 1970
MSC 70-22

HOUSTON, TEXAS--NASA today selected the Service Technology Corporation of Dallas, Texas for the award of a contract for laboratory and technical support services at White Sands Test Facility, Las Cruces, New Mexico.

The cost-plus-award-fee contract will cover one year and the estimated contract value is $3.5 million.

This contract will provide technical services for development testing and verification testing of space propulsion systems and related sub-systems associated with follow-on NASA Manned Spacecraft Center missions.

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NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
MANNED SPACECRAFT CENTER
Houston 1, Texas

483-5111

February 10, 1970

ALSEP System Status - 12:00 C.S.T.

After more than 79 days of operation, ALSEP 1 continues its satisfactory performance in transmitting to Earth scientific data from the seismometer, the magnetometer, and the field particle experiment sensors. All experiments and the central station continue to function in the OPERATE mode as a steady 74 watts of power is being provided by the thermoelectric generator. The ALSEP 1 system experienced its third lunar sunset at 15:51 CST, 31 January. Temperature sensors indicate that no appreciable change has occurred since the optical terminator crossing, as the central station and various instrument temperatures remain stabilized. Signal strength of the downlink telemetry remains constant at -140 dbm. Minor fluctuations in the signal strength occur depending on the characteristics of the remoted site supporting ALSEP.

The Passive Seismic Experiment detected seismic activity on the X axis and Y axis long-period horizontal sensors coinciding with the terminator crossing. A seismic signal lasting twenty minutes in duration was detected at 21:51 CST, 31 January. The seismic event was recorded on the three long-period sensors.

The Lunar Surface Magnetometer field sensor outputs displayed significant variant magnetic field intensities on 1 February and diminished slowly thereafter.

The Suprathermal Ion Detector Experiment indicated considerable activity in its low energy data immediately prior to the optical terminator crossing.

NEWS RELEASE

TIONAL AERONAUTICS AND SPACE ADMINISTRATION

MANNED SPACECRAFT CENTER

Houston 1, Texas

483-5111

February 10, 1970
MSC 70-23

HOUSTON, TEXAS--The National Aeronautics and Space Administration, Manned Spacecraft Center has invited 14 firms to submit proposals for an engineering study on a space environment in which the "average" person could work, sleep, eat, and relax comfortably and efficiently over long periods of time.

The objective of the study will be to prepare handbooks to be used as basic criteria for architectural design, compartment utilization, volume, lighting, acoustics, temperature, and color for extraterrestrial living environments. The handbooks will present standards setting maximum, minimum, and desired ranges.

The study will relate these standards to space stations with 6 to 100 crewmen, up to 400,000 cubic feet of volume and designed for missions lasting as long as 10 years; to logistic spacecraft with 2 to 12 crewmen, up to 10,000 cubic feet of room and an orbital stay time of seven days; and to planetary space vehicles with 6 to 12 crewmen, up to 30,000 cubic feet of volume and designed for missions lasting as long as 1,040 days.

The request for proposals notes that operating in new and strange environments is not new to man. Enormous amounts of data have been compiled to reflect the lighting, acoustics, temperatures and color

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desirable to daily life. Additional information has been gathered from such sources as submarines, underwater oceanographic research facilities, Arctic and Antarctic stations and from spaceflight, where men have lived for long periods in confined environments.

The Manned Spacecraft Center plans to allot up to $100,000 for the study. The seven month effort will be carried out under the direction of MSC's Engineering and Development Directorate.

Industry proposals for the study contract are to be submitted by March 9, 1970.

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NEWS RELEASE
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
MANNED SPACECRAFT CENTER
Houston 1, Texas

483-5111

February 13, 1970
MSC 70-24

HOUSTON, TEXAS--Distribution of 28 pounds of Apollo 12 lunar material to scientists in the U. S. and 16 foreign countries has begun at the NASA Manned Spacecraft Center, Houston, Texas.

The material, in the form of rocks, chips, fine material and thin sections, is scheduled to be distributed to 139 U. S. and 54 foreign scientists. Distribution of the samples is to continue for the next several months.

The 28.6 pounds of material (13 kilograms) represents about 40 percent of the material collected from the Moon's Ocean of Storms by Apollo 12 astronauts Charles Conrad and Alan Bean in November 1969. The bulk of the samples will be distributed to scientists through the mail and by diplomatic courier. Some scientists will travel to MSC to arrange for personal receipt of their sample.

There are 51 more scientists receiving Apollo 12 samples than the number of principal investigators who received samples from the first lunar landing. Eighteen pounds of Apollo 11 samples were distributed to 106 U. S. scientists and 36 scientists representing eight foreign countries last September.

The domestic scientific analysis will be performed in 139 university, industrial and government laboratories in 25 states and the District of Columbia. The 54 foreign investigators represent Australia, Belgium, Canada, Czechoslovakia, Finland, West Germany, Japan, Korea, Switzerland, United Kingdom, South Africa, Italy, France, Norway, India, and Spain.

A total of 1,620 separate samples, rocks, fines, chips, and thin sections will be distributed. The scientists will perform analysis in mineralogy-petrology, chemical-isotope, physical properties, and bio-science and organic investigations.

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Preliminary examination at the Lunar Receiving Laboratory has revealed the Apollo 12 material has characteristics similar to the samples returned on Apollo 11. Mineralogically, the 12 samples contain the same major minerals, pyroxene, plagioclase, olivene, and ilmenite, as found in the samples returned by the 11 crew.

Most of the 12 rocks are a coarse grained crystalline variety with abundant pits and glass splashes throughout the material.

Potassium-Argon age dating, conducted during the preliminary examinations at the LRL shows the Apollo 12 samples to be about 1 billion years younger than the age of the Apollo 11 samples determined by the same method. Other tests revealed the 12 samples to have organic content of somewhat less than that found in 11 samples.

The principal investigators will be asked to make a report of their findings at a Lunar Science Conference scheduled to be held in Houston, Texas in January 1971.

Of the 28 pounds of material distributed to scientists, approximately four pounds will be destroyed in the course of the planned experiments. The remaining 23.7 pounds of sample material will be returned to NASA.

The parts of the Surveyor III spacecraft which were returned by the 12 crew were released from the LRL on January 10. Scientists and engineers at the Jet Propulsion Laboratory, Pasadena, California and Hughes Aircraft Company, Culver City, California are currently examining parts of the Surveyor TV camera, TV cable and scoop.

In addition to the Apollo 12 samples NASA will distribute an additional 112 grams of Apollo 11 material to 13 scientists in the U. S. and Japan for second generation experiments.

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NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

MANNED SPACECRAFT CENTER

Houston 1, Texas

483-5111

February 13, 1970
MSC 70-25

HOUSTON, TEXAS--Establishment of a Space Shuttle Program Office was announced today by the Manned Spacecraft Center.

Robert F. Thompson was named program manager. Kenneth S. Kleinknecht succeeds Thompson as Manager of the Apollo Applications Program Office. Clifford E. Charlesworth has been named Deputy Manager, AAP, a new position. Charlesworth has been a flight director in the Gemini and Apollo programs.

The appointments are effective immediately. No successor has been named to Kleinknecht's former position as Manager for Command and Service Modules, Apollo Spacecraft Program Office.

The Space Shuttle Program Office will be responsible for managing the studies to be awarded and subsequent development of the reusable space shuttle craft.

The new office is still in the planning stage. Details such as size, composition, and further appointments within its management structure will be announced later.

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NEWS RELEASE
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
MANNED SPACECRAFT CENTER
Houston 1, Texas

483-5111

February 16, 1970
MSC 70-26

HOUSTON, TEXAS--The Apollo 12 lunar module, in its final moments of landing on the Moon November 19, 1969, generated a dust shower which may have caused more impacts to the Surveyor III television camera than 950 days of exposure to the space environment.

A preliminary analysis conducted at the NASA Manned Spacecraft Center revealed the Surveyor III TV camera experienced meteoroid damage of negligible consequence during 950 days exposure to the space environment; however, a report of the analysis reveals numerous shallow craters, of recent origin, apparently caused by the LM -- 600 feet away.

A report, prepared by Burton G. Cour-Palais, Chief, Meteoroid Sciences Branch of the Science and Applications Directorate, explained the distribution of craters of low velocity origin peaked at approximately a region directly in line with the LM. In addition, protuberances on the TV camera (screw heads, support struts, etc.) left dark shadows on the camera paint, again pointing to the LM.

The external surfaces of the camera and a length of polished aluminum tube retrieved by the Apollo 12 crew were microscopically examined for evidence of meteoroid impacts by the Meteoroid Sciences Branch of the MSC. These examinations were carried out in the Lunar Receiving Laboratory before the Surveyor parts were released for detailed analysis to the Jet Propulsion Laboratory and Hughes Aircraft Company, Culver City, California.

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Cour-Palais said the LM generated craters "were shallow craters generally, and mostly of recent origin, as indicated by their whiteness against the sandy brown color of the TV camera housing painted surface. There was a definite concentration (10 to 100 times) of these white craters on the arc of the TV camera facing the LM, compared with the other side (away from the LM).

"After a detailed examination of the geometrics involved, taking into account the relative angles of the shadowing, the TV camera, the Surveyor spacecraft and the LM, it can be readily shown that the origin of these craters was in plus or minus 3 degrees of the LM landing site. It is therefore postulated that the LM in its final moments of landing generated a dust shower that affected the Surveyor and sand blasted the camera surface facing towards it," Cour-Palais concluded.

During the examination about 60 percent of the TV camera surface area of nearly 2 square feet was scanned at about 25 times magnification and all impacts on selected areas on the flat surfaces were counted to determine the fluxes (rate of flow) of primary and secondary particles. The polished tubing (7 3/4" x 1/2" in diameter) was carefully scanned at a general magnification of 40 with a stereo-zoom microscope.

A preliminary assessment of the meteoroid impacts reveals possibly five meteoroid impacts on the camera housing and another four craters possibly of meteoroid origin on the polished tube. None of the impacts on the camera housing penetrated the protective paint covering, Cour-Palais stated.

Cour-Palais said detailed microscopic analysis of a two-inch section of the polished tube is continuing at MSC.

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NEWS RELEASE
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
MANNED SPACECRAFT CENTER
Houston 1, Texas

483-5111

February 16, 1970

RELEASED BY NASA HEADQUARTERS

Neil A. Armstrong and the flight director during the critical Apollo 11 lunar surface landing maneuvers, Eugene F. Kranz, will receive the Arthur S. Flemming Award in Washington, D. C., Thursday, February 19.

The award is presented annually by the Downtown Jaycees of Washington to ten young men in civil service in recognition of their outstanding and meritorious service in the Federal Government.

The award will be presented at a noon luncheon in the Grand Ballroom of the Mayflower Hotel. The Honorable George Romney, Secretary of the Department of Housing and Urban Development, will be the guest speaker.

Armstrong, a civilian aerospace engineer and test pilot of the National Aeronautics and Space Administration, was commander of the Apollo 11 spacecraft which made the first lunar landing July 20, 1969. Kranz is Chief of the Flight Control Division at the NASA Manned Spacecraft Center, Houston, Texas.

The award for 1969 brings to 16 the number of men who have earned the Flemming Award while employed by NASA. The other 14 are:

Dr. George M. Low, Deputy Administrator

Leonard Jaffe, Deputy Associate Administrator for Space Science and Applications (Applications)

Edgar M. Cortright, Director, Langley Research Center

Dr. Christopher C. Kraft, Jr., Deputy Director, Manned Spacecraft Center

-more-

Add 1

Dr. Robert Jastrow, Director, Goddard Institute for Space Studies

Dr. George F. Pezdirtz, Director, Chemistry and Physics Branch, Langley Research Center

John D. Hodge, Manager, Advanced Missions Program Office, Manned Spacecraft Center

James J. Kramer, Chief, Propulsion Systems Acoustics Branch, Lewis Research Center

Dr. Norman F. Ness, Chief, Extraterrestrial Physics Branch, Goddard Space Flight Center

Bernard Lubarsky, Assistant Director for Power, Lewis Research Center

Wesley L. Hjornevik, formerly Associate Director, Manned Spacecraft Center, now Deputy Director, Office of Ecomonic Opportunity

Dr. Joseph F. Shea, formerly with the Office of Manned Space Flight, now with the Raytheon Corp.

Dr. John W. Townsend, Jr., formerly of Goddard Space Flight Center, now Deputy Administrator, ESSA

Dr. Wilmot N. Hess, formerly of Manned Spacecraft Center, now with ESSA, Director, Research Laboratories, Boulder, Colorado.

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NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
MANNED SPACECRAFT CENTER
Houston 1, Texas

483-5111

February 17, 1970
MSC 70-27

HOUSTON, TEXAS--Scientific instruments left on the Moon by the Apollo 12 crew are expected to record possible thermal "shock" effects on the lunar surface during a lunar eclipse on February 21, 1970.

The lunar eclipse, a twice a year event, is caused by the Earth blocking out the rays of the Sun. This turns lunar day into partial lunar night causing a thermal "shock," the effects of which will be measured and transmitted to Earth by the Apollo 12 Lunar Surface Experiment Package (ALSEP). The eclipse will start at 12:55 a.m. CST, Saturday, February 21, 1970.

Scientists at the NASA Manned Spacecraft Center anticipate the thermal "shock" to crack rocks, release entrapped gases, make the lunar surface tremble and modify the electric fields near the lunar surface. The Apollo Lunar Surface Experiment Package (ALSEP) will be in the shadow caused by the passage of the Earth between the Sun and the Moon.

The ALSEP gives man the first opportunity to study the results of such an eclipse on the lunar surface. The array of scientific instruments has been in continuous operation since its emplacement on the Moon by the Apollo 12 crew on November 20, 1969.

"We will possibly see the effect of the release of entrapped gases from the lunar surface," Dr. John Freeman, Associate Professor of Space Sciences, said of the eclipse. Dr. Freeman is principal investigator of the ALSEP's lunar ionosphere detector which is designed to study the charged particles in the lunar atmosphere.

Five instruments, a power source, and data system comprise the ALSEP which will study the eclipse and transmit the data to the Mission Control Center at MSC.

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Add 1
MSC 70-27

The Passive Seismic Experiment (PSE) measures disturbances produced by the Moon quakes and Meteoroid impact. The PSE will record the cracking or seismic disturbances caused by the eclipse.

The Lunar Surface Magnetometer (LSM) will measure the magnitude and direction of the surface magnetic field effected by the eclipse.

The Lunar Ionosphere Detector and the Lunar Atmospheric Detector will record changes, if any, in the lunar ionosphere and atmosphere which may be caused by the eclipse.

Solar Wind Experiment will measure any changes in the solar wind which the eclipse may cause.

The eclipse,which occurs during lunar day,will cast a dark shadow (Umbra) over the Moon for approximately one hour and a lighter shadow (Penumbra),which only partly cuts off the sunlight,will last for approximately five hours. The temperature on the lunar surface is expected to drop from 250 degrees (centigrade) to a minus 200 degrees (centigrade).

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NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

MANNED SPACECRAFT CENTER

Houston 1, Texas

483-5111

February 24, 1970

RELEASED BY NASA HEADQUARTERS

The National Aeronautics and Space Administration has designated its Apollo Applications program Skylab.

The Skylab Program is designed to make maximum use of the existing space hardware developed for the Apollo manned lunar landing series and contemplates its first launch in late 1972 of a 10,000-cubic-foot manned workshop into a 235-mile high Earth orbit.

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NEWS RELEASE
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
MANNED SPACECRAFT CENTER
Houston 1, Texas

483-5111

70-28
February 24, 1970

Houston, Texas---A team of scientists and engineers from the NASA Manned Spacecraft Center will take a hard look at the Sun during the total solar eclipse on March 7.

The scientific team of MSC's Space Physics Division will be set up on a mountain in southern Mexico where it will conduct seven experiments aimed at learning more about the Sun. The group will photograph the sun through an assortment of telescopes as the Sun is totally blocked out by the Moon at 11:38 a.m. CST on March 7.

The eclipse will be total in a band about 85 miles wide, running from the southwest (in the Pacific) across Mexico, along the eastern seaboard of the U. S. and northeast over Nova Scotia. The shadow caused by the eclipse will first touch land on the west coast of southern Mexico, near Puerto Angel, pass over the isthmus of Mexico, the Gulf of Mexico, across Florida near Apalachicola and along the eastern seaboard, leaving the continental U. S. at Norfolk, Virginia.

The MSC group will have their telescopes, cameras and associated equipment set up in the Mexican State of Oaxaca outside the town of Miahuatlan. Miahuatlan, some 300 miles south of Mexico City, has relatively clear skies and affords the best location to view nature's most spectacular phenomenon. It is also the geographic point where the total eclipse has its longest duration, about $3\frac{1}{2}$ minutes.

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The main scientific objective is to gain information on the Sun's corona, the fiery outer envelope of the Sun, normally obscured by the Sun's brightness. MSC also hopes to obtain information on the family of faint comets predicted to be found near the Sun, determine distribution of the coronal radiation and of the sunlight scattered by the Earth's atmosphere.

The MSC expedition, under the supervision of Dr. Robert Kovar, the chief scientist, traveled to Mexico via truck convoy with $2\frac{1}{2}$ tons of equipment and is currently setting up their cameras and telescopes. The group will use eight telescopes (3 to 7 inch) and an assortment of 16mm motion picture, 35mm and 70mm cameras in carrying out their experiments.

Others in the MSC group are NASA contract experimenters, representing Lockheed Electronics Corporation and the University of Houston.

The experiments and their scientific objectives to be conducted by the MSC team are as follows:

H-Alpha: This experiment is designed to separate the F-corona (reflected corona) and K-corona (emission of ionized gases and plasma) out to 3 degrees from the Sun. With information from this experiment, it is possible to determine the distribution of interplanetary particles in the vicinity of the Sun. Dr. Robert P. Kovar of MSC is chief experimenter.

Polarization Experiment: This experiment is designed to separate the F and K-coronae to three solar radii in order to obtain information on the distribution of particles between the Earth and Sun. Dr. Jack Reid of Lockheed is chief experimenter.

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Photoelectric Studies: The spectral and polarmetric distribution of the coronal radiation and of the sunlight scattered by the Earth's atmosphere will be studied by this experiment. Dr. Natalie S. Kovar, University of Houston, is chief experimenter.

Flash Spectrum: This experiment is designed to record the spectrum of the chromosphere (the thin layer of relatively transparent gases above the photosphere of the Sun) just before and after totality. Analysis of this data will yield data on the temperature distribution of the chromosphere. Chief experimenter is Carl L. Kotila of MSC.

Comet Search: Exposures of varying length will be taken during totality in order to detect the family of faint comets predicted to be found near the Sun. The known presence or absence of these comets will be important in the solution of the problem of dealing with the replenishment of interplanetary dust particles. George Bonner of MSC is chief experimenter.

Shadow Band Experiment: Bonner along with Michael F. Heidt are chief experimenters of this experiment which will be employed to determine the size, velocity, and intensity variations of the shadow bands. Very little is known about the nature of these bands since they have never been detected photographically or photoelectrically.

Multicolor Coronal Photography: This experiment consists of taking photographs of the inner corona in order to determine how the structure of the corona varies with the wavelength. This variation will depend on the distribution of the various ions within the corona. Experimenter for the multicolor experiment is Kenneth D. Cashion.

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Project scientists state the results of the Mexican experiments will provide a better understanding of the Sun and the properties of the interplanetary space and in addition the information gained from these experiments will provide a large amount of ground-based data for use by the solar Apollo Telescope Mount experiment, scheduled for use in the Apollo Applications Program.

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NEWS RELEASE
TIONAL AERONAUTICS AND SPACE ADMINISTRATION
MANNED SPACECRAFT CENTER
Houston 1, Texas
483-5111
February 25, 1970

RELEASED BY NASA HEADQUARTERS

The National Aeronautics and Space Administration plans to place its White Sands, New Mexico Test Facility on stand-by status in June of 1971.

Mothballing could involve a reduction of employment at the facility from its present 641 to a caretaker force of about 50 after completion of the scheduled 1970-71 tests of the Apollo lunar module and the Skylab Program command and service modules.

The Apollo tests at the facility involve lunar module extended tanks which increase the propellant load of the Apollo lunar-landing spacecraft, while the Skylab tests include the reaction control rocket engines of the command and service modules to be used in Skylab's orbital workshop program.

The decision to place WSTF on a stand-by condition is based on NASA's reduced FY 71 budget requests and the reduction of work in the Apollo program. However, the facility will be kept in condition to allow a rapid resumption of work on lunar modules in 60 to 90 days in the event NASA has such a future requirement.

NASA Administrator Dr. Thomas O. Paine said: "The NASA facilities at White Sands are unique and valuable. We plan to consider them carefully for possible use in future NASA programs, and to undertake a survey of possible uses by other Government agencies."

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Add 1

NASA shares a portion of the White Sands range with the Department of Defense and the NASA facility is a small part of the total White Sands operation, which utilized more than 6,500 employees.

The White Sands Test Facility at Las Cruces, New Mexico, is on the western edge of the U. S. Army White Sands Missile Range and occupies 55,861 acres of land as a tenant at this site. It has as its primary mission the performance of operational tests required to accomplish the development of propulsion systems of spacecraft for manned space flights.

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3/1/70

DRAFT NEWS RELEASE

2.3 grams of powdered lunar material from Apollo 11 rock number 50 disappeared Saturday night while on display at a Los Angeles charity benefit.

The missing lunar material checked out to Dr. George Weatherill of the Institute of Geophysics, U.C.L.A., was being shown at a $100-a-plate fund raising dinner attended by 275-300 persons in support of the Saul Winstein and the Doheny Eye Foundations.

NASA-MSC was notified of the disappearance by U.C.L.A. officials early Sunday morning. The lunar material was being displayed in a small vial.

Mr. Anthony J. Calio, Director of Science and Applications at MSC said the FBI has been requested to investigate the disappearance.

Mr. Calio said further: "Although I'm certain all principal investigators associated with lunar sample analysis recognize the importance of safeguarding their samples in accordance with established procedures, this unfortunate incident underlines the necessity for strict observance of security regulations in order to maintain a productive scientific investigation of lunar materials."

NASA's agreement with all investigators requires security measures be followed while the samples are in possession of the investigators. Approval for public nonscientific display must be requested from NASA Headquarters, Washington, D. C. Records there do not indicate such a request was made for this event.

Public display must be on a noninterference basis with the investigation and with the same security requirements in force.

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NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

MANNED SPACECRAFT CENTER

Houston 1, Texas

483-5111

March 9, 1970
MSC 70-29

HOUSTON, TEXAS--Dr. Charles A. Berry, Director of Medical Research and Operations at the NASA Manned Spacecraft Center, Friday will take part in an international medical conference by two-way satellite television relay between Houston and 11 cities in Europe.

Speaking from MSC's small public affairs auditorium, Berry's topic will be "The Current Aspect of Space Medicine." His talk will follow a brief message from Houston by American Medical Association president Dr. Gerald D. Dorman.

The central meeting will be at the Swiss ski resort of Davos, where participants will view proceedings by means of large-screen television projection. Other medical groups will take part through television projection at simultaneous meetings in nine German cities and in Vienna, Austria. The meeting is a part of the 18th International Post-Graduate Congress of the German Federal Medical Council, and is jointly sponsored by the German Senate for Post-Graduate Medical Instruction and CIBA, Ltd.

The program includes television relay presentations from aerospace medical researchers at the USAF School of Aerospace Medicine, Brooks AFB, San Antonio, Texas.

Live discussions will be relayed by Intelsat III, in synchronous orbit over the Atlantic, through ground stations at Etam, W. Virginia, and Raisting, Germany.

The other major topic of the day-long meeting will be medical techniques for early detection of cancer.

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NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

MANNED SPACECRAFT CENTER

Houston 1, Texas

483-5111

MSC 70-31
March 9, 1970

HOUSTON, TEXAS--The National Aeronautics and Space Administration has awarded a cost-plus-fixed fee contract to the General Electric Co. for Spacecraft Checkout (ACE-S/C), Reliability and Quality Assurance Engineering and Systems Engineering in support of NASA's Apollo and Skylab programs. This contract definitizes a letter contract with General Electric.

The period of performance for this work will be from October 1969, through December 1972. The value of the cost-plus-fixed-fee contract is $57,264,989.

The contract provides for equipment and engineering required for the continued use of Acceptance Checkout Equipment - Spacecraft (ACE-S/C) stations, reliability and quality assurance engineering and other engineering efforts required by the Apollo and Skylab Program Offices of the NASA's Manned Spacecraft Center.

General Electric will be required to modify, program, maintain, and operate the ACE-S/C stations as required through December 1972.

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NEWS RELEASE
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
MANNED SPACECRAFT CENTER
Houston 1, Texas

483-5111

March 10, 1970
MSC 70-32

HOUSTON, TEXAS--An experimental, low-cost spacecraft module, the Subsystem Test Bed (STB), began a ten-day vacuum chamber test today, March 10, at the NASA Manned Spacecraft Center.

The test is being conducted in the 65-foot-diameter, 120-foot-high chamber A of MSC's Space Environment Test Division and will determine how the STB reacts to the temperature and vacuum extremes of space.

Engineers at MSC will compare thermal-vacuum results on the full-scale STB with results from similar tests on smaller scale models and with mathematical predictions. By correlating the results it would be possible to verify the thermal-vacuum design of future, large space vehicles using smaller and less expensive scale models in vacuum chamber tests.

The test is planned to last 257 hours and will subject the 15-foot-diameter, 9-foot-high STB to temperatures ranging from 100 degrees Fahrenheit below zero to 230 degrees above zero and to a vacuum equivalent to that almost 100 miles above Earth.

Solar simulators in the huge vacuum chamber will reproduce heating from the sun while chamber wall panels cooled to 300 degrees below zero Fahrenheit with liquid nitrogen will simulate the coldness of space.

For the current test the STB will have no interior subsystems except for a temperature and humidity control package which will circulate air inside the vehicle and control the air temperature. Two of the STB's six circular windows will have motorized shades which can be raised and lowered during the test.

In future tests the STB will provide a realistic spacecraft structure for development work on advanced space vehicle equipment such as environmental control systems for long-duration missions and on-board checkout systems for maintenance during flights.

-more-

Add 1

The cake-lid shaped STB was designed and built by the Martin Marietta Corporation, Denver under a NASA supporting Development contract. The vehicle structure was delivered to MSC in April 1968, where it has since been equipped with hatches, windows, trusses, insulation, surface skin and other auxiliary equipment. The vehicle satisfactorily completed static launch load tests, docking and thrusting load tests and leakage and pressure tests before going into the current thermal-vacuum test series.

The STB test program is managed by MSC's Spacecraft Design Office with support from the Center's Space Environment Test, Structures and Mechanics, Crew Systems, Engineering, and Technical Services Divisions.

During the STB test Manned Spacecraft Center engineers will also be evaluating the performance of a novel device called a heat pipe, which may be useful in controlling the temperature of future space vehicles.

Up to now spacecraft designers have faced a difficult problem in maintaining the proper temperatures in spacecraft, which receive large heat inputs from the sun on one side and radiate heat rapidly into space on the other side. This condition can cause a number of problems including failure of electrical equipment in areas of high heating and freezing of propellant and fluid lines in areas of extreme cooling.

The Apollo spacecraft uses insulation, heaters and absorptive and reflective coatings to minimize adverse thermal effects. During flight the spacecraft is also rotated slowly to give more uniform surface temperatures.

Heat pipes transfer thermal energy efficiently and uniformly from one location to another and could conceivably do much to solve the tricky problem of thermal control in space vehicles.

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The device is basically a hollow tube containing a small amount of fluid. The fluid will absorb heat until it reaches vaporization temperature, a temperature determined by the type of fluid and the pressure inside the tube. The fluid vapor will then transfer heat uniformly through the tube to a point where it can either be radiated or made to do useful work.

Heat tubes can be formed into continuous loops and the loops stacked to form the structure of a space vehicle. By controlling the pressure or changing the fluid within the pipes, future astronauts could provide the proper temperatures for any given area of the vehicle with little or no concern about the vehicle's attitude toward the sun.

Two heat pipes are supported above the Subsystem Test Bed in Chamber A. The pipes are stainless steel, about one-half inch in diameter and are formed into a 15-foot-diameter loop. To assist with absorption and radiation of thermal energy four-inch longitudinal fins made of copper have been attached to each of the pipes. A stainless steel wick inside the pipes is used to collect condensed vapor and return it to the heat source by capillary action.

One of the pipes contains 300 cubic centimeters of water and is expected to reach an equilibrium temperature of about 76 degrees Fahrenheit. The second pipe contains 300 cubic centimeters of methanol and will be used as a comparison for the pipe containing water.

The heat pipes to be used in MSC tests are the largest of their type ever built. They were designed and fabricated by TRW Systems Group of Redondo Beach, California.

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NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

MANNED SPACECRAFT CENTER

Houston 1, Texas

483-5111

70-33
March 16, 1970

Houston, Texas---The vial of Apollo 11 lunar material which was stolen and subsequently recovered in Los Angeles, California, was returned Monday to the NASA Lunar Receiving Laboratory at Houston, Texas.

The material, about 2 grams of fine material returned in man's first landing on the Moon, will be examined by scientists at the Manned Spacecraft Center to confirm the material, in fact, is the sample released to the University of California Los Angeles several months ago. Dr. George Wetherill of UCLA, a principal investigator for NASA, reported the sample was taken from a fund raising dinner in a Los Angeles department store on February 28.

The sample vial was subsequently recovered less than 48-hours later when Los Angeles police were informed by an anonymous caller that they would find the vial in a mailbox in Los Angeles.

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NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

MANNED SPACECRAFT CENTER

Houston 1, Texas

483-5111

MSC 70-34
March 26, 1970

The National Aeronautics and Space Administration today named flight and support crews for the Apollo 15 mission.

Prime crewmen are Astronauts David R. Scott, 37, commander; Alfred M. Worden, 37, command module pilot; and James B. Irwin, 40, lunar module pilot. They were backup crewmen for Apollo 12.

The backup flight crew for Apollo 15 consists of Astronauts Richard F. Gordon, 40; Vance D. Brand, 38; and Harrison H. (Jack) Schmitt, 34.

Members of the support crew are Astronauts Karl G. Henize, 43, and Richard H. Truly, 32.

Gordon, Brand and Schmitt will be eligible for selection as prime crewmen for any mission subsequent to Apollo 16.

Schmitt, who holds a doctorate in geology, is the first scientist-astronaut to be named to a flight crew. It is likely that he will be a prime crewman on Apollo 17 or 18. Since Dr. Schmitt is the only professional geologist currently qualified for flight crew selection, lunar landing site selection will be an important factor in determining which mission he will fly.

Apollo 15 is expected to fly 6 months after the Apollo 14 mission, presently scheduled in the fall of 1970. The launch date and the lunar site at which Apollo 15 will land will not be determined until after detailed evaluation of information returned by Apollo 13, and perhaps Apollo 14.

Apollo 15 will be approximately 10 days in duration. As presently planned, there will be two periods of lunar surface exploration of about 4 hours each. Those durations may be extended based on experience in preceding missions.

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An Apollo Lunar Surface Experiments Package (ALSEP) will be deployed, extending the network of instruments relaying to earth information concerning the moon's interior, exterior and atmosphere.

Scott, an Air Force colonel, has flown two previous space missions, Gemini 8 and Apollo 9.

Worden, an Air Force major, will be making his first space flight. He has been an astronaut since April 1966.

Irwin, an Air Force lieutenant colonel, has not yet flown in space. He was selected as an astronaut in April 1966.

Gordon, a Navy captain, was command module pilot of Apollo 12. He also flew the Gemini XI mission.

Brand, a civilian, has not yet flown in space. He is a member of the group selected in 1966.

Schmitt, a civilian, is a member of the first group of scientist-astronauts selected in July 1965.

Henize, a civilian, holds a doctorate in astronomy. He was selected in the second group of scientist-astronauts in August 1967.

Truly, a Navy lieutenant commander, joined the NASA astronaut team in September 1969. He is one of the seven astronauts assigned to the NASA program after the Department of Defense Manned Orbiting Laboratory program was cancelled.

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NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
MANNED SPACECRAFT CENTER
Houston 1, Texas

483-5111

MSC 70-35
March 27, 1970

HOUSTON, TEXAS--The NASA Manned Spacecraft Center today requested proposals from the aerospace industry for a feasibility and planning study of a lunar orbit station for use during the 1980's.

The station is one element of the agency's Integrated Manned Space Flight Plan. The plan envisions reusable shuttles, Earth orbiting stations, reusable Earth orbit to lunar orbit nuclear shuttles, the lunar orbit station and a space tug which also can operate on the Moon's surface.

Major objectives of the study are to define station configuration, refine functions performed by the orbiting station, detail the kind and nature or scientific investigations which may be conducted and develop rescue capabilities.

The proposal calls for the initial station to operate in zero gravity; however, it is to be designed such that it can be modified to an artificial gravity station at some later date. The station may be 33 feet in diameter, made up of several decks and weigh between 60 and 90 tons.

Also called for in this study is an investigation of possible application of the Earth orbital space station for lunar orbit operations.

The proposal calls for a fixed-price contract. MSC has allotted $250,000 for use in this study. Proposals are to be submitted to MSC by April 24. The study is to be completed approximately nine months after contract award. It will be conducted under the direction of the Advanced Missions Program Office.

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NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

MANNED SPACECRAFT CENTER

Houston 1, Texas

483-5111

70-36
April 2, 1970

Houston, Texas --- Paul E. Purser, Special Assistant to Robert R. Gilruth, Director of the NASA Manned Spacecraft Center, will retire tommorrow (April 3) after more than 30 years service to the National Aeronautics and Space Administration and its predecessor, the National Advisory Committee for Aeronautics (NACA).

In announcing the retirement Dr. Gilruth said, "Mr. Purser joined NACA in 1939 as an aeronautical engineer and has served as Special Assistant to the Director since the Space Task Group was formed in 1958. During his many years of service he has made many significant contributions to the success of the manned space flight program."

As Special Assistant to the Director Mr. Purser was responsible for much of the detailed technical administration of MSC, serving as Acting Director of the Center in the absence of the Director and Deputy Director.

Mr. Purser was also active in the Center's many relationships with the nation's colleges and universities and made significant contributions to engineering education. He was granted a 1 year's leave of absence from MSC in September, 1968 to assist Dr. Philip G. Hoffman, President of the University of Houston. He has served as a visiting professor and guest lecturer at several colleges, led in the development of a graduate-level space engineering course and contributed to and co-edited a college textbook entitled "Manned Spacecraft: Engineering Design and Operation."

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Together with Maxime Faget, Director of Engineering and Development at MSC, Mr. Purser conceived the Little Joe system, a solid propellant, single-stage launch vehicle used for testing the escape system of the Mercury spacecraft. He was also one of the pioneers in the use of free-flying rocket models as research instruments while an engineer with the National Advisory Committee for Aeronautics, Langley Laboratory.

Mr. Purser received a Bachelor of Science degree in Aeronautical Engineering from Louisiana State University and worked briefly for the Glenn L. Martin Company of Baltimore, Maryland, before joining NACA.

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483-5111

MSC 70-38
April 6, 1970

HOUSTON, TEXAS--A preliminary study of a reusable Space Tug that can be economically operated around Earth, at the Moon and in support of interplanetary missions today was requested of the aerospace industry by the NASA Manned Spacecraft Center.

The Tug is one of several new flight hardware items identified in the Space Task Group report to the President during September 1969.

The study calls for investigation of a system that has multi-purpose applications, is highly versatile and can be flown either manned or unmanned. It may consist of four modules: 1) crew quarters, 2) cargo compartment, 3) electronics and control system and 4) the power system.

Major uses of the Space Tug during Earth orbital operations might include the assembly of space station modules, rescue of disabled craft, satellite retrieval and service, and the transport of payloads from one altitude to another.

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add 1
MSC 70-38

Lunar operations could include the assembly of station modules, rescue, satellite retrieval, surface landing, surface exploration and surface base support.

The Tug also might serve as a work vehicle which will assemble in space component parts of a planetary space ship.

The primary objectives of the nine-month long study are to investigate Space Tug missions and operations, and also to determine if a single design vehicle can accomplish all the tasks proposed of it.

The proposal calls for a fixed-price contract. MSC has allotted $250,000 for use in this study. Proposals are to be submitted to MSC by April 24, and the study will be conducted under the direction of the Advanced Missions Program Office.

483-5111

April 8, 1970
MSC 70-39

HOUSTON, TEXAS---The National Aeronautics and Space Administration Manned Spacecraft Center, has awarded a $875 thousand contract to the Hycon Manufacturing Company, Monrovia, California for five lunar topographic camera systems.

The camera will be flown on the Apollo 13, 14, and 15 missions to photograph future lunar landing sites and targets of scientific interest. It will be equipped with an 18-inch-focal-length lens and will give sufficient resolution to identify objects as small as 8 to 15 feet in diameter in photographs taken from an altitude of 60 nautical miles. From an altitude of 50 thousand feet objects from three to five feet in diameter can be identified in the four-and-one-half inch square photographs taken by the camera.

The lunar topographic camera will be mounted in the window of the crew access hatch. With an accompanying remote control panel, astronauts may operate it in an automatic mode for overlapping topographic coverage or in a manual mode. The camera will hold 200 feet of film and will take more than 400 stereographic or conventional pictures without reloading. To prevent image blur, it will automatically compensate for the relative motion of the spacecraft and the lunar surface by rocking back and forth on pivot mounts. It also has a vacuum platen that holds the film flat to minimize distortion, and it has a timing device which permits correlating each exposure with the spacecraft attitude at the time the picture was taken.

The camera is about 28 inches long, 11 inches wide, and 12 inches high, and weighs about 64 pounds with film.

Hycon builds the camera system, a modified version of an existing camera now in production, at its facility in Monrovia, near Los Angeles.

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NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

MANNED SPACECRAFT CENTER

Houston 1, Texas

483-5111

April 9, 1970
MSC 70-40

The National Aeronautics and Space Administration has awarded a $4.5 million contract to the Fairchild Camera and Instrument Corporation, Syosset, New York for a camera system to be used on future Apollo missions for precision mapping of the moon.

Fairchild will design, develop, fabricate and test a 3-inch-focal-length mapping camera, a stellar reference camera and a timing device. NASA has a separate contract with the Radio Corporation of America for a laser altimeter, which Fairchild will integrate, along with other elements of the system, into a single package which can be operated remotely from the Apollo command module.

The heart of the system is the 3-inch mapping camera which will provide 4.5 inch X 4.5 inch photographs with the precise geometric controls necessary for accurate mapping. The 4.5 inch square photographs can be adapted for use in most mapping laboratories, which use 9 inch square format.

The stellar reference camera used in the system together with the laser altimeter and the timing device will give map makers the spacecraft attitude, the time and the altitude at which each photograph was taken.

The Fairchild mapping system and a 24-inch-focal-length, high-resolution camera produced by the Itek Corporation of Lexington, Massachusetts, will be part of a scientific instrument package to be carried in the spacecraft service module as early as Apollo 16.

The Itek camera will provide high resolution panoramic photographs which can be correlated with the lower-resolution mapping photographs for detailed and systematic mapping of the moon's surface.

Film magazines from the cameras will be retrieved by one of the astronauts and returned to the command module before the two spacecraft modules separate for earth entry.

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Under the cost-plus-fixed-fee contract, Fairchild will deliver three flight units and associated mockups, simulators, prototypes, qualification units and ground support equipment. NASA has the option of purchasing two additional flight units and associated ground support equipment at an additional cost of $615 thousand.

Fairchild will produce the mapping camera systems at its facility in Syosset, Long Island, New York.

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NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
MANNED SPACECRAFT CENTER
Houston 1, Texas

483-5111

April 10, 1970
MSC 70-41

Houston, Texas --- The NASA Manned Spacecraft Center has awarded a $1.9 million contract to Itek Corporation, Lexington, Massachusetts, for design, development, and delivery of multispectral photographic equipment for use in Project Skylab.

The contract calls for the delivery of a six lens camera unit which will be flown as part of the Earth Resources Experiment Package. The multispectral camera is part of an integral group of experiments that will provide data on surface reflectance emmitance and texture along with determining the effects of atmospheric influences over a broad portion of the electromagnetic spectrum.

Itek will provide one flight and one backup unit along with associated lenses and magazines. The multispectral unit will utilize six high precision 70mm cameras with matched distortion and focal length. The lenses will have a focal length of six inches (21.2 degree field of view) providing approximately 80 nautical miles square surface coverage from the 235 mile orbital altitude.

Itek is scheduled to deliver the flight hardware by July 1971.

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NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

MANNED SPACECRAFT CENTER

Houston 1, Texas

483-5111

MSC 70-42
April 22, 1970

HOUSTON, TEXAS--Dr. Charles A. Berry, Director of Medical Research and Operations at the NASA Manned Spacecraft Center will preside as president of the 41st annual scientific meeting of the Aerospace Medical Association (ASMA) April 27-30 in St. Louis, Mo.

Twenty-three members of the MSC's medical directorate are scheduled to take part in the scientific meeting which will be headquartered at the Chase-Park Plaza Hotel, St. Louis. Members of the directorate will deliver technical and medical papers as well as take part in a panel discussion on a "Report on Apollo Lunar Missions" scheduled for 2:00 p.m. on April 30.

Dr. Berry announced Wednesday that William A. Anders, Executive Secretary of the National Aeronautics and Space Council, will deliver the annual Louis H. Bauer Lecture on the opening day, Monday, April 27. Anders, former lunar module pilot on Apollo 8, the first manned orbital flight in December 1968, will speak on "Aeronautics and Astronautics Prospects for the 70's."

Dr. Berry is the 39th President of the ASMA which is composed of professionals in the field of aerospace medicine in government and private industry. Dr. Berry has been Director of Medical Research at MSC since 1966.

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Add 1
MSC 70-42

MSC doctors scheduled to present papers are: C. L. Fischer, "Laboratory Medicine in Support of Project Apollo;" Carolyn Leach Huntoon, "The Urinary Excretion of Aldosterone;" G. F. Humbert, "Metabolic Assessment of the First Lunar Walk;" P. C. Rambaut, "The Nutritional Dilemma of Apollo Applications;" and W. C. Alexander, "Intrinsic Control of Fluid Transport in Canine Skeletal Muscle."

Scheduled to take part in the Apollo panel during the Thursday session are: Drs. Fischer, W. W. Kemmerer, J. A. Rummel, and R. L. Johnson.

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NEWS RELEASE
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
MANNED SPACECRAFT CENTER
Houston 1, Texas

70-42a

483-5111

April 22, 1970

Houston, Texas---Earth resources data of selected areas of Texas gathered by the NASA's Manned Spacecraft Center will be presented Thursday to representatives of the Texas Committee for the Study of Land Use and Environmental Control.

The 20-member state committee, headed by Senator Criss Cole of Houston, will be briefed on the operation of MSC's earth resources aircraft program. The committee also will receive a detailed presentation of earth resources data on Texas collected while developing remote sensing techniques for spacecraft applications.

Representatives of the Earth Resources Division of MSC's Science and Applications Directorate will explain and display photographic and other imagery data collected of selected areas of Houston-Galveston, Dallas-Ft. Worth, El Paso, the Gulf Coast and numerous inland areas of Texas. The briefings are scheduled to start at 1:30 pm Thursday in Bldg. 2 at MSC.

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NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

MANNED SPACECRAFT CENTER

Houston 1, Texas

70-43

483-5111

April 23, 1970

Houston, Texas---The National Aeronautics and Space Administration has awarded the Garrett Corp., Airesearch Manufacturing Company Division, Los Angeles, Calif., a $3,000,000 contract for a portable astronaut life support assembly (ALSA). The ALSA is for use in support of extravehicular and intravehicular activity for the Skylab program scheduled for flight in 1972.

The astronaut life support assembly consists of two items: a pressure control unit for ventilation and pressurization to a suited astronaut receiving oxygen from the spacecraft oxygen system via an umbilical; and an emergency oxygen pack, separately packaged from the pressure control unit. The emergency oxygen pack will automatically provide oxygen to the pressure control unit in the event that the umbilical supply becomes insufficient.

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NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

MANNED SPACECRAFT CENTER

Houston 1, Texas

70-44

483-5111

April 24, 1970

The National Aeronautics and Space Administration has selected Wackenhut Services, Inc. of Coral Gables, Fla., for final negotiation of a contract to provide security, safety, fire protection, and emergency ambulance services to the Manned Spacecraft Center, Houston.

The estimated value of the 1-year cost-plus-award-fee contract is $1.2 million. Services are to be provided from July 1, 1970 through June 30, 1971, with contractual provisions for two additional 1-year extensions.

Wackenhut Services, which has provided security and fire protection services at the Manned Spacecraft Center for the past 3 years, was selected by NASA from among five firms responding to an MSC request for proposals.

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NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

MANNED SPACECRAFT CENTER

Houston 1, Texas

70-45

483-5111

April 28, 1970

The National Aeronautics and Space Administration's Manned Spacecraft Center has issued a cost plus fixed fee contract to The Boeing Company, Southeast Division, to define a letter contract for systems engineering and flight readiness assessment in support of NASA's Apollo Program. The period of performance is from January 1, 1970 through December 31, 1970, with options for calendar years 1971 and 1972. The estimated value of the contract, including options, is $34,065,390.

The majority of the work will be performed by The Boeing Company at their facility in Houston, Texas.

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NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

MANNED SPACECRAFT CENTER

Houston 1, Texas

483-5111

May 7, 1970

RELEASED BY NASA HEADQUARTERS

The Fra Mauro region of the Moon has been selected as the landing site for the Apollo 14 mission.

The choice was made by Dr. Thomas O. Paine, NASA Administrator, following the recommendation of the Apollo Program site selection committee meeting today at the Manned Spacecraft Center.

Fra Mauro was the intended landing site of last month's unsuccessful Apollo 13 mission.

Dr. Paine said information so far developed by the Apollo 13 Review Board indicates that Apollo 14 cannot be launched before Dec. 3.

"Our present assessment is that the modifications to the oxygen tanks in the Service Module that have already been identified will require several months and that Apollo 14 cannot be launched before the Dec. 3 launch window," said Dr. Paine.

"We will take whatever time is necessary and will not commit to a specific launch date until the Apollo 13 Review Board completes its work and makes its findings and recommendations," he added.

The flight crew for Apollo 14 will be Capt. Alan B. Shepard USN, Commander; Maj. Stuart A. Roosa, USAF, Command Module Pilot; and Cdr. Edgar D. Mitchell, USN, Lunar Module Pilot.

The landing site is in the hilly uplands north of the crater Fra Mauro. The lunar coordinates are 3.6 degrees south latitude by 17.5

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degrees west longitude, about 110 miles east of where Apollo 12 landed last November. New trajectories for Fra Mauro landings will be calculated for Dec. 3, 1970, and subsequent opportunities in early 1971.

Fra Mauro is of great interest to scientists because it is expected to provide new information on the age of the Moon.

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NEWS RELEASE
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
MANNED SPACECRAFT CENTER
Houston 1, Texas

483-5111

70-46
May 8, 1970

An experiment designed to observe the very hot and massive stars in the Southern Cross constellation will be launched by NASA scientists on or about May 26 from Woomera, Australia.

Dr. Yoji Kondo, Chief Experimenter, said the Ultraviolet Spectrograph Experiment, will photograph the first, second and fourth brightest stars (Alpa, Beta, and Delta) of the Southern Cross. Dr. Kondo and John Lintott, Co-Experimenter, are both with the Astronomy Branch of MSC's Space Physics Division, Science and Applications Directorate.

The 125-lb experiment package will be carried to an altitude of 106 nautical miles by an Aerobee 150 sounding rocket. This marks the first launch of an Aerobee 150 from the Australian Weapons Research Establishment at Woomera.

Dr. Kondo said the UV spectrograph experiment is designed to take six photographs at varying exposures (5 to 165 seconds) during the planned four minute observation period. The on-board camera will be turned on when the package reaches 60-70 mile altitude and continue to take photographs, the most critical of which will be the 40 and 165 second exposures.

Dr. Kondo said he expects data gathered on this flight will aid in understanding the physical condition of these very hot stars and also aid in determining the amount of atomic hydrogen between the earth and these particular stars (Alpha, Beta, and Delta.) Dr. Kondo said very little is known about the Atomic Hydrogen density in this direction of the galactic plane.

The Aerobee 150, a two-stage sounding rocket, will be launched by the NASA Goddard Sounding Rocket Branch, Greenbelt, Md., from the Australian launch site. The scientific payload is scheduled to be recovered by parachute within 40-50 miles of the launch site in southern Australia.

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NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

MANNED SPACECRAFT CENTER

Houston 1, Texas

483-5111

May 12, 1970

RELEASED BY NASA HEADQUARTERS

The National Aeronautics and Space Administration selected two aerospace industrial firms today for final negotiations of parallel 11-month contracts for definition and preliminary design studies of a reusable space shuttle vehicle for possible future space flight missions.

Fixed priced contracts will be negotiated with McDonnell-Douglas Corp., St. Louis, and North American Rockwell Corp., Space Division, Downey, Calif. valued at approximately $8 million each.

NASA's Marshall Space Flight Center, Huntsville, Ala., will manage the McDonnell-Douglas work; the North American Rockwell contract will be managed by the NASA Manned Spacecraft Center, Houston. Four firms submitted proposals for the studies.

The two-stage, space shuttle vehicle will transport crew, passengers and cargo from Earth to near space and back. It will be used for logistics missions such as the delivery of propellants and supplies to a space station or another orbiting vehicle; for the delivery of propulsive stages and payloads and for the placement, maintenance and retrieval of experimental modules and satellites. It may also be used for short duration special purpose space flight missions, including rescue operations.

The space shuttle will reduce significantly space operational costs through vehicle reuse and payload simplification; provide a commercial airline type environment for crew and passengers; provide a high launch rate capacity; and extend the technology of space transportation systems including a land landing capability. The vertical take-off, horizontal-landing shuttle could be in operation by 1977 or 1978.

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Add 1

Principal subcontractors proposed by McDonnell-Douglas are Martin Marietta Corp., Denver; TRW Inc., Los Angeles; Pan American World Airways Inc., Cocoa Beach. Fla.; Raytheon Co., Lexington, Mass.; Sperry Rand Corp., Great Neck, N. Y.; and Norden Division of United Aircraft, Norwalk, Conn.

Subcontractors proposed by North American Rockwell are General Dynamics Corp., San Diego; International Business Machines Corp., Huntsville, Ala.; Honeywell, Inc., Minneapolis; and American Airlines, Inc., New York, N.Y.

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NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

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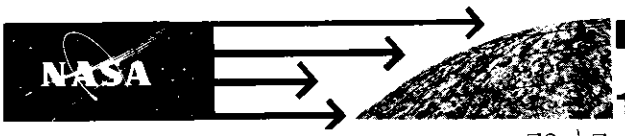

483-5111

70-47

May 12, 1970

Houston, Texas---The NASA Manned Spacecraft Center has requested proposals from the aerospace industry for a space shuttle cryogenic system study.

The study calls for an investigation of engineering tasks making cryogenic systems used on an Earth-to-orbit shuttle as functional and effective as possible.

The space shuttle is one of the newer elements of the agency's manned space flight program. The vehicle could be flight operational as early as 1976. It is completely reusable; one that can fly into space and return like an airplane.

The major objective of the study is to review and define mission requirements, and then select system concepts for meeting these requirements.

Also called for in the study is an analysis of tankage configuration, pressurization and insulation concepts, fluid dynamics and any other factors which might significantly influence cryogenic system performances.

MSC has alloted approximately $300,000 for use in the study. More than 30 companies have been invited to submit proposals which are due by May 21.

The proposal calls for a cost-plus-fixed-fee contract, and it is to be completed approximately 18 months after contract award.

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NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
MANNED SPACECRAFT CENTER
Houston 1, Texas

483-5111

70-48
May 13, 1970

HOUSTON, TEXAS---The NASA Manned Spacecraft Center has selected the Lockheed Missiles and Space Company, Sunnyvale, California, for award of a contract for a large space station solar array technology evaluation program.

The cost-plus-fixed-fee contract is approximately $1,075,000.

The objectives of the program are to conduct a technical evaluation of the current state-of-the-art of solar systems. Design analysis and test evaluation of compcnents in three areas also is called for in the contract.

The three areas include: array structure; deployment and orientation; and power transfer procedures.

The work will be conducted under the direction of the MSC Propulsion and Power Division, and it is to be completed in 18 months.

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NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

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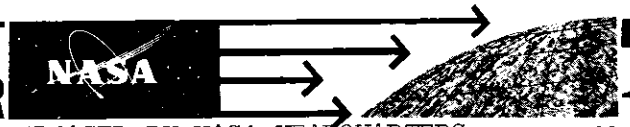
Houston 1, Texas



483-5111

RELEASED BY NASA HEADQUARTERS

May 15, 1970
MSC 70-49

HOUSTON, TEXAS---Saturn IB and Saturn V launches scheduled for the 1972-73 Skylab Program will be from Launch Complex 39, Kennedy Space Center, Fla.

The decision to conduct Saturn IB launches at Launch Complex 39, rather than Complex 34, Cape Kennedy, was reached after a comprehensive study of the capabilities and costs of both locations, Skylab Program officials said.

The National Aeronautics and Space Administration's Skylab Program calls for the launch of a Saturn V third stage configured as an experimental space station. Three astronauts in an Apollo spacecraft will be launched aboard a Saturn IB about 24 hours later to rendezvous with the space station and spend up to 28 days in orbit.

Two more manned flights to Skylab are planned for approximate three-month intervals thereafter. Both of these missions could last up to 56 days.

Initial plans called for the Saturn IB launches to take place at Complex 34, a part of the U.S. Air Force Eastern Test Range used by both NASA and the Department of Defense.

William C. Schneider, Skylab Program Director, said the decision to move the Saturn IB launch site to Complex 39 was made to take advantage of the more modern facilities at the site and to save money by consolidating manpower and spacecraft support and checkout equipment requirements and to reduce transportation costs.

Advantages include operating inside the Vehicle Assembly Building with its controlled environment as compared with preparation at Launch Complex 34 which is exposed to the weather.

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Add 1
MSC 70-49

Complex 34, which became operational in 1961, was placed in a standby condition after the Apollo 7 flight in October 1968. Extensive updating of equipment and repair would be required to ready it for the Skylab Program.

A preliminary estimate is that $10 to 12 million can be saved by using Complex 39 for the series of three Saturn IB launches planned for late 1972 and 1973.

A Vehicle Assembly Building high bay, a mobile launcher and a firing room have been assigned for the Saturn V and its Skylab payload. Similar action will be taken for the Saturn IB.

The Saturn IB will undergo checkout and will be launched from a modified mobile launcher previously used for Saturn V flights. The major change will be the addition of a 128-foot pedestal on the launcher platform. This will allow the present upper swing arms on the launcher to be used with the Saturn IB and the spacecraft.

Relatively minor modifications will be required for propellant and gas servicing of the Saturn IB booster. The rocket hold-down arms used at Pad 34 can be used at Complex 39.

The recent decision to suspend Apollo lunar exploration flights during the period of the Skylab Program led to a reevaluation of the launch sites, Schneider said. This determination released the mobile service structure (MSS) at Complex 39 for use with a Saturn IB and Apollo spacecraft. The MSS is required for manned spacecraft operations at Complex 39.

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NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

MANNED SPACECRAFT CENTER

Houston 1, Texas

483-5111

May 15, 1970
MSC 70-50

HOUSTON, TEXAS---The National Aeronautics and Space Administration, Manned Spacecraft Center has invited eight firms to submit proposals for development of a prototype lighweight, intravehicular space suit assembly for advanced space missions.

The suit is to weigh approximately 10-12 pounds and is to be comfortable enough to be worn full-time during space flights. It is believed that a lightweight suit can be developed which will not restrict astronaut movement when unpressurized and which can be worn as the primary garment in a shirt-sleeve environment.

The suit will be configured with a soft collapsible helmet which can be installed quickly if the suit needed to be pressurized in an emergency.

It is expected that a three phase contract will be awarded for design and development of two prototype suits. Design and development of a first prototype is to be completed nine months from award of a contract. Any necessary modifications to the prototype will then be made and a final version prototype will be delivered 16 months from the award of a contract.

Production of flight qualified suits would be handled under a separate contract.

The suit is to be durable enough to withstand pre-flight training and testing and missions lasting up to one year with daily donning and doffing. And it is to be designed so a crewman can put it on without assistance, hook up to the spacecraft environmental control system and pressurize the suit within two minutes.

Industry proposals are to be submitted to the Manned Spacecraft Center by May 27. It is expected that a single contract will be awarded for prototype design and development.

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NEWS RELEASE
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
MANNED SPACECRAFT CENTER
Houston 1, Texas

483-5111

May 15, 1970
MSC 70-51

HOUSTON, TEXAS---Several major universities and the aerospace industry have been invited by the NASA Manned Spacecraft Center to submit proposals on planning exercises associated with the development of a reusable space shuttle.

During the past year, interest has increased in the development of a reusable vehicle for the transportation of passengers and cargo from Earth's surface into orbit and return. Such a vehicle is visualized as a "workhorse" during the new era of spaceflight; an era when large economies and practical applications are the primary focus of the program.

The shuttle is presently envisioned as a two-stage vehicle, each stage with wings and configuration similar to present-day aircraft. Each stage -- booster and orbiter -- will be flown back to Earth after completing its mission.

In addition to an $8,000,000 definition and preliminary design shuttle study to be managed by this Center, two requests for proposals (RFP) recently were issued.

One RFP has the goal of studying reentry characteristics of the orbiter vehicle. It calls for a computer study to determine the extend and nature of molecule flow across the vehicle (including wings).

MSC has alloted $100,000 for use in the study. The contract will be fixed-price and it is to be completed approximately ten months after contract award.

The second proposal, which has been issued to ten major U. S. universities, calls for an investigation of vehicle aerothermodynamic characteristics.

The major objective of the study is to provide information pertinent to surface pressure and heat transfer rates caused by shock wave impingements during orbiter reentry.

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Add 1
MSC 70-51

A cost-reimbursable contract in the amount to $70,000 is called for, and work is to be completed one year from date of contract award.

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NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

MANNED SPACECRAFT CENTER

Houston 1, Texas

483-5111

May 18, 1970
MSC 70-52

HOUSTON, TEXAS---Neil Armstrong, the first man to set foot on the Moon, and one of the nation's foremost engineering test pilots, has been named to head the Aeronautics Program of the National Aeronautics and Space Administration.

Armstrong, commander of the Apollo 11 lunar landing mission, becomes Deputy Associate Administrator for Aeronautics, Office of Advanced Research and Technology at NASA Headquarters, Washington, effective July 1, 1970.

He succeeds Charles W. Harper who is joining Dr. Wernher von Braun, NASA Deputy Associate Administrator in carrying out the agency's planning effort for future U.S. aeronautics and space missions.

In his new position, Armstrong will be responsible for the coordination and management of over-all NASA research and technology work related to aeronautics and cooperation and coordination between NASA, industry and other government agencies with respect to aeronautics.

NASA conducts a broad program in aeronautics including aerodynamics, loads and structures, propulsion, operational environment problems and flight dynamics. The program is directed towards all types of aircraft, both civilian and military in the areas of general aviation, vertical and short take-off and landing aircraft, subsonic aircraft, supersonic, hypersonic aircraft and other advanced aviation technologies.

NASA in the past few years has been devoting some $75 million of its annual budget for aeronautics. The Fiscal Year 1971 budget request calls for $87 million in aeronautics research.

-more-

Armstrong, a civilian astronaut, has more than 20 years experience as an engineer and pilot. He was a Naval aviator from 1949 to 1952 and flew 78 combat missions during the Korean action.

He joined NASA's Lewis Research Center in 1955 (then NACA Lewis Flight Propulsion Laboratory) and later transferred to the NASA High Speed Flight Station (now Flight Research Center) at Edwards Air Force Base, Calif., as an aeronautical research pilot for NACA and NASA. He was an X-15 project pilot, and flew that aircraft to altitudes above 200,000 feet and approximately 4,000 miles per hour.

Other flight test work included piloting the X-1 rocket airplane, the F-100, F-101, F-102, F-104, F5D, B-47, the paraglider, and others. As pilot of the B-29 "drop" aircraft, he participated in the launches of over 100 rocket airplane flights.

Armstrong's aircraft test pilot flights covered the areas of icing research and de-icer tests, gust research, varying leading-edge slat configurations, supersonic compressor stall, boundary layer determination, roll coupling alleviation using pitch transition, and heat transfer research, minimum aircraft controllability, subsonic boundary layer noise research, and catapult and arrested landings.

Armstrong became a NASA astronaut in September 1962 and he was command pilot for the Gemini 8 mission March 16, 1966. During that mission he was successful in achieving the first space docking of two vehicles. Shortly after docking a malfunctioning thruster caused the spacecraft to gyrate wildly but exceptional piloting skill by Armstrong and his fellow crewman, Astronaut David R. Scott, overcame the problem and resulted in a successful recovery.

Armstrong and Astronaut Edwin E. Aldrin, Jr., on July 20, 1969 accomplished man's first landing on the Moon. Armstrong and then Aldrin became the first men to walk on the Moon as they conducted a two hour and 40 minute exploration of the lunar surface, deployed experiments and collected Moon material for return to Earth.

Add 2
MSC 70-52

Armstrong has received many awards and honors including the Octave Chanute Award, the Collier Trophy, the Thomas White Trophy, the Presidential Medal for Freedom, the National Civil Service League Award, and the National Geographic Society's Hubbard Medal.

Armstrong was born August 5, 1930 in Wapakoneta, Ohio. He attended local schools, received a bachelor of science in aeronautical engineering from Purdue University in 1955 and master of science in aerospace engineering from the University of Southern California in 1970. He is married to the former Janet Shearon of Evanston, Ill. The Armstrongs have two children.

Harper joined the NASA Ames Research Center in 1941 and, successively, became Assistant Chief of the 7x10' Wind Tunnel Branch, and Systems Research Division until transferring to Headquarters in October 1964 as Director of the Aeronautical Vehicles Division.

He became Deputy Associate Administrator (Aeronautics) in the Office of Advanced Research and Technology on May 3, 1967 when the office was created.

Harper was born in Winnipeg, Canada, Sept. 24, 1913, and became a United States citizen in 1941. He graduated from the University of California, Berkeley, in 1941 with a degree in Mechanical Engineering (Aeronautics Option).

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McLEAISH All of you gentlemen have received copies of the news release we put out a few minutes ago, so what I think we'll do is just open it to questions that you might have of Mr. Armstrong.

QUERY Mr. Armstrong, what led you to decide to stop flying or to close all opportunity to future space flights?

ARMSTONG You're presuming a lot. I suspect that when we're both 70, we'll still be flying in space. Although it is true that I will off active astronaut status, I intend to keep current and maintain a flying status. I think that it is important to the understanding of this new job.

QUERY Neil, I'm curious. Why did you decide to take this new position?

ARMSTONG Well, as you know, I've been a long-time aviation enthusiast and have been in aeronautical research for the majority of my career with NASA. I look forward to this opportunity to move back into the aeronautics side because I feel there is a great challenge in the aeronautical industry these days. There is challenge in hypersonics, supersonic civil aviation, in military aviation, in general aviation and, probably most important, in the research that leads to the new generation of aircraft that we can't even foresee at this time.

QUERY As far as maintaining flying status is concerned, could you explain that a little bit more?

ARMSTONG I mean, place myself in a status where I was currently flying wide variety of aircraft types. I currently fly jet aircraft, helicopters, light aircraft, that is general aircraft, and even sailplanes and I would anticipate continuing doing that.

QUERY Do you feel that the 1971 fiscal budget of 87 million is sufficient for your program?

ARMSTRONG I think that there is a great deal that we can do with the '71 budget. I won't have any difficulty, in foreseeing how that can be used. I think we will have an additional number of programs that we'd like to get into that that funding will not allow but I would hope that our programs will earn their way toward a higher priority in the budget in years to come.

QUERY Do you have any kind of personal predictions, say, as to what the average citizen's connection with aviation is going to be 20 years from now with what it is today? Such as a personal plane or anything along those lines?

ARMSTRGONG Well, prophecy is very difficult for me but I do believe that aviation will continue to be a strong force -

END OF TAPE

ARMSTRONG I do believe that aviation will continue to be a strong force, not only in the economy, but in the daily lives of not only citizens of this country but people around the world. More and more individuals are becoming airline passengers every day, not only larger in numbers but larger in percentage of the population and a first class transportation system is imperative for future progress. Not just in transportation but in all walks of life around the world.

McLEAISH Paul Recer

QUERY Once again - do I understand that this new job will make it - you will not be able to make another Apollo flight, is that correct?

ARMSTRONG I would think that - yes, that would be correct.

SPEAKER Okay, what led you to make a decision that would - to accept a job that would deny you future Apollo flights?

ARMSTRONG Well, I - I'm not certain there would have been another Apollo flight for me. In any case, this was the opportunity that was offered. In my past history with NASA I've had a number of job changes offered me by the management and I've always taken them and I've always been glad I did. I think I'll be very glad that I was offered this opportunity and I look forward to getting into it.

McLEAISH Houston Post.

QUERY Is Mr. Harper an aviator, or flier or a pilot?

ARMSTRONG Mr. Harper is a very good friend of mine. He is not a professional pilot. He is a very competent aeronautical research engineer and I - I've had the pleasure of working with him for a number of years in the past. I look forward to doing so in the future and I think he'll be a valuable contribution to our planning activity with Dr. Werner von Braun.

QUERY Are you the first aviator astronaut to hold this position?

ARMSTRONG Yes, I am, because Mr. Harper was the first person to occupy this specific job when it was created about 3 years ago.

QUERY Neil, how do you feel about leaving the Manned Flight Program?

ARMSTRONG Of course, I have a lot of reservations about leaving. Not only my friends and colleagues here at Manned Spacecraft Center but also Houston which I've come to enjoy very much and like the people here very much, however, I don't think that it will be a permanent parting. I foresee that aeronautical and space activities will become more and more closely related in years to come and first and most obvious

ARMSTRONG example of that is the shuttle program which is going to demand the best of both the space disciplines and also the aeronautical disciplines and of course that is one of the areas in which I will be continuing to work with the people here at Houston and throughout the Manned Spacecraft Program.

McLEAISH Any further questions?

QUERY Did you discuss this decision with your family and if so, did they have a reaction?

ARMSTRONG Yes, I did and they all - all expressed some regret at having to leave the Houston area.

McLEAISH Lee Holley.

QUERY Have you put your house on the market yet?

ARMSTRONG No - maybe I better just keep it in case I need a hiding place later, from the Washington people.

QUERY Neil, you said you'd be working with aircrafts that, perhaps, you can't even foresee, what do you see after SST in a shuttle, what direction would aircraft - airplanes go beyond that?

ARMSTRONG Well, historically we've never guessed very well, if we look back at our wild-eyed experts of a decade or two ago, we find that they all underestimated the mark, no one would have predicted the 747, two decades or even one decade ago. As a matter of fact, shortly before I transferred here to Houston -

END OF TAPE

ARMSTRONG shortly before I transferred here to Houston when the jets were first coming on the scene. We didn't foresee that they would be very practical and many people said the additional cost of operating a jet airplane, just to pick up an hours shortened flight direction between here and Los Angeles, was considered somewhat irresponsible by a large section of the population. Well, we could see now that their foresight was less than perfect and I think we'll find the same thing to be true in supersonics. Right now the supersonics are coming under a great deal of fire. I think this is just history repeating itself.

QUERY You don't think there is a possibility that perhaps the supersonic is - maybe we should be going to a hypersonic without staying very long with a supersonic?

ARMSTRONG I think there is legitimacy to that question. Perhaps the only disadvantage to the supersonic transport is that it really isn't a big enough jump.

McLEAISH Any further questions? Got a question?

QUERY Would you describe a few of the projects that you'll be immediately be working on in your new job? Perhaps reorbital vehicle, skylab or are you going to be associated with any of these areas?

ARMSTRONG The major areas of immediate interest in the aeronautics program are the hypersonics, supersonic transport, the VTOL program, Air Space Program, some general aviation projects, propulsion and advance research.

McLEAISH In the absence of further questions we'll end it. Thank you.

END OF TAPE

NEWS RELEASE
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
MANNED SPACECRAFT CENTER
Houston 1, Texas

483-5111

MSC 70-53
May 20, 1970

HOUSTON, TEXAS---A one-tenth size, dynamically scaled experimental model of the proposed "MSC 12.5K Space Orbiter Shuttlecraft" will be subjected to a series of drop tests at the White Sands Missile Range in New Mexico with the first drop scheduled on May 25, 1970.

Initial systems verification tests were conducted in a drop from 8,000 feet at Ft. Hood, Texas on May 4, 1970.

The continuing tests at WSMR are to demonstrate the test vehicle's transition from a high angle of attack reentry to a level cruise attitude, the stability of the vehicle in stalled conditions, and to obtain free-flight data to assist in aerodynamic analytical transition prediction techniques.

The shuttle test vehicle to be used in these tests is about 13 feet long, with a fuselage 2 feet in diameter, an 8-foot wing span and weighs about 600 pounds.

The vehicle incorporates an outer fiberglas fuselage section shaped to the desired contour, break-away fiberglas wing tips, and a fiberglas vertical stabilizer. These fiberglas parts can be readily changed to update the model configuration or if any of the parts are damaged. The model also employs a crushable nose section to attenuate landing shock since the vehicle lands in a nose down attitude suspended from its parachute. The remaining structure is of aluminum construction.

Systems incorporated within the vehicle are a telemetry system, dual command system, cold-gas rate-damping reaction control system (RCS), controllable elevator system, forward-looking on-board movie camera, radar transponder system, a stabilization parachute system, a recovery parachute system and a safety timer sequencer system.

The shuttlecraft test vehicle will be air dropped from a CH-54 helicopter at low airspeeds from maximum drop altitudes of 12,000 feet mean sea level. Helicopter support will be supplied by the 291st Aviation Company, U. S. Army, Ft. Sill, Oklahoma.

Add 1

Control of the test vehicle will be from the MSC ground control van located in the drop zone. All control commands to the vehicle will be preprogrammed through a selectable time sequencer located in the van.

Royce L. McKinney, test Project Manager, will head up the team of engineers from the MSC Landing and Recovery Division. The test drops are expected to be completed within ninety days.

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NEWS RELEASE
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
MANNED SPACECRAFT CENTER
Houston 1, Texas

483-5111

Hold For Release Until May 24, 1970
MSC 70-54

HOUSTON, TEXAS--A new dimension in information gathering for the 1970 census is being conducted from an altitude of 10 miles with the aid of aircraft from the NASA Manned Spacecraft Center, Houston, Texas.

NASA is flying a four engine RB57F jet over selected U. S. cities gathering photographic data for census correlation studies for the U.S. Geological Survey. In recent weeks, the RB57F - part of the NASA Earth Resources Survey Program operated by the Manned Spacecraft Center's Science and Applications Directorate - has conducted aerial photographic surveys of Asheville, N. C., Atlanta, Ga., New Orleans, La., and three Texas cities - Dallas, Houston, and Wichita Falls. Susan Moorlag, Robert Alexander and James R. Wray of the USGS are co-investigators for the census flights.

Other cities which will be photographed during the next several weeks are: Aurora, Illinois; Boston, Massachusetts; Cedar Rapids, Iowa; Denver, Colorado; El Paso, Texas; Lawrence, Kansas; Midland, Texas; New Haven, Connecticut; Peoria, Illinois; Phoenix, Arizona; Pontiac, Michigan; Riverside, California; Salt Lake City, Utah; San Francisco, California; San Juan, Puerto Rico; Seattle, Washington; Tampa, Florida; Tucson, Arizona; Washington, D. C.; and West Palm Beach, Florida.

The RB57F is one of the three aircraft used in the aircraft survey program. The three aircraft - the 57F, C-130B and NP3A Lockheed Electra - fly multi-disciplined earth resource study missions

for the development of remote sensing techniques from aircraft and spacecraft for numerous government agencies and universities. The project is conducted in cooperation with the Departments of Agriculture, Interior and Navy.

The major objective of the overall program is to derive benefits from the utilization of both aeronautical and space activities in the various earth sciences - geography, geology, hydrology, oceanography, agriculture and forestry.

A total of 26 cities will be overflown for the Geographic Applications Program, USGS. Purposes of the census flights, which are being flown at approximately the same altitude and at the same time of the day, is to gather standardized data on urban areas and correlating land usage with data gathered during the census.

Wray of USGS, who describes the aircraft census flights as "census contemporaneous" said "We plan to relate data gathered from these flights with statistical data to determine to what extend we can detect urban changes from the air or space."

The census flight experiment will provide interurban comparisons of area, functional and environmental characteristics of selected cities, Wray said. This information will be used in evaluating the real time television imagery which will be transmitted from the earth resources technology satellite (ERTS) which is now scheduled to be launched during 1972-73.

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The photography taken from the RB57F will be used to prepare a mosaic and orthophoto reference base of each urban area. It is planned that approximately 10 land use categories will be identified, mapped, and correlated with a universal grid system applied to each urban area.

Wray explained that "such uniformed assessments of land use and potential land use, in terms of airborn data keyed to census data, have not been heretofore possible."

Nine separate cameras, utilizing six different types of film are being used for this project. The camera array is mounted in the 4,000 lb. remote sensing pallet beneath the aircraft.

The census flights which are operated by the Aircraft Project Office of MSC's Earth Orbital Mission Office, are flown at about 50,000 feet above each city in order to produce as nearly as possible to the base of 1:1,000,000 scale.

The RB57F is a two man aircraft -- the pilot and the scientific instrument engineer. The engineer is a member of the Aircraft Project Office and the pilot is a USAF pilot.

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NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
MANNED SPACECRAFT CENTER
Houston 1, Texas

483-5111

MSC 70-55
May 21, 1970

HOUSTON, TEXAS--Fifteen aerospace firms have been invited by the NASA Manned Spacecraft Center to submit proposals for an engineering study of checkout techniques onboard a space station and space base facility.

The proposal calls for many of the functions that formerly were performed at Mission Control to be conducted in the station/base including operations, maintenance and repair, systems status and the process and control of scientific data.

"These functions should be automated to the maximum extent . . . in order to minimize crew participation," according to the work statement which accompanied the request to industry. "The crew and the investigators need the maximum man-hours available to devote to scientific and research endeavors," the statement concludes.

As presently planned, the checkout system calls for seven basic units of electronic hardware as part of the station/base facility. These are a general purpose digital computer, a control and display unit, data interchange unit, a generator, two switching units, and a measurement device.

MSC has allocated approximately $280,000 for use in the study. The proposal calls for a cost-plus-fixed-fee contract, and it is to be completed nine months after contract award.

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NEWS RELEASE
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
MANNED SPACECRAFT CENTER
Houston 1, Texas

483-5111

May 21, 1970
MSC 70-56

HOUSTON, TEXAS--The National Aeronautics and Space Administration has awarded a $1 million contract to TRW, Inc., Redondo Beach, California for initial design of a subsatellite to be placed in lunar orbit on the Apollo 16 and 18 missions.

The 80 pound subsatellite will be carried in a compartment of the Apollo service module as part of a scientific package which will include mapping and panoramic cameras, a laser altimeter and various remote sensors.

The subsatellite is a six-sided prism, 30 inches high and 14 inches in diameter that is spin stabilized at 12 revolutions per minute. Its payload consists of six charged particle detectors, a magnetometer and an S-band communications system. Electrical power is supplied by a battery/solar cell subsystem.

An astronaut will activate and deploy the subsatellite in a 60 nautical mile lunar orbit by operating a switch on the control panel of the command module which positions, spins and spring-ejects the subsatellite from its launching platform in the scientific instrument module of the CSM. The magnetometer experiment is extended on a boom which deploys after separation. Two other booms deploy for stabilization.

The subsatellite will be designed to operate in lunar orbit for about 1 year, providing information on charged particles and Earth's magnetic field in the vicinity of the Moon. By tracking the device

-more-

scientists will also learn more about the nature of the lunar gravity field and the long-term effects of lunar gravity on an orbiting body.

Total cost of the subsatellite program is expected to be about $5 million.

TRW, Inc., Systems Group will be required to design, develop, fabricate, assemble and test three flight subsatellites and launch platforms. Two of the systems will be used for flight and one will be used for qualification testing.

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NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
MANNED SPACECRAFT CENTER
Houston 1, Texas

483-5111

MSC 70-57
May 26, 1970

HOUSTON, TEXAS--Astronaut Donn F. Eisele will leave the Manned Spacecraft Center in mid-June to become Technical Assistant (Manned Flight) at NASA's Langley Research Center, Hampton, Virginia.

Eisele, 39, will be assigned to the Space Systems Research Division as a consultant and advisor on manned systems in which the Langley center is conducting studies. They include the Space Shuttle and Space Station Programs, Skylab experiments, and life support research.

A lieutenant colonel, Eisele will remain in the Air Force. "I have served on prime and backup crews of four different spaceflight assignments. Now that manned flights have been stretched out and considering that there are numerous qualified astronauts who have not yet flown, I believe it is time for me to move on," Eisele said.

"I have accepted this new assignment because it will afford an opportunity to broaden the scope of my participation in spaceflight activities and thereby enhance my effectiveness in the total space effort," he said.

Eisele has been a NASA astronaut since October 1963. He was the command module pilot for the 11-day Apollo 7 mission in October, 1968. Apollo 7 was the first manned flight test of the Apollo command and service modules. With Spacecraft Commander Walter M. Schirra, Jr., and Lunar Module Pilot Walter Cunningham, Eisele performed transposition and docking and lunar orbit rendezvous exercises with the S-IVB stage of

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their launch vehicle, completed eight ignitions of the service module propulsion system, measured the performance of all spacecraft systems, and provided the first effective television transmissions of onboard crew activities.

Eisele was backup command module pilot for Apollo 10.

A native of Columbus, Ohio, he received a bachelor of science degree from the U. S. Naval Academy in 1952 and a master of science degree in astronautics from the Air Force Institute of Technology in 1960. He is a graduate of the Air Force Aerospace Research Pilot School.

He has received the NASA Exceptional Service Medal, Air Force Command Pilot Astronaut Wings, and Air Force Distinguished Flying Cross. He is a co-recipient of the American Institute of Aeronautics and Astronautics' 1969 Haley Astronautics Award, and he was presented the National Academy of Television Arts and Sciences Special Trustees Award in 1969.

Eisele is married and has four children.

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NEWS RELEASE
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
MANNED SPACECRAFT CENTER
Houston 1, Texas

483-5111

MSC 70-58
May 22, 1970

HOUSTON, TEXAS--A NASA scientist today reported a microorganism thought to have been accidently deposited in the Surveyor III TV camera prior to its launch to the Moon three years ago, was recovered from inside the camera when it was returned to Earth by the Apollo 12 crew in November 1969.

Frederick J. Mitchell, a microbiologist in NASA's Lunar Receiving Laboratory at the Manned Spacecraft Center, Houston, Texas said the microorganism - Streptococcus mitis - apparently survived the launch, the three-day Moon-bound journey in the vacuum of space, and 950 days in the hostile lunar environment. The organism was found following extensive laboratory testing of the camera parts in Houston.

Mitchell, a USAF Captain on assignment to the Medical Research and Operations Directorate at MSC, is project officer for the team of microbiologists who took part in the nearly five-month study of the retrieved camera and a Surveyor III backup camera. Others in the group are: Walter L. Ellis, Microbiology Laboratory Supervisor for Brown and Root/Northrup (NASA LRL support contractor) and Dr. Martin D. Knittel of the Jet Propulsion Laboratory.

Streptococcus mitis is a common respiratory organism. This organism does not ordinarily produce disease in man and the retrieved organism produced no disease on animal innoculation.

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Add 1
MSC 70-58

Microbial analysis of the retrieved Surveyor parts began in the LRL early this year following the release from quarantine of the Apollo 12 crew. Mitchell revealed details of the five month study following completion of testing on the retrieved camera and backup Surveyor III camera.

Mitchell said the microorganism was found in a small bit of polyurethane foam which was used as insulation in circuit boards inside the camera housing. The small bit of foam (one cubic millimeter in size) was placed in Thioglycollate broth, a bacterial media solution, at 37 degrees centigrade.

"The first signs of life were observed after four days of incubation (in the bacterial media). On the next day (the fifth day of incubation) the tube was turbid with growth," Mitchell reported.

"The accumulation of data concerning its growth in association with the foam sample, the location where it was isolated, the initial delay in growth, and other laboratory data leads us to conclude that the best explanation of the data is that it is a 'surviving organism' deposited prior to launch and not on its return trip to Earth," Mitchell said.

Samples of the microorganism were sent to U. S. Communicable Disease Center, Atlanta, Ga., which confirmed it to be Streptococcus mitis.

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Similar tests were conducted on a Surveyor III backup TV camera which had been retained in 'bonded' storage at Hughes Aircraft, Pasadena, California since the April 17, 1967 launch. Test samplings were made and Captain Mitchell reported the Streptococcus mitis was not found in the backup camera.

Mitchell said the samples were taken by the same individuals and the procedures were identical to the retrieved camera. The samples were obtained from the backup camera at the Hughes plant in California and detailed analysis was performed on these samples at the LRL in Houston.

Both cameras - the retrieved camera and the backup camera - went through a series of "thermal vacuum tests" prior to the launch of Surveyor III. These tests were performed in a vacuum with hot and cold cycles.

In instances where repairs were needed the shroud on the camera was removed, the repair made, the shroud replaced and the camera was then subjected to another thermal vacuum test.

Mitchell said the microorganism was probably accidently deposited on the camera during one of the times the camera shroud was removed for repairs.

These procedures and the high vacuum of space are thought to have been responsible for the preservation of this organism in a lyophilized state (freeze-dried). Investigators had predicted it might be possible for organisms to survive under such circumstances.

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NEWS RELEASE
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
MANNED SPACECRAFT CENTER
Houston 1, Texas

483-5111

MSC 70-59
May 26, 1970

HOUSTON, TEXAS--A lemon-sized lunar rock returned by the Apollo 12 crew has been found to be chemically unique and possess the highest concentration of naturally radioactive elements yet observed in Moon samples. After preliminary examination by NASA and University scientists it was announced Tuesday that "this rock has an apparent age of 4.6 billion years, clearly the oldest rock yet found on the Moon."

During examination of Apollo 12 samples at the Lunar Receiving Laboratory (LRL) at the Manned Spacecraft Center, Houston, Texas, this 83-gram (approximately three ounces) specimen was found to have 20 times as much Uranium, Thorium, and Potassium as any other lunar rock. A group of NASA and University scientists in the U. S. and England were selected and samples of this rare rock -- speciman #12013 (1 1/2" x 1" x 3/4" in size) -- are now under investigation.

Announcement of this new 'find' was made jointly at the NASA Manned Spacecraft Center, Houston, Texas and at the 13th annual meeting of the committee on space research (COSPAR) of the International Council of Scientific Unions (ICSU) in Leningrad, Russia. Anthony J. Calio, Director of Science and Applications at MSC and Dr. Paul Gast, Chief of Lunar and Earth Sciences Division at MSC announced the unique find along with Dr. G. J. Wasserberg, who presented a paper on the subject at COSPAR. Dr. Wasserberg, California Institute of Technology, is one of the U. S. University scientists working on this particular sample.

The preliminary examination at the LRL further revealed that the rock had a texture readily distinguishable from both the breccia and igneous rock samples. Color variations on the surface of the rock suggested that the rock was macroscopically inhomogeneous.

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Plans for the distribution of this rock could not be implemented until a better understanding of its unique characteristics could be obtained. A single slice of this rock was distributed ten days ago to a team of eleven scientists from the United States and England whose interests were particularly well-suited to the study of this unique rock. This team is composed of principal investigators whose interests are in the isotopic analysis and age determination of all lunar samples. They are supported by other P-Is carrying out mineralogy and trace element studies.

The report of the group study stated, "First results on the age of this rock, obtained at the end of last week, indicate that the rock has an apparent age of 4.6 billion years. Thus, it is clearly the oldest rock yet found on the moon."

"Other rocks from the Apollo 11 and 12 sites appear to have crystalized from an igneous liquid that was formed between 3.3 and 3.7 billion years ago. Isotopic studies on the lunar soil and breccia samples indicate that they may have been derived from rocks as old as 4.4 billion years, but no specific age can be inferred from these results."

This Apollo 12 specimen is essentially identical in age with the date of formation that has been observed for most meteorites. The time of formation of stone meteorites is widely accepted as a time of formation of the planets and even the sun. Calio and Gast state, "It now appears that we have recovered from the surface of the moon a sample that dates back almost to the formation of the solar system. We conclude from this that some parts of the surface of the moon must have remained essentially unchanged since this time."

"The exact origin of sample 12013 cannot be established at present, but it seems likely that it may have come from a highland area or from the rocks that underlie the Mare region. In the latter case, it could have been transported to its present location by the impact that formed the crater Copernicus. If the 4.6 billion year old age for this rock is substantiated, a wide variety of interesting experiments which will clarify the early stages of the evolution of the terrestrial planets will be made possible by future Apollo missions."

The scientists currently analyzing this unique specimen are among the more than 150 U. S. and foreign scientists chosen by NASA as principal investigators of Apollo 12 lunar material.

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NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

MANNED SPACECRAFT CENTER

Houston 1, Texas

483-5111

MSC 70-60
May 26, 1970

HOUSTON, TEXAS--John D. Hodge, Manager of the Advanced Missions Program Office at the Manned Spacecraft Center, will leave the National Aeronautics and Space Administration June 1 to become an officer in a new organization being created by the Department of Transportation.

Hodge has been Manager of the Advanced Missions Program Office since September 28, 1968. In that capacity, he had the responsibility for planning, coordinating and directing all aspects of advanced programs involving MSC.

He will become the Director of Transportation Systems Concepts for DOT's new Transportation Systems Center, Cambridge, Massachusetts.

Hodge's duties will include responsibility for planning and defining goals for future transportation programs including land, water and air. He also will develop studies covering transportation systems of the future.

Hodge has been with NASA for more than 10 years. He entered the federal service in 1959 as a member of the Space Task Group, and served as a coordinator of plans in its Operations Division. In this capacity, he assisted in the development of flight concepts and procedures during the early phases of Project Mercury.

In 1961 he was appointed head of the Flight Control Branch with responsibility for organizing and training the flight control teams for the coming operations in support of Mercury space flights.

Hodge also planned flight control operations for Projects Gemini and Apollo, and in 1963 he was promoted to the position of Chief of the Flight Control Division at MSC.

Awards to Hodge include the NASA Medal for Exceptional Service, given twice; the Arthur S. Fleming Award in 1966 and an honorary degree of Doctor of Science from the City University of London in 1966.

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Add 1
MSC 70-60

Hodge was born February 10, 1929 at Leigh-On-Sea, Essex, England. He received a Bachelor of Science degree in Engineering from Northampton Engineering College in 1949. He became a United States citizen November 6, 1964.

No successor has been named.

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NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

MANNED SPACECRAFT CENTER

Houston 1, Texas

483-5111

70-60
May 27, 1970

HOUSTON, TEXAS---The NASA Manned Spacecraft Center has awarded a $250 thousand contract to North American Rockwell Corporation for a preliminary planning study of a lunar orbit station.

Major objectives of the study, which will be conducted at the company's Space Division facility in Downey, California, are to define station configuration, refine functions performed by the orbiting station, detail the kind and nature of scientific investigations which may be undertaken, and to develop rescue capabilities.

The station initially will operate in zero gravity; however, it is to be designed such that it can be modified to an artificial gravity environment at some later date. The station may be 33 feet in diameter, made up of several decks and weigh between 60 and 90 tons.

The station is one element of the agency's Integrated Manned Space Flight Plan. The plan envisioned reusable shuttles, Earth orbiting stations, reusable Earth orbit to lunar orbit nuclear shuttles, the lunar orbit station and a space tug which also can operate on the Moon's surface.

Operational flights for the lunar orbit station are projected for the 1980's.

Identified as a Phase A effort, the study is to be completed by February 1971. It is being conducted under direction of the Advanced Missions Program Office.

XXX

NOTICE TO NEWSMEN JUNE 1, 1970

SKYLAB PRESS BRIEFING

The National Aeronautics and Space Administration will have a "Skylab and Beyond" press briefing June 15-16, 1970, at the Marshall Space Flight Center, Huntsville, Ala.

The program will start at 1:30 p.m. June 15 and end at 4:30 p.m. June 16. Officials from NASA Headquarters, the Marshall Center, Manned Spacecraft Center, Houston, and the Kennedy Space Center, Fla., will provide information on all aspects of the Skylab program.

Prominent on the agenda will be the inspection of the recently-completed Saturn Workshop mockup. This is the final design of the workshop, a major part of the country's first space station, which is to be launched in 1972. A tour of the assembly building where Apollo Telescope Mount (ATM) solar observatories are being assembled is also on the schedule, as well as Skylab simulations in a large underwater zero-gravity simulator. The final session will be devoted to a status report on the "integrated program" -- recent work on the proposed space station, space shuttle, nuclear shuttle and tug.

Mockups and hardware will be available for photographs as will demonstrations by astronauts and technicians.

Correspondents planning to attend this briefing should notify the MSFC Public Affairs Office, 205-453-0034 or 453-0035. A block of rooms has been reserved at the Sheraton Motor Inn, Huntsville. To make a reservation, call the Sheraton, 205-837-3250, and identify yourself with the Skylab press briefing, before June 14.

Transportation will be provided from the motel to the Center.

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NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
MANNED SPACECRAFT CENTER
Houston 1, Texas

483-5111

MSC 70-61
June 4, 1970

HOUSTON, TEXAS--The NASA Manned Spacecraft Center has awarded a $250 thousand contract to North American Rockwell Corporation, Space Division, Downey, California for a preliminary planning study of a reusable Space Tug.

The study calls for investigation of a system that has multi-purpose applications, is highly versatile and can be flown either manned or unmanned. It also is designed to operate around Earth, at the Moon and in support of interplanetary missions.

Major uses of the Space Tug during Earth orbital operations might include assembly of space station modules, rescue of disabled craft, satellite retrieval and service, and the transport of payloads from one altitude to another.

Lunar operations could include the assembly of station modules, rescue, satellite retrieval, surface landing, surface exploration, and surface base support.

Primary objectives of the study are to investigate Space Tug missions and operations, and also to determine if a single design vehicle can accomplish all the tasks proposed of it.

The study is to be completed by February 1971. It is being conducted under direction of the Advanced Missions Program Office.

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NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

MANNED SPACECRAFT CENTER

Houston 1, Texas

483-5111

MSC 70-62
June 4, 1970

HOUSTON, TEXAS--The National Aeronautics and Space Administration has completed negotiations of a supplemental agreement to the Apollo spacecraft contract with North American Rockwell Corp., Space Division, Downey, Calif. to provide four command and service modules for the Skylab Program.

This supplemental agreement definitizes the letter contract issued March 1969. The estimated cost of the cost-plus-fixed-fee/award fee supplement is $305,700,000. The total estimated cost of the CPFF/AF contract for both Apollo and Skylab is $3,618,006,813 (total cost and fee).

The spacecraft will be used to transport astronaut crews to the Earth orbiting Skylab in late 1972 and 1973.

North American will provide supporting test and checkout services in addition to manufacturing the spacecraft. The major portion of the work will be performed at the contractor's facility in California. Prelaunch support operations will be carried out at the NASA Kennedy Space Center, Fla. and related test activities at the NASA Manned Spacecraft Center, Houston.

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NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
MANNED SPACECRAFT CENTER
Houston 1, Texas

483-5111

MSC 70-63
June 4, 1970

HOUSTON, TEXAS--The National Aeronautics and Space Administration Manned Spacecraft Center, Houston, has awarded a $13 million contract extension to ILC Industries, Dover, Delaware for additional Apollo space suits and associated support through 1971. This brings total value of the contract to $46,543,299.

Under terms of the contract ILC Industries will supply 36 additional A7L Apollo pressure garment assemblies and will provide associated field support at the Manned Spacecraft Center and the Kennedy Space Center, Fla.

ILC Industries fabricates the Apollo pressure suit at its facility in Dover.

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NEWS RELEASE
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
MANNED SPACECRAFT CENTER
Houston 1, Texas

483-5111

MSC 70-64
June 5, 1970

HOUSTON, TEXAS--The National Aeronautics and Space Administration has selected the Space Division of General Electric Co., and the Link Division of Singer-General Precision, Inc., both of Houston, for competitive negotiations leading to a contract for development of a crew training simulator to be used in training flight crews for the Skylab (formerly Saturn Workshop).

Value of the cost-plus-award fee is estimated to exceed $3.5 million, and will include design, fabrication, installation, check-out, simulation programs, on-site systems engineering and supporting documentation.

The Skylab simulator, to be located at the Manned Spacecraft Center, will simulate system characteristics of the Skylab orbital workshop in both normal and malfunction modes.

It may be operated in conjunction with the Mission Control Center and the existing Command Module Simulator for integrated training of flight crews and flight controllers.

Skylab, scheduled to be launched in 1972, consists of a modified Saturn V third stage (S-IVB) outfitted on the ground as living quarters for three astronauts and includes a solar observatory called the Apollo Telescope Mount (ATM), an air-lock module, and a multiple docking adapter. The first flight crew will occupy and work in the Skylab for up to 28 days, with two subsequent crews remaining for up to 56 days.

In addition to the solar astronomy experiments with the ATM, the Skylab will provide facilities to develop data on man's capabilities to operate for extended periods in Earth orbit, to make meteorological and Earth resources observations and to carry out medical, scientific and technical experiments.

The contract will be administered by the Manned Spacecraft Center, Houston, under the direction of NASA's Office of Manned Space Flight, Washington.

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NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

MANNED SPACECRAFT CENTER

Houston 1, Texas

483-5111

MSC 70-65
June 5, 1970

HOUSTON, TEXAS--The NASA Manned Spacecraft Center has awarded a $210 thousand fixed-fee contract to Lockheed Aircraft Corporation for a preliminary planning study of safety methods and rescue techniques during future lunar operations.

The contractor is requested to prepare a rescue plan for advanced lunar missions and also to identify lunar orbital and surface safety requirements. To accomplish this he will analyze potential operational hazards, their effects and determine the areas where safety is most essential.

Emergency survival and escape also are to be a part of the study.

Lockheed proposes to accomplish the task as follows: (1) Define and determine hazards during lunar surface exploration and also during orbital operations; (2) Make an analysis of escape, survivability and rescue concepts for personnel stranded on the Moon's surface, as well as in lunar orbit.

Analysis should cover "typical lunar surface missions on foot, by . . . surface vehicle, and by flying machines," according to MSC's work statement.

The nine month long study is part of the space agency's new Integrated Manned Space Flight Plan. The plan envisions reusable shuttles, Earth orbiting stations, reusable Earth orbit to lunar orbit nuclear shuttles, a lunar orbit station, a space tug and mobility vehicles which can operate on the surface of the Moon.

Identified as a Phase A effort, the study is to be completed by March 1971. It will be conducted by Lockheed's Missiles and Space Division at Sunnyvale, California.

MSC's Safety Office will monitor the program.

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NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

MANNED SPACECRAFT CENTER

Houston 1, Texas

483-5111

MSC 70-66
June 9, 1970

HOUSTON,TEXAS--The NASA Manned Spacecraft Center has selected Pratt & Whitney Division, United Aircraft Corporation, Hartford, Connecticut and the Direct Energy Conversion Business Section, General Electric Corp., West Lynn, Massachusetts to negotiate parallel contracts for development of fuel cell technology to provide electrical power for a space shuttle.

The two firms will negotiate cost-plus-fixed-fee contracts to develop fuel cell technology leading to the design, fabrication, and testing of an engineering model fuel cell system. The contracts will run for 13 months beginning July 1, 1970 and will be worth approximately $825 thousand each.

The program is aimed at developing a hydrogen-oxygen fuel cell with a lifetime goal of five thousand hours, a power output of five thousand watts and weighing three hundred pounds or less.

Three oxygen-hydrogen fuel cells are used in the Apollo program. They have a combined weight of about 735 pounds and produce a total of about 4,200 watts of electrical power.

Pratt & Whitney and General Electric were selected to negotiate contracts from among three firms responding to a NASA request for proposals.

The development programs will be coordinated closely with the space shuttle phase B program definition studies being conducted for NASA by the McDonnell Douglas and North American Rockwell Corporations.

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NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

MANNED SPACECRAFT CENTER

Houston 1, Texas

483-5111

MSC 70-67
June 15, 1970

HOUSTON, TEXAS--The National Aeronautics and Space Administration will negotiate with Grumman Aerospace Corp., Bethpage, N. Y., Lockheed Aircraft Corp., Los Angeles, and Chrysler Corp., New Orleans, for 11-month Phase A (feasibility) contracts to study several alternate space shuttle concepts. The Boeing Co., Seattle, will be a major subcontractor to Grumman.

The Grumman/Boeing contract, to be managed by NASA's Manned Spacecraft Center, Houston, involves the study of three shuttle concepts:

(1) A stage-and-a-half shuttle consisting of a single reusable manned spacecraft with an onboard propulsion system and droppable tanks to provide supplementary propellants.

(2) A reusable orbiter with expendable booster. This envisions a second stage orbiting shuttle launched on an existing expendable booster or on a new minimum cost first stage liquid or solid propellant booster.

(3) A reusable first stage using existing J-2S engine technology and solid propellant auxiliary boosters with a reusable second stage orbital shuttle also powered by J-2S engines. The J-2S engine is an advanced version of the J-2 hydrogen-oxygen engines successfully used on the second and third stages of the Saturn V launch vehicle.

Estimated value of the Grumman fixed-price contract is $4 million.

The Lockheed study, to be managed by NASA's Marshall Space Flight Center, Huntsville, Ala., will define an alternate stage-and-a-half shuttle system including both high and low cross range designs.

Estimated value of the Lockheed fixed-price contract is $1 million. In a related Phase A (feasibility) effort, the Chrysler Corp. will study another concept--a reusable vehicle that can place a payload into Earth orbit with a single stage. Estimated value of the fixed-price contract is $750,000. The contract will be managed by the Marshall Space Flight Center.

-more-

Add 1
MSC 70-67

Recently, the National Aeronautics and Space Administration selected the McDonnell Douglas Corp., St. Louis, and the North American Rockwell Corp., Space Division, Downey, Calif., for final negotiations of parallel 11-month Phase B (definition and preliminary design) contracts for studies of the most promising approach to the space shuttle--the fully reusable two-stage vehicle.

The Grumman/Boeing and Lockheed studies will rigorously reexamine the feasibility of shuttle concepts that might be competitive--technically and economically--with the two stage fully reusable system. The results of these studies, together with those already underway, will assure that nothing is overlooked and that the shuttle concept finally selected for development will indeed provide the most economical space transportation system.

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NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

MANNED SPACECRAFT CENTER

Houston 1, Texas

483-5111

June 17, 1970
MSC 70-68

HOUSTON, TEXAS--The National Aeronautics and Space Administration has awarded a $100 thousand fixed-fee contract to the Grumman Aircraft Engineering Corporation, Bethpage, New York to study station operating techniques during a space station mission.

Purpose of the study, according to the work statement, is to "define crew command structure necessary to insure . . . successful operations in pursuit of defined mission objectives."

Included in the study will be a definition of crew duties, training requirements, duty and rotation cycles, and the kind, number and type of crew member that will comprise the station complement.

The contract will be administered by the Advance Missions Program Office at the Manned Spacecraft Center, Houston, Texas.

It is to be completed in February 1971.

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NEWS RELEASE
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
MANNED SPACECRAFT CENTER
Houston 1, Texas

483-5111

June 18, 1970
MSC 70-69

HOUSTON, TEXAS--Three hundred scientific proposals detailing analysis of lunar samples returned on future Apollo missions are currently being reviewed by the National Aeronautics and Space Administration.

The proposals were submitted by scientists from the U. S. and 25 foreign countries. The NASA in March 1970 invited the international scientific community to propose studies of Moon rocks and soil expected to be recovered by Apollo missions 14 through 19.

The research proposals are being evaluated on the basis of scientific merit. The investigators proved ability, the readiness of his laboratory to conduct the proposed studies and the amount of lunar material and NASA funds required.

Scientists at the Manned Spacecraft Center are reviewing the research proposals. The review process is being coordinated at MSC by the Lunar Sample Office of the Science and Applications Directorate. John W. Harris is manager of the Lunar Sample Office.

One hundred and fifty of the 192 scientists currently analyzing Apollo 12 lunar material have submitted proposals to conduct studies on samples from Apollo missions 14 through 19.

Seventy-four of the 300 proposals are from scientists representing Austrailia, Austria, Belgium, Brazil, Canada, Ceylon, Czechoslavakia, England, Finland, France, Germany, Greece, the Netherlands, Italy, Japan, Korea, Norway, Scotland, South Africa, Spain, Sweden, Switzerland and West Pakistan.

NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

MANNED SPACECRAFT CENTER

Houston 1, Texas

483-5111

June 22, 1970

RELEASED BY NASA HEADQUARTERS

The National Aeronautics and Space Administration has selected Honeywell, Inc., Boston, for award of a contract for the design, development and delivery of a 10-band multispectral scanner instrument to be flown in the Workshop of the Skylab manned space flight program in 1972.

Estimated value of the cost-plus-incentive-fee contract is $3 million. Delivery of flight hardware is scheduled for late 1971. Manned Spacecraft Center, Houston, will manage the multispectral scanner contract.

Objectives of the multispectral scanner experiment are to develop techniques and interpretive methods for Earth survey from orbital vehicles.

The scanner will detect and measure radiated and reflected solar energy from materials on Earth. Since materials generally exhibit a unique signature (identifying characteristic) in a portion of the electromagnetic radiation spectrum, this signature can be used to identify the material and detect changes.

Data acquired by the scanner will be used along with multispectral photography aboard Skylab and airborne flights over selected sites to determine optimum signatures for identifying types and evidence of crop disease, mapping of vegetation water pollution, and mapping surface temperatures. The instrument will collect data in ten spectral bands between 0.4 and 12.5 microns over a minimum ground resolution of approximately 130 feet.

The multispectral scanner will be flown as part of the Earth Resources Experiment Package under development for Skylab. Other experiments include a multispectral photographic facility, an infrared scanner, and a set of microwave instruments. Principal objectives of the Earth Resources Experiments Package are to gather data over a broad portion of the electromagnetic spectrum for Earth resources studies, using man in selecting

sites and operating instruments for specific measurements, and to help determine the optimum sensors and techniques for application in future Earth orbital, manned and automated, information gathering systems.

The data returned from this package of experiments will be used by the scientific community along with data from the Earth Resources Technology Satellite and the Manned Spacecraft airborne program to assess the benefits possible from remote sensing from orbital altitudes in the areas of agriculture, forestry, geography, geology, hydrology, oceanography and other Earth resources disciplines.

NEWS RELEASE
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
MANNED SPACECRAFT CENTER
Houston 1, Texas

483-5111

June 22, 1970
MSC 70-70

HOUSTON, TEXAS--The National Aernonautics and Space Administration has selected General Electric Co., Valley Forge, Pa., for the design, development,and delivery of a microwave radiometer-scatterometer/altimeter instrument to be flown in the Workshop of the Skylab manned space flight program in 1972.

Estimated value of the cost-plus-incentive-fee contract is $5 million. Flight hardware delivery is scheduled for October 1971. The contract will be managed by the Manned Spacecraft Center, Houston.

Objectives of the microwave radiometer-scatterometer/altimeter experiment are to evaluate the usefulness of passive and active microwave systems in providing information on sea and land conditions, such as ocean surface roughness; wave heights; large-scale oceanic wind fields near the surface; snow cover, frozen and unfrozen ground and soil moisture conditions. The microwave data will be correlated with measurements in the visible and infrared bands to be made aboard the Skylab Workshop.

The altimeter will determine return signal characteristics for a variety of Earth and sea surface conditions to guide the design of future orbital geolotic altimeters.

The microwave radiometer-scatterometer/altimeter will be flown as part of the Earth Resources Experiment Package under development for Skylab. Other experiments include a multispectral photographic facility, an infrared scanner and a 10-band multispectral scanner.

Principal objectives of the package of experiments are to gather data over a broad portion of the electromagnetic spectrum for Earth resources studies, using man in selecting sites and operating instruments for specific measurements, and to help determine the optimum sensors and techniques for application in future Earth orbital, manned and automated, information gathering systems.

The data returned from the Earth Resources Technology Satellite will be used by the scientific community along with data from these experiments and the MSC airborne program to assess the benefits possible from remote sensing from orbital altitudes in the areas of agriculture, forestry, geography, geology, hydrology, oceanography and other Earth resources disciplines.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
MANNED SPACECRAFT CENTER
Houston 1, Texas

483-5111

June 22, 1970
MSC 70-71

HOUSTON, TEXAS--The National Aeronautics and Space Administration Monday announced the Laser Ranging Retro-Reflector (LRRR), similar to the one placed on the lunar surface during the first U.S. lunar landing, has been added to the scientific experiment package scheduled to fly aboard the Apollo 14.

The LRRR, designed to make laser distance measurements from the Earth to the Moon with an accuracy of six inches is scheduled to be placed in the Fra Mauro region of the Moon by astronauts Alan B. Shepard, Jr. and Edgar D. Mitchell. The Apollo 14 is scheduled for launch no earlier than Dec. 3, 1970.

The proposed landing site for Apollo 14 is 3 degrees 36 minutes South and 17 degrees 24 minutes West, approximately 800 miles west of the position of the Apollo 11 LRRR in the Sea of Tranquility.

Lunar range measurements from the second LRRR will provide valuable new information to scientists on the dynamics of the Earth-Moon system. The two LRRR will serve as a "bench mark" to which precise range measurements can be made by timing the round-trip of a short pulse of laser light reflected from it. Eventual plans call for the placement of a third LRRR on the surface of the Moon.

The LRRR consists of an array of 100 special reflectors of fused silica mounted on a square frame 18 inches on a side and weighs about 45 pounds (Earth weight).

A very short laser pulse of light is transmitted from an Earth-based telescope to the Moon-based reflected.

The distance can be calculated from the measured round-trip travel time (approximately 2.5 seconds) and the speed of light (186,000 mps).

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Add 1
MSC 70-71

Primary scientific objectives of the LRRR include the study of gravitation and relativity (secular variation in the gravitational constant), the physics of Earth (fluctuation in rotation rate, motion of the poli, large-scale crustal motions) and the physics of the Moon (physical librations, center-of-mass motion size and shape).

Dr. James Faller, Wesleyan University, Middletown, Connecticut, is the principal investigator for the LRRR.

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NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

MANNED SPACECRAFT CENTER

Houston 1, Texas

483-5111

June 23, 1970

RELEASED BY NASA HEADQUARTERS

L. Gordon Cooper, one of the seven original Mercury astronauts and veteran of two space flights, is resigning effective July 31 to become a Washington business executive.

His retirement as an Air Force colonel is effective the same day.

Cooper is one of two Mercury astronauts still on flight status (the other is Alan Shepard). Cooper joined NASA in April 1959. His first mission was the Mercury-Atlas 9 flight, a 22-orbit, 34-hour mission which concluded that program on May 16, 1963. It was also the longest of the Mercury flights and an important step in demonstrating that relatively long periods of space flight had no serious permanent physical effects on the human system.

Cooper's second space flight was as command pilot of the 8-day, 120 revolution Gemini 5 mission, which began on August 21, 1965, and set a new manned flight endurance record. He was the first man to make a second oribtal flight and accumulated 222 hours and 15 minutes in space, also a record.

Following the conclusion of the Gemini program, Cooper was assigned to important tasks in the Apollo and Apollo Applications (Skylab) programs. In addition to demanding ground test jobs, both as an astronaut and engineer, Cooper served as backup command pilot for Gemini 12 and backup commander for Apollo 10.

Cooper said that following his resignation from NASA and Air Force

-more-

Add 1

Retirement, he is to become President of National Exhibits, Inc., and member of the Board and engineering consultant to Intersales, Ltd., both Washington-based enterprises. National Exhibits was formed to establish a new convention center and a permanent exposition promoting exhibits from the fifty states. Intersales is an International export marketing organization formed in 1958.

Cooper attended public schools in Shawnee, Oklahoma, and received a BS degree in Aeronautical Engineering from the Air Force Institute of Technology. He was graduated from the Air Force Experimental Flight Test School at Edwards Air Force Base, California, in 1957, and assigned as an aeronautical engineer and test pilot at Edwards.

Cooper has received many honors and decorations including the Distinguished Flying Cross with cluster and the NASA Distinguished Service and Exceptional Service Medals.

Cooper is married to the former Trudy Olson of Seattle, Washington. They have two daughters, Camala and Janita.

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NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
MANNED SPACECRAFT CENTER
Houston 1, Texas

483-5111

June 24, 1970
MSC 70-72

HOUSTON, TEXAS--Members of U. S. military services assigned to the Manned Spacecraft Center will be honored in an awards ceremony at MSC Friday, June 26.

Eighty awards will be presented including the Silver Star, the Legion of Merit, the Meritorious Service Medal, the Air Medal, the Air Force Commendation Medal, the Republic of Viet Nam Service Medal, and the Purple Heart.

Award presentations will be made by Astronauts Edwin E. Aldrin, Jr., and Thomas P. Stafford. Speakers at the ceremony will be MSC Director Robert R. Gilruth, Donald K. Slayton, Director of Flight Crew Operations, Flight Director Milton L. Windler, and Colonel William C. Moore, Headquarters Command, USAF.

The awards ceremony will be held in the MSC auditorium, Building 1 at 3:00 p.m. Friday, June 26.

Major William W. Fink, Jr., will receive the Silver Star for gallantry in military action in Southeast Asia. Major Fink was cited for disregarding his own personal safety while conducting a highly successful night bomber attack against heavily fortified enemy gun positions on November 29, 1967.

Major Fink is presently assigned to the Flight Control Division at MSC.

Major Fink's father, William W. Fink, Sr., will be awarded the Purple Heart at the same ceremony. Mr. Fink, who lives in Houston, earned the Distinguished Service Cross and the Purple Heart as a private during World War I in action at Remonville, France. He received the Distinguished Service Cross, but was never presented the Purple Heart.

Major Lloyd Reeder, Mr. Quentin A. Holmes (formerly Captain), Major George M. Colton and Dr. Malcolm A. Smith (formerly Major) will be awarded the Legion of Merit for "significant contributions to the effectiveness and successful accomplishment of the national goal of placing a man on the Moon and returning him safely."

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Major Reeder is assigned to MSC's Flight Crew Support Division and served as training coordinator for the Apollo 11 astronauts. Mr. Holmes is assigned to the Center's Mission Planning and Analysis Division where he developed improved techniques for computing lunar trajectories. Dr. Smith is assigned to the Medical Research and Operations Directorate and headed the team which developed and qualified food processing and packaging techniques for Apollo missions. Major Colton is assigned to the Flight Crew Support Division and was in charge of preparing maps, charts and other graphic aids needed by the Apollo 11 astronauts in navigating to and from the Moon and in conducting lunar surface operations.

The Meritorious Service Medal will be presented to the following 31 persons for outstanding contributions to the Apollo and Manned Orbiting Laboratory programs: Colonel Charles M. Barnes, Lt. Colonel William J. Frome, Major Richard A. Boster, Lt. Commander Robert R. Crippen (USN), Major Charles G. Fullerton, Major William R. Marlowe, Jr., Major Joe H. Roberts, Major Charles J. Tringali, Captain William H. Block, Captain Bernard A. Durand, Captain Grover D. Fulkerson, Captain Fred C. Jensen, Captain Joseph A. Lazzaro, Captain Edwin F. Marzano, Captain Rodney J. Reining, First Lt. Nathan J. Adams, Jr., Lt. Colonel Albert H. Crews, Jr., Lt. Colonel Turnage R. Lindsey, Major William D. Dupee, Major Charles T. Essmeier, Lt. Commander Richard H. Truly (USN), Major Robert F. Overmeyer (USMC), Major John E. Streit, Major William H. Wood, Jr., Captain Charles A. Denham, Captain Robert M. Edwards, Captain Michael J. Howley, Captain Richard J. Labrecque, Captain Joe M. Leeper, Captain Dwight G. Peterson, Captain Harold O. Spurlin.

Major Gail F. Steele will receive the Air Medal, Sixth Oak Leaf Cluster and Captain Laverne B. Tubergen will receive the Air Medal, First Oak Leaf Cluster for "meritorious achievement" while participating in aerial missions in Southeast Asia.

The Air Force Commendation Medal will go to the following individuals: Major Vernon L. Carter, James D. Duval, Jr., LCol., USAF (Ret), Captain Vito J. Pagano, Captain Richard A. Willhite, Major Alfred H. Davidson III,

Captain Marion D. Clark, Captain Cletus B. Kuhla, William C. Loveless, LCol., USAF (Ret), Captain Francis J. Welsh, Major Thomas L. Stuebe, Captain Robert M. Bond, Captain Ross E. Ferland, Captain James F. Gilbert, Captain Howard C. Johnson, Jr., Captain Paul H. Kruppenbacher, Captain Thomas A. Runner, Captain Ronald E. Sickler, Captain Raymond F. Teague, Captain William G. Weppner, First Lieutenant John M. Hill, First Lieutenant George L. Stanton, Captain Jack D. Chandler, Jr., Captain John P. Oss, MSgt. James O. Schlosser, MSgt. Glenn R. Lowry, Major Gail F. Steele, Dennis H. Johnson, LCol., USAF (Ret), Captain Keith N. Kuhlenschmidt, Captain Terry L. Spencer, Major William W. Fink, Jr., Captain Peter K. Birk, Captain William P. Dotson, Jr., Captain Daniel K. Ford, Captain Thomas J. Hankee, Captain Lawrence W. Knutson, Captain George H. Raroha, Captain Samuel L. Ruple, Captain Paul G. Stokholm, Captain Charles R. Wells III, Captain James W. Williams, First Lieutenant Jose L. Saenz.

Lieutenant Colonel Turnage R. Lindsey will be awarded the Republic of Viet Nam Service Medal.

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NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
MANNED SPACECRAFT CENTER
Houston 1, Texas

483-5111

70-73
June 24, 1970

HOUSTON, TEXAS---The NASA Manned Spacecraft Center has modified its contract with the Bendix Corporation, Aerospace Division, Ann Arbor, Michigan, for the fabrication of a fifth Apollo Lunar Surface Experiments Package for deployment on the lunar surface during the Apollo 16 mission.

Estimated value of the cost plus fixed fee contract is $8 million. Total value of the contract is about $76 million.

The contract modification requires fabrication, test, and delivery of the fifth ALSEP which includes a passive seismic experiment, an active seismic experiment, a lunar surface magnetometer, and a heat flow experiment.

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NEWS RELEASE
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
MANNED SPACECRAFT CENTER
Houston 1, Texas

483-5111

June 25, 1970
MSC 70-73a

HOUSTON, TEXAS--The National Aeronautics and Space Administration has signed a supplemental agreement with North American Rockwell Corporation valued at $4,785,130 for changes in the Apollo command and service module contract.

The agreement formally incorporates into the North American contract 26 changes previously authorized by NASA for modification to the contractor's ground support equipment, for test and checkout of the CSM, for modification to flight and ground test hardware, and for additional test and effect analysis changes.

The modifications bring the total estimated value of the North American contract since August 1963 to approximately $3.5 billion.

North American Rockwell Corporation performs the majority of work on the command and service module contract at its Downey, California facility with support from divisions located in Anaheim, California and Tulsa, Oklahoma. Many subcontractor organizations also participate. In addition, launch support operations will be performed at the Kennedy Space Center, Florida, and related test activities will be carried out at the Manned Spacecraft Center, Houston, Texas.

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NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

MANNED SPACECRAFT CENTER

Houston 1, Texas

483-5111

June 30, 1970

RELEASED BY NASA HEADQUARTERS

Changes to be made in the Apollo spacecraft and procedures before the Apollo 14 mission will require postponing the launch to no earlier than Jan. 31, 1971.

The changes and new date were announced by Dr. Thomas O. Paine, Administrator of the National Aeronautics and Space Administration, following a review of recommendations of the Apollo 13 Review Board, an evaluation of the Board's report by the NASA Aerospace Safety Advisory Panel, and recommendations by NASA's Office of Manned Space Flight.

The Review Board had reported that a short circuit ignited electrical insulation in spacecraft oxygen tank No. 2, causing failure of the tank, subsequent loss of electrical power and abort of the lunar-landing mission 200,000 miles from Earth on April 13.

Command and Service Module systems will be modified to eliminate potential combustion hazards in high-pressure oxygen of the type revealed by the Apollo 13 accident.

In addition, a third oxygen tank will be added to the Service Module to avoid operations in low oxygen conditions, thereby making possible the removal of unsealed fan motors in the tanks.

Use of Teflon, aluminum, and other materials potentially combustible in the presence of high-pressure oxygen will be minimized throughout the high-pressure oxygen system and kept away from possible ignition sources.

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Add 1

All electrical wires will be stainless-steel sheathed and the quantity probe will be stainless steel instead of aluminum.

The fuel cell oxygen supply valve will be redesigned to isolate Teflon-coated wires from the oxygen.

Warning systems on board the spacecraft and at Mission Control will be modified consistent with the Board's recommendations to provide more immediate and visible warnings of system anomalies.

A comprehensive review of spacecraft emergency equipment and procedures and use of Command Service Modules and Lunar Modules in "lifeboat" modes is now underway at the Manned Spacecraft Center in Houston.

NASA will take steps to disseminate widely throughout industry and the technical community the lessons of Apollo 13 to prevent recurrences in other areas. In this connection, Dr. Paine told the Senate Committee on Aeronautical and Space Sciences today, he has forwarded to Academician M. V. Meldysh of the Soviet Academy of Sciences a copy of the complete Apollo 13 Review Board Report so that lessons which might be learned from the accident can be applied to prevent a similar hazard to Soviet cosmonauts.

Apollo 14 will land in the Fra Mauro region of the Moon, a hilly upland area that was the intended landing site of Apollo 13. The crew will be Capt. Alan B. Shepard, Jr., USN, Commander; Maj. Stuart A. Roosa, USAF, Command Module Pilot; and Cdr. Edgar D. Mitchell, USN, Lunar Module Pilot.

Postponement of Apollo 14 will also move the planned launch date for Apollo 15 several months to July or August 1971, maintaining approximately a 6 month interval between launches.

NEWS RELEASE
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
MANNED SPACECRAFT CENTER
Houston 1, Texas

483-5111

MSC 70-74
July 1, 1970

HOUSTON, TEXAS--The National Aeronautics and Space Administration has awarded a $20,000 contract to Texas Tech University to develop a new type electrode which may be used to monitor heart function of astronauts on Skylab missions.

The first Skylab flight -- a 28-day, earth orbital mission -- is scheduled for late 1972. One of the objectives of Skylab missions will be to evaluate the effects of long duration space flights on the physical condition of astronauts.

Electrocardiogram electrodes now available must be attached to the astronaut's body with a wet electrolyte paste. A dry, insulated electrode would be more easily removed and reattached in flight. It would also be more comfortable.

The primary problem in the fabrication of an insulated electrode is the deposition of an extremely thin, tough dielectric which can withstand normal handling and abrasion.

Work on the new electrode will be conducted at Texas Tech University in Lubbock under a one-year cost-reimbursement-type contract. Texas Tech is to deliver 25 completed ECG electrodes to the NASA Manned Spacecraft Center, Houston for evaluation and possible use on Skylab and other future programs.

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NEWS RELEASE
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
MANNED SPACECRAFT CENTER
Houston 1, Texas

483-5111

MSC 70-75
July 1, 1970

HOUSTON, TEXAS--The National Aeronautics and Space Administration has signed a Supplemental Agreement with the Grumman Aerospace Corporation, Bethpage, N. Y., valued at about $3,248,000, for changes in the Apollo Lunar Module contract.

The agreement formally incorporates into the Grumman contract 18 changes previously authorized by NASA for modification to the contractor's procedures of conducting vehicle readiness reviews, vibrational testing, changes to the rendezvous radar, Quality Assurance and Reliability Procedures, and for updating a descent engine.

The modifications bring the total estimated value of the Grumman contract since January 1963 to approximately $1,673,119,200.

Grumman performs the majority of work on the Lunar Module contract at its Bethpage, N. Y., facility with support from its field offices in Houston, White Sands, and at the Kennedy Space Center, Fla.

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NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
MANNED SPACECRAFT CENTER
Houston 1, Texas

483-5111

MSC 70-76
July 1, 1970

HOUSTON, TEXAS--The National Aeronautics and Space Administration today awarded a 10-month contract extension to Federal Electric Corp., Houston, for support services at the Manned Spacecraft Center, Houston. The cost-plus-award-fee extension has an estimated value of $3.29 million. Total value of the contract is $7.394 million since June 1, 1969.

Under the contract, Federal Electric will be responsible for real-time mission support, flight control documentation, technical editing and writing, engineering documentation, library materials processing, graphic illustrations, satellite quick-copy operation, microform services, publications and forms distribution, supply function, and moving and hauling services for the Manned Spacecraft Center.

The contract provides direct and indirect support to all administrative operations and research and development programs at the center for a 10-month period beginning June 1, 1970 and ending March 31, 1971.

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NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

MANNED SPACECRAFT CENTER

Houston 1, Texas

483-5111

70-77

July 1, 1970

The NASA Manned Spacecraft Center has been informed that a fragment of Apollo 11 lunar material, weighing less than an ounce, is missing from the laboratories at the Goddard Space Flight Center.

The sample was reported missing by Dr. Nicholas M. Short of GSFC, one of the scientists assigned lunar material from Apollo 11. The sample was among several circulated within a group of scientists studying the effect of shock waves in lunar material.

Dr. Short reported to MSC that he inventoried his lunar samples last week and it was then that he found this particular sample missing. Dr. Short was preparing to return the samples to the sample curator at MSC. He last inventoried this particular sample late in February, MSC officials report.

The missing sample, about one-fourth inch in length and weighing .02 ounce, was part of a one pound fine grained gray rock (sample 10020) returned by the Apollo 11 crew. It was subsequently sub-divided and this fragment was examined by other scientists, before Dr. Short received it.

NASA officials are conducting an investigation into the circumstances surrounding the missing sample.

This is the second lunar specimen reported missing by a scientist. Late in January a University of California at Los Angeles scientist reported one of his sample specimens missing during a public display. It was subsequently returned to NASA.

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NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

MANNED SPACECRAFT CENTER

Houston 1, Texas

483-5111

July 2, 1970
MSC 70-78

HOUSTON, TEXAS--The NASA Manned Spacecraft Center has awarded a contract to UNIVAC Division of Sperry Rand Corp., St. Paul, Minn., for lease and maintenance of four UNIVAC 1108 computer systems.

The fixed-price supply contract for an initial three-month period April 1 through June 30, 1970 is valued at $600,000. The agreement contains options for two additional one-year renewals, which could bring the total value to $5,283,345.

The computers, located in Building 12 at MSC, are used for management and administrative tasks, analysis of test data, mission support and trajectory analysis, and scientific problem solving. Since 1966 the computers have been in use at the Center under a General Services Administration contractual agreement with Sperry Rand.

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NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

MANNED SPACECRAFT CENTER

Houston 1, Texas

483-5111

July 10, 1970
MSC 70-79

HOUSTON, TEXAS-- "Tranquility Base here. The Eagle has landed. . ."

A year has passed since those calm words from Neil Armstrong told the waiting world that man had landed on another celestial body. The Eagle touched down a year ago Monday, July 20.

MSC will observe the first anniversary of the Apollo 11 lunar landing by holding an extensive public open-house program Saturday, Sunday and Monday, July 18, 19, and 20. Saturday hours will be from 9:00 a.m. to 5:00 p.m., Sunday 1:00 p.m. to 5:00 p.m. and Monday 10:00 a.m. to 4:00 p.m.

Facilities at MSC open to visitors will include the auditorium and exhibit hall, the Mission Simulation and Training Facility, the Life Systems Laboratory, Central Data Office, Anechoic Chamber, Centrifuge, Mission Control Center, Space Environment Simulation Laboratory, Lunar Receiving Laboratory and cafeteria.

Equipment and space hardware flown on Apollo 11 will be on display in the auditorium lobby and the film "Returns from Space" will be shown at intervals in the auditorium. The Apollo 11 command module, "Columbia", is on a tour of all 50 state capitals and will not be available for the open house.

The Lunar Science Institute, located east of MSC on NASA Road 1, will also be open to the public Sunday and Monday from 3:00 p.m. to 5:00 p.m.

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NEWS RELEASE
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
MANNED SPACECRAFT CENTER
Houston 1, Texas

483-5111

July 13, 1970

RELEASED BY NASA HEADQUARTERS

Aerospace and architectural engineering firms have been invited to submit proposals for assisting the National Aeronautics and Space Administration in planning ground facilities for a space shuttle system.

One firm will be selected as a contractor to support a newly established NASA Shuttle Facilities Group for 12 months in developing an overall facilities plan, with options, for a space shuttle system that could be in operation by the late 1970's.

The shuttles, now in preliminary design, are envisaged as reusable airplane-like vehicles that will transport people and cargo between Earth and low Earth orbit at greatly reduced costs compared with present expendable rockets.

The 12-man Shuttle Facilities Group is headed by R. H. Curtin, NASA Director of Facilities, and includes representatives of the Office of Facilities, Office of Manned Space Flight, Office of Advanced Research and Technology, NASA's three manned flight Centers, and the U. S. Air Force.

In drawing up its plan the group will look at existing facilities, including those at Kennedy Space Center, Fla.

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NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

MANNED SPACECRAFT CENTER

Houston 1, Texas

483-5111

July 15,1970

RELEASED BY NASA HEADQUARTERS

The National Aeronautics and Space Administration announced today that it will reduce civil service employment by about 900 personnel by October 1, 1970. This reduction includes a decrease of 200 planned in NASA's FY 1971 budget and 700 required to meet the limitation on personnel costs in NASA's FY 1971 Authorization Act signed by the President on July 2, 1970.

The principal reductions will be at NASA Headquarters in Washington, D. C., and Manned Space Flight installations. The reductions at each NASA location affected will be approximately:

Headquarters	200
Manned Spacecraft Center	150
Marshall Space Flight Center	190
Kennedy Space Center	85
Ames Research Center	54
Langley Research Center	82
Lewis Research Center	114
NASA Pasadena Office	25
	900

The final reductions in force at each location will be determined by the requirements for retaining a balanced work force for accomplishing NASA missions at the lower employment levels. NASA is acting to have the reduction-in-force completed by October 1, 1970, in order to minimize the number of employees who must be discharged.

Together with the reduction of approximately 600 earlier this month in connection with the Electronics Research Center at Cambridge, Mass., the reductions announced today will bring total civil service reductions in the last three years to above 5,200 and give NASA a staff of 29,850, the lowest since 1963.

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NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

MANNED SPACECRAFT CENTER

Houston 1, Texas

483-5111

July 15, 1970
MSC 70-80

HOUSTON, TEXAS--The government of Peru has accepted NASA's offer to send one of its remote sensing aircraft to help assess damage resulting from the recent severe Peruvian earthquake.

The aircraft, stationed at the Manned Spacecraft Center, Houston, Texas departed July 11. It stopped in Mexico City to pick up two representatives of the Mexican Space Commission's earth resources team and arrived in Lima July 12.

The aircraft, a Lockheed Electra equipped to acquire the black and white, color, and color infra-red photography and thermal infra-red imagery will be used to obtain data over the area in northern Peru which suffered the most severe earthquake damage.

Data acquired during the mission, which supplements that data already obtained by the Peruvian government, will be processed at the Manned Spacecraft Center and furnished as rapidly as possible to Peruvian government authorities for analysis.

The duration of the mission will be from a week to a month, depending upon cloud cover conditions. It is expected that the data obtained, in addition to helping the Peruvian government assess damage and plan reconstruction, will also contribute to the future application of the science of remote sensing to natural disasters.

Approximately 30 different flights are scheduled during the next several weeks, along the western coast of Peru as well as the Santa Valley which experienced the heaviest damage. The NP3A Lockheed aircraft is being flown by members of the MSC Aircraft Operations Project Office (APO). APO is part of the Earth Orbital Missions Office of the Science and Applications Directorate.

-more-

Add 1
MSC 70-80

The aircraft will stage out from Lima Calleo International Airport, Lima and overfly the several target sites at altitudes of 28,000 feet and 5,000 feet.

Frank Newman of the Aircraft Project Office is Mission Manager.

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NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

MANNED SPACECRAFT CENTER

Houston 1, Texas

483-5111

July 15, 1970
MSC 70-81

HOUSTON, TEXAS--The Manned Spacecraft Center has awarded a contract to the Fairchild Hiller Corporation for a food systems study that could be used on an Earth-orbiting space station.

The study will be conducted at the firm's Republic Aviation Division, Farmingdale, New York with emphasis placed on mechanics of food systems rather than caloric requirements.

Concepts of systems scheduled for investigation include packaging, storage, reprocessing, food type selection and cleanup procedures.

MSC has allocated $87,410 for use in the study. It is a fixed price contract, and is to be completed by January 31, 1971.

Personnel from the Medical Research and Operations and Engineering and Development Directorates jointly are monitoring the program.

The study is planned for a 12-man station which could be operational in the late-1970's.

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NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

MANNED SPACECRAFT CENTER

Houston 1, Texas

483-5111

70-82
July 16, 1970

Houston, Texas---One of the new minerals found in samples returned in America's first lunar landing has been named "Armalcolite" in honor of the Apollo 11 crew, Neil A. Armstrong, Edwin Aldrin, and Michael Collins.

The new mineral name incorporates the first few letters of each astronaut's name with "ite" added - Armalcolite. All modern mineral names must end in "ite."

Announcement of the new mineral name came nearly one year to the day the Apollo 11 lunar module landed in the Moon's Sea of Tranquility on July 20, 1969. Armstrong and Aldrin collected and returned approximately 47 lbs. of lunar material from their historic flight.

The mineral is a solid solution of ferrous iron titanium oxide and magnesium titanium oxide end members where the number of atoms of ferrous iron and magnesium in the molecule are approximately equal ($Fe^{2+}_{0.5}Mg_{0.5}Ti_2O_5$). The pure end members are yet to be found in nature and the suggestion has been made that they should be referred to as ferro-armalcolite and magnesium armalcolite.

Announcement of the mineral name is included in the just released Proceedings of the Apollo 11 Lunar Science Conference of Geochemica et Cosmochemichia acta (cq). The Geochemica publication is also dedicated to the Apollo 11 crew. The mineral name has been approved by the Nomenclature Committee of the International Mineralogical Association.

-more-

Also approved by the committee is the name of pyroxferroite which is a new iron-rich calcium-magnesium-iron bearing silicate.

Lunar samples scientists who discovered the new mineral and named it in honor of the Apollo 11 crew are Drs. A. T. Anderson, University of Chicago; T. E. Bunch, Ames Research Center; E. N. Cameron, University of Wisconsin; S. E. Haggerty, F. R. Boyd, and L. W. Finger of Geophysical Laboratories, Washington; O. B. James, U. S. Geological Survey, Washington, D. C.; K. Keil and M. Prinz, University of New Mexico; and P. Ramdohr and A. AlGorsi, Max Planck Institute, Heidelberg, Germany.

The new mineral was found both in the fine grain material as well as the rock samples returned by the Apollo 11 crew.

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NEWS RELEASE
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
MANNED SPACECRAFT CENTER
Houston 1, Texas

483-5111

70-83
July 29, 1970

Houston, Texas---The National Aeronautics and Space Administration has signed a supplemental agreement with North American Rockwell Corp., Downey, Calif., valued at approximately $92,449,970 for changes in the Apollo command and service module contract.

The agreement formally incorporates into the North American contract a change to increase the mission duration, add a scientific instrument module (SIM) to accommodate lunar orbit experiments, and to provide experiment integration. Adjustments to the contract delivery schedules are also included.

The modification brings the total estimated value of the North American cost-plus-fixed-fee/award-fee contract since August 1963 to approximately $3,724 billion.

The principal portion of the contract work is being performed at the California facility. Other divisions of the contractor, and many subcontractor organizations also participate. In addition, launch support operations will be performed at the Kennedy Space Center, Fla., and related test activities will be carried out at the Manned Spacecraft Center, Houston.

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NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

MANNED SPACECRAFT CENTER

Houston 1, Texas

483-5111

70-84
July 29, 1970

Houston, Texas---The National Aeronuatics and Space Administration has signed a supplemental agreement with the Grumman Aerospace Corporation, Bethpage, N. Y., valued at about $7,974,400 for changes in the Apollo lunar module contract.

The agreement formally incorporates into the Grumman contract changes previously authorized by NASA for modification to the contractor's maintenance and repair program.

The modifications bring the total estimated value of the Grumman cost-plus-incentive-fee contract since January 1963, to approximately $1,681 billion.

Grumman performs the majority of work on the lunar module contract at its Bethpage facility with support from its field offices in Houston, White Sands, and at the Kennedy Space Center.

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NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

MANNED SPACECRAFT CENTER

Houston 1, Texas

483-5111

MSC 70-86
July 4, 1970

HOUSTON, TEXAS--The National Aeronautics and Space Administration announced Tuesday the award of a $856,000 contract to the Cutler-Hammer, Inc., Long Island, New York for design and development of an L-Band Microwave Radiometer for use in Skylab.

The contract which was awarded by the NASA Manned Spacecraft Center calls for Cutler-Hammer to design, develop and deliver the L-Band Microwave Radiometer (Skylab experiment S-194) flight hardware by October 15, 1971. Cutler-Hammer, Inc. is located in Melville, Long Island, New York.

Objective of S-194 is to obtain a measure of the brightness temperature of the terrestrial surface of the Skylab ground track. The brightness temperature will be measured in the L-Band portion of the specturm.

The S-194 system will consist of a radiometer sensor for external mounting on the Multiple Docking Adapter and a remote control unit which will be located within the spacecraft in an area readily accessible for astronaut operation of controls.

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NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

MANNED SPACECRAFT CENTER

Houston 1, Texas

483-5111

August 5, 1970

RELEASED AT NASA HEADQUARTERS

The National Aeronautics and Space Administration has selected RCA Corporation's Astro-Electronics Division, Princeton, New Jersey, to build a ground-commanded television system for use in the last four Apollo lunar exploration missions.

The $1.62 million cost-plus-fixed-fee contract covers flight hardware for color television cameras and remote control units which will be compatible with existing Apollo real-time command systems at Manned Space Flight Network tracking stations. The color camera is similar to the field sequential camera used on previous Apollo missions.

The system permits the camera to be operated remotely from Earth or manually by Apollo crews. When it is connected by cable to the lunar module batteries and S-Band transmitter, operation is manual.

Used with the lunar roving vehicle (Rover), the camera system can be earth-commanded on or off, pan and tilt, zoom lens focal length and switch automatic light control from "peak" to "average." A rover-mounted camer conceivably could relay to Earth a view of lunar module liftoff, depending on Rover battery life remaining.

The camera and remote control unit will be used in conjunction with a briefcase-size portable lunar communications relay unit (LCRU) being developed under a separate RCA contract. The LCRU can be mounted on the Rover vehicle or carried by a crewman on the surface of the Moon.

Communications with Earth during exploration treks afoot or by Rover will no longer be limited by the lunar horizon around the lunar module landing spot; the LCRU will permit voice and TV picture transmission direct to Earth without lunar module relay.

The complete camera, remote control unit, LCRU system and Rover is scheduled to be flown first on Apollo 16.

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NEWS RELEASE
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
MANNED SPACECRAFT CENTER
Houston 1, Texas

483-5111

August 6, 1970

RELEASED AT NASA HEADQUARTERS

Photographs taken by an instrumented NASA aircraft of the area of Peru damaged by the earthquake of May 31 were turned over today to the Government of Peru in Lima.

The photographs are part of the data obtained by a National Aeronautics and Space Administration Electra which was dispatched to aid the South American nation in assessing disaster damage.

Equipped with camera and infrared sensing instruments, the aircraft had previously provided rapid and accurate data on damage done last year to the United States Gulf Coast by Hurricane Camille and, earlier this year, by a tornado in Lubbock, Texas. U. S. Geologic Survey geologists helped in preparing the mission, as did the U. S. representative on the Inter-American Geodetic Survey in Peru.

Plans were coordinated with the Peruvian Military Geographic Institute, the National Aerophotographic Service of the Peruvian Air Force and the Peruvian National Reconstruction Committee. Electronic engineers from the Mexican National Space Commission, who had previously cooperated with NASA in a remote sensing program, also took part.

Processing of the data was completed in Houston, base of the NASA aircraft, and delivered to Peruvian authorities for analysis and possible use in restoration of the damaged area.

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NOTE: Photos are available at NASA Headquarters and MSC.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
MANNED SPACECRAFT CENTER
Houston 1, Texas

483-5111

August 11, 1970

RELEASED BY NASA HEADQUARTERS

The National Aeronautics and Space Administration's Office of Manned Space Flight is developing two alternative plans for the future of the Apollo lunar exploration program and has asked two scientific advisory boards for their views on these alternatives.

NASA Administrator Thomas O. Paine has asked NASA's Lunar and Planetary Missions Board and the Space Science Board of the National Academy of Sciences to consider the alternatives. Representatives of the boards will present their views at a meeting with NASA management during the week of Aug. 24. The NASA management group will make a decision on the future course of Apollo following that meeting.

Alternative number 1 is to fly the remaining six Apollo missions as presently planned. Alternative number two would delete two of these missions.

The Apollo schedule now calls for Apollo 14 to be launched Jan. 31, 1971, with Apollo 15, 16, and 17 following at approximate 6-month intervals. The Skylab workshop and three astronaut revisits would be flown late in 1972 and 1973 and then Apollo 18 and 19 would be launched in 1974.

The second and more economical alternative would delete two Apollo flights. The four remaining Apollo missions would be scheduled at approximate 6-month intervals before Skylab. Apollo 14 will explore the Fra Mauro region of the Moon. Apollo 15, 16, and 17 would use the extended

-more-

capability lunar modules to permit longer stay times on the Moon and carry lunar roving vehicles to explore the three landing sites of highest scientific interest.

Deletion of the two Apollo missions would make two Saturn V launch vehicles and spacecraft available for possible future uses such as space station missions.

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NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

MANNED SPACECRAFT CENTER

Houston 1, Texas

483-5111

August 12, 1970

Houston, Texas---The National Aeronautics and Space Administration has signed a supplemental agreement with North American Rockwell Corp. valued at $13,006,000 for changes in the Apollo command and service module contract.

The agreement formally incorporates into the North American contract changes previously authorized by NASA, which changed the vehicle deliveries of CSM's 110 - 115A, from one every 2 to one every $2\frac{1}{2}$ months, and deletion of Customer Acceptance Readiness Reviews (Three-Phase CARR) and substituting in their place the preparation of System Summary Acceptance Documents (SSAD).

The modifications bring the total estimated value of the North American contract since August 1963, to approximately $3.736 billion.

North American Rockwell Corp. performs the majority of work on the command and service module contract at its Downey, Calif. facility with support from divisions located in Anaheim, Calif., and Tulsa, Okla. Many subcontractor organizations also participate. In addition, launch support operations will be performed at the Kennedy Space Center, Fla., and related test activities will be carried out at the Manned Spacecraft Center, Houston.

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NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
MANNED SPACECRAFT CENTER
Houston 1, Texas

483-5111

70-87
August 13, 1970

The Manned Spacecraft Center now is open to the public 7 days a week from 9am until 4pm. Reservations are not required and there is no admission charge. The Center is closed on Federal holidays.

The Visitor Orientation Center, Building 1, has a collection of spacecraft and flight articles, as well as exhibits about America's Manned Space Flight Program. NASA films are shown throughout the day in the auditorium theater.

Visitors may take a self-guided walking tour through other designated areas including the Flight Acceleration Facility, Building 29; the Central Data Office, Building 12; and the Mission Simulation and Training Facility, Building 5. Souvenirs and light refreshments may be purchased in the Cafeteria, Building 3.

The Manned Spacecraft Center has a limited number of guided tours available from Monday to Friday only for adults and children at least 12 years old. Reservations are required. They should be made at least 2 weeks in advance by calling Area Code 713-483-4321 or by writing the Special Events Office, Code AP5, NASA Manned Spacecraft Center, Houston, Texas 77058. Include the exact number of visitors and children (12 years or older), and the specific date desired. Because of the large volume of requests for these tours, MSC cannot guarantee fulfilling requests except on a first come, first served basis.

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NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
MANNED SPACECRAFT CENTER
Houston 1, Texas

483-5111

70-88
August 19, 1970

The NASA Manned Spacecraft Center today notified 175 employees they will be released as a result of cutbacks in the Civil Service work force at the Center.

At the same time, an additional 185 employees were informed they would be reassigned or placed in jobs at a lower grade. Twenty-three employees who were to be affected by the reduction plan to resign or retire.

The action came as part of a NASA-wide manpower reduction announced in July.

Of the 198 employees leaving 155 of them have jobs at the Houston Center. The remainder work at MSC field operations at Downey, California; Bethpage, New York; White Sands, New Mexico; and at the Kennedy Space Center, Florida.

MSC Director Robert R. Gilruth said, "Every effort will be made to assist employees who are being separated or reassigned to less attractive jobs through no fault of their own. We feel these people, many of whom worked directly on the moon landing program, have management and technical experience and abilities which will make them very valuable to other businesses and organizations."

MSC has set up an outplacement center for those affected by the reduction and has invited other Government agencies and commercial firms throughout the country to interview MSC employees for new positions. In addition, working closely with the Houston Chamber of Commerce and the Texas Employment Commission, 300 firms in the Houston area have been contacted and invited to interview NASA employees who would like to remain in this area.

Interested Government agencies and business firms will begin interviewing prospective employees at the Center at the end of August, and MSC will continue intensive efforts to place affected personnel in new jobs before September 30, when layoffs and reassignments take effect.

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Among the 198 employees to leave, 79 are engineers and scientists with backgrounds in electronic, electrical, civil, mechanical, aerospace and general engineering and in the scientific fields of optics and meteoroid studies; 53 are technicians with backgrounds in electronics, construction, reliability and quality assurance, and drafting; 31 are administrative professionals in the fields of budget, procurement, supply, program planning and general administration; and 31 are clerks in the fields of supply and accounting.

Organizations wishing to review employee resumes or desiring to interview MSC employees for job openings are urged to contact Stanley Goldstein, Manager of the Outplacement Center, Mail Code BPX, NASA Manned Spacecraft Center, Houston, Texas 77058, phone (713) 483-4555.

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NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
MANNED SPACECRAFT CENTER
Houston 1, Texas

483-5111

MSC 70-89

August 23, 1970

HOUSTON, TEXAS--Joseph Nicholas Kotanchik, 61, Chief of the Structures and Mechanics Division, Engineering & Development Directorate, NASA-Manned Spacecraft Center, was stricken with a heart attack and died Saturday afternoon, August 22.

Kotanchik, a government employee for 32 years, joined the Manned Spacecraft Center in December 1961, as assistant Chief of the Systems Evaluation and Development Division. This division was responsible for the planning and development of design requirements leading to the construction of the Space Environment Simulation Laboratory, the Vibration and Acoustic Laboratory, the Structures and Materials Laboratory, the 10-Megawatt Arc-Jet Facility and several other major test facilities of the Center.

In 1963, he was named to his current position and was responsible for the operation of these facilities in support of the Apollo program. His organization was responsible for management and technical direction involved in the development of many of the Apollo spacecraft subsystems including the structures, thermal protection, mechanical systems, earth landing systems and others. Mr. Kotanchik personally made many contributions toward the solution of many of the complex technical problems associated with the development of the lightweight spacecraft structures and with the retrofitting of the spacecraft interiors with fire resistant materials after the Apollo spacecraft fire in January 1967.

From November 1965 to August 1966, Kotanchik was attached to the Apollo Spacecraft Program Office as Assistant Manager for the Command and Service Modules.

- more -

Add 1

Dr. Robert R. Gilruth, Director of the Manned Spacecraft Center, said "Mr. Kotanchik was highly dedicated and a key member of the management team of the Manned Spacecraft Center and had made many valuable contributions toward its development. He played a very vital and important role in the successful accomplishment of the landing of men on the moon. His loss will be deeply felt by the Center and by his many friends and associates in the technical community."

Kotanchik was graduated from the Massachusetts Institute of Technology in 1938 with a BS degree in Aeronautical Engineering. In October 1938, he joined the Structures Research Division of the Langley Research Center, at Langley Field, Virginia. There he conducted structures and materials research programs and participated in the development of facilities for structures and materials testing.

Under his direction at Langley, much of the development of high temperature experimental research based on quartz-tube-lamp radiant heating and electric-arc heating of gas streams was performed.

Kotanchik received the NASA Exceptional Service Medal in January 1969, for his contributions to the Apollo 8 Lunar Orbiting Mission and in October 1969, he received a second Exceptional Service Medal for his contributions to the Apollo 11 Lunar Landing Mission. He was a member of the American Institute of Aeronautics and Astronautics.

He was born November 17, 1908 in Ranshaw, Pennsylvania and was married to the former Mary Habura. They have two children, James, 27 of Arlington, Massachusetts and Joseph, 23, U.S. Army, Ft. McPherson, Georgia.

Final rites will be conducted Wednesday, August 26, in the Ukranian Catholic Church in Shamokin, Pennsylvania. The family requests in lieu of flowers, that contributions be made to the Heart Fund.

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NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

MANNED SPACECRAFT CENTER

Houston 1, Texas

483-5111

MSC 70-90
8/24/70

Houston, Texas

The NASA Manned Spacecraft Center today announced plans to restructure and consolidate a number of its Support Service contracts, reducing the number of such contracts from 28 to 17.

MSC Associate Director Frank A. Bogart said the plan will cover a five year period, with all consolidations and recompetitions to be completed in about 2 years.

Consideration will be given to current contract periods, program impacts and budget cycles, he said; and five support services contracts will be set aside for competition among small businesses.

General Bogart said MSC should realize benefits in terms of better utilization of personnel and reduced overhead through the consolidation and restructuring of support contracts.

Current contracts for photographic sciences, the photographic laboratory operation and the making of precision slides for the Mission Control Center will be consolidated into a single photographic support contract.

Contracts for facility support, public affairs support, and logistical and technical information support will be combined into a single institutional support contract.

A consolidated electronic and computation services contract will replace present contracts for general electronic and instrumentation support; computer programming, operation and maintenance; and hybrid computer maintenance.

Present contracts for Mission Control Center engineering and operational support; Skylab flight crew procedures development, simulator maintenance and operation and communications command and telemetry system support will be consolidated into a new flight support contract.

-More-

Add 1
MSC 70-90

Combined contract for program integration and engineering analysis will replace existing support contracts for integration analysis, reliability and quality assurance; spacecraft systems analysis; and technical integration and evaluation.

Consolidation was not considered feasible for the mission trajectory control program contract, clinical support, aircraft maintenance, laboratory support, mission computer support and protective services; and these contracts will remain separate.

Contracts for closed circuit television support, custodial services, motion picture production, rigging and heavy hauling, and central shop support will be set aside for competition among small businesses.

White Sands Test Facility contracts for laboratories and test stand operations, facilities maintenance and installation support, and security guard services will be phased out and replaced with a contract to maintain the New Mexico facility in reduced operational status.

NEWS RELEASE
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
MANNED SPACECRAFT CENTER
Houston 1, Texas

483-5111

MSC 70-91
August 24, 1970

HOUSTON, TEXAS---Ivy Fossler was cited recently by the National Aeronautics and Space Administration as one of four agency nominees for the 1969 Federal Woman's Award.

To be eligible, a woman must demonstrate "outstanding ability and achievement in an executive, professional, scientific or technical position.

Mrs. Fossler, who is senior engineer in the Applied Flight Dynamics section at the NASA Manned Spacecraft Center, was nominated for her contributions to the Apollo moon landing program and in the development of re-useable launch vehicles for post-Apollo programs.

In nominating Mrs. Fossler for the award NASA cited her for playing a major role in determining the wind conditions under which it is safe to launch an Apollo spacecraft. The analysis she performed continues to determine the launch wind restrictions for all Apollo launches.

Mrs. Fossler, formerly Ivy Hooks, and her husband Kenneth and daughters Paula and Cyd, reside in Friendswood, Texas. Mrs. Fossler received her BS and MS degrees from the University of Houston in 1963 and 1965. She has also attended Stephen F. Austin State College, Southwestern University, and Sam Houston State College.

Mrs. Fossler joined the NASA Manned Spacecraft Center in 1963.

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NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

MANNED SPACECRAFT CENTER

NASA

Houston 1, Texas

483-5111

MSC 70-92
August 25, 1970

HOUSTON, TEXAS--A test flight of a new 38 million cubic foot balloon system, designed to carry a 13,800 pound payload to an altitude of more than 21 miles is scheduled to be launched for the National Aeronautics and Space Administration from Holloman Air Force Base, New Mexico on or about August 26, 1970.

This launch will test a new polyethylene balloon which has been developed for NASA's project CRISP (Cosmic Ray Ionization Spectrograph Program).

CRISP is intended to measure cosmic radiation at an altitude of around 108,000 feet. On November 6, 1969 a 34 million cubic foot balloon was launched in this program, but ended prematurely when the balloon failed to rise to its assigned altitude because of a separation in the balloon panels.

This launch is intended to test the new balloon and will carry a dummy payload. If this launch is successful, the instrumented CRISP payload will be launched in October. The experiment is designed to provide significant new scientific information about the high energy cosmic radiation and to develop future scientific experiments which will have application to manned space missions.

The CRISP balloon and payload will stand nearly 1,000 feet tall. After attaining its float altitude, 108,000 feet, it will drift westward and be recovered in Arizona.

The balloon is a two part interconnected system. For launching, the top balloon will be inflated. As the balloon rises, the gas expands and is forced into the much larger main balloon. The expanding helium flows through a connecting transfer duct which is the collar like ring which joins both balloons. Nearly 16 acres of plastic film go into the making of the CRISP balloon.

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Add 1
MSC 70-92

The balloon will be launched and controlled during its flight by personnel from the balloon R&D Test Branch at Holloman Air Force Base, which is a unit of the Air Force Cambridge Research Laboratory under Air Force Systems Command.

CRISP is a project of the Science and Applications Directorate, NASA Manned Spacecraft Center, Houston, Texas.

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NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
MANNED SPACECRAFT CENTER
Houston 1, Texas

483-5111

MSC 70-93
August 26, 1970

HOUSTON, TEXAS---Representatives of national fire safety organizations today will meet with National Aeronautics and Space Administration Manned Spacecraft Center engineers to discuss and inspect fire-fighting garment concepts developed for the manned space flight program. The meetings will explore the possibilities of adapting the specialized fire-fighting garments and equipment to general use.

Representatives of the International Association of Fire Chiefs, International Association of Fire Fighters, the National Fire Protection Association and the National Bureau of Standards will meet with Matthew I. Radnofsky of the Center's Crew Systems Division. Examples of fire-fighting garment concepts such as the proximity fire fighting suit, the rescue garment and the fire entry suit--all developed for launch pad and training vehicle rescue work and made of fire retardant fabrics---will be demonstrated.

Radnofsky's group at the Center has been working with industrial and fire safety groups in making space-evolved fire-retardant materials and technology available for other applications.

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NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

MANNED SPACECRAFT CENTER

NASA

Houston 1, Texas

483-5111

August 31, 1970

RELEASED AT NASA HEADQUARTERS

The Apollo spacecraft command and service modules will be modified to enchance their potential use in an emergency mode.

The decision followed an extensive study of consumables and emergency equipment aboard the spacecraft as recommended by the Apollo 13 Review Board.

The modification includes adding a 400 amp hour battery in the service module as an alternate power source in the event the spacecraft's main power supply failed. Provisions will be made to store an additional 20 pounds of potable water in the command module.

Earlier, a decision was made to add a third oxygen tank in the service module as a part of the redesigned spacecraft oxygen system.

These modifications would permit a powered down mode of emergency flight from lunar orbit to landing back on earth.

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NEWS RELEASE
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
MANNED SPACECRAFT CENTER
Houston 1, Texas

483-5111

September 2, 1970
MSC 70-94

HOUSTON, TEXAS--Nine volunteer test subjects will spend seven days in bed and then undergo high acceleration loads in a centrifuge at NASA's Manned Spacecraft Center to determine man's physiological tolerance to reentry loads calculated for NASA's Space Shuttle program.

The test subjects (all enlisted men from Brooks Air Force Base, San Antonio) will ride the centrifuge and be exposed to "eye balls down" reentry configurations at G-levels ranging from 2.5 to 4.5 for periods up to six minutes and 10 seconds.

Dr. William Shumate, principal investigator in charge of the experiment said the purpose of the tests is to determine what effect prolonged "eye balls down reentry acceleration will have on space shuttle crew members and passengers who have spent long periods in a weightless state.

Nominal space shuttle reentry mode of the MSC straight wing shuttle produces the downward through the head (plus G_z) acceleration as opposed to acceleration forces through the chest (plus G_x) or "eye balls in" experienced in previous Mercury, Gemini and Apollo manned space flights.

The test program is scheduled to begin September 8 when the first group of three volunteers climb into bed for the first 24-hour bed rest. The test subjects will be bedded down in the Crew Reception Area of the Lunar Receiving Laboratory. The nine volunteers will be divided into groups of three, with each group following the same test twenty hours apart.

After 24 hours bed rest, the first group will be transported by ambulance from the LRL to the centrifuge where they will be exposed to shuttle reentry profiles (2.5 to 4.5 Gs). Numerous medical and operational parameters (respiration rate, heart rate, indirect blood pressure, voice, etc.) will be measured during each run and recorded on strip chart and magnetic tape for future evaluation.

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Add 1
MSC 70-94

In addition to centrifuge data, each test subject will undergo numerous physiological measurements prior to and immediately following the acceleration runs in the centrifuge.

The first group of test subjects will begin their seven day bed rest on September 14, with the other groups following in 24-hour periods. All test subjects will be completed with the 24-hour and 164-hour bed rest and subsequent centrifuge runs by September 23.

During the peak acceleration runs the test subjects will be required to view and call out to medical monitors the numbers which light up on a digital display inside the centrifuge gondola.

The volunteers are USAF Technical Sergeants Elmer L. McCoy and Donald L. Watson; Staff Sergeants Earl V. Fraley and Philip A. Robinson; and Airmen First Class William N. Hursta, Michael D. Johnson, Joseph D. Mundy, Howard J. Perlman and Wilbur C. Williams.

Doctors Sidney D. Leverett, Jr., and Samuel J. Shubrooks, Jr. (Major) of Brooks Air Force Base are co-investigators with MSC's Dr. Shumate. Dr. Shumate is assigned to the Biomedical Laboratories Division of MSC/s Medical Research and Operations Directorate.

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NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

MANNED SPACECRAFT CENTER

Houston 1, Texas

483-5111

September 2, 1970
MSC 70-95

HOUSTON, TEXAS--The NASA Manned Spacecraft Center has awarded six-month parallel contracts for the development of radiative non-metallics to be used as high temperature heat protection on the space shuttle.

Winning the awards are the Missiles and Space Division of Ling-Temco-Vought, Dallas, Texas, and the Astronautics Company of McDonnell Douglas Corporation, St. Louis, Missouri.

The fixed-price contracts are expected to cost approximately $215,000 each.

Unlike the single-flight Apollo heat protection that was required for one mission, the space shuttle is designed to operate as an airplane for many missions and to provide a comparatively low cost method of transportation.

To meet multi-flight requirements, NASA is seeking a new generation of materials which can be directed toward application to the leading edge structure of the shuttle orbiter wing and tail surfaces. A thermal protection system must be able to sustain multiple applications in all environments imposed from Earth launching through orbit, entry, maneuver to landing site and finally landing.

The major goals of this contract are to achieve a reliable leading edge design and materials that can accommodate a multi-mission life capable of withstanding up to 4,000 degrees F; and this must be done at reasonable weights and costs.

The two contracts are for the first phases of the development of an oxidation resistant carbon-carbon material called Reinforced Pyrolized Plastic (RPP) composite. The contractors will perform such tasks as studying various processing techniques for the incorporation of oxidation inhibitors, characterizing the materials by obtaining thermal and physical properties and making evaluation studies.

-more-

Add 1
MSC 70-95

Reinforced pyrolyzed plastic composite are a new family of high temperature materials which are intended for long-term use in high temperature, highly oxidizing, high heat flux environments. They are made by reinforcing a plastic, such as phenolic, with carbon or graphite fibers or fabric, fabricating or machining the part to the shape wanted., then cured, pyrolyzed and graphitized under heat up to 4,600 degrees F. in an inert environment.

Development of a light-weight leading edge material which can survive multiple reuse through boost and entry environments will advance the state-of-the-art technology. The experience with RPP to date has been most encouraging, and MSC engineers say and offers a promising approach to the shuttle thermal protection problem.

LTV and McDonnell Douglas were selected from four companies which bid on the proposal. The work will be performed for MSC's Engineering and Development Directorate.

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NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

MANNED SPACECRAFT CENTER

NASA

Houston 1, Texas

483-5111

September 3, 1970
MSC 70-96

HOUSTON, TEXAS---A number of leading experts on the Moon are scheduled to attend a symposium and conference next week at the Manned Spacecraft Center and the Lunar Science Institute.

The meetings, which are being conducted by the Lunar Science Institute, will include discussions on lunar geology, origins of the Earth/Moon system, mass concentrations on the Moon, and age of the lunar surface.

A day-long symposium on "Geophysics on the Moon" will begin at 9:30 a.m. Tuesday, September 8 in the MSC Building 1 Auditorium. The symposium will be chaired by Dr. Gene Simmons, Chief Scientist at MSC and will cover the results of a continuing colloquium on lunar geophysics sponsored by the Lunar Science Institute in August, 1969 and June, 1970.

About 50 lunar scientists are expected to attend a meeting September 9 - 11 at the Lunar Science Institute near MSC to discuss the structure, composition and history of the lunar surface.

The conference will be chaired by Dr. Paul Gast, Chief of the Lunar and Earth Sciences Division at MSC and by Dr. William W. Rubey, Chairman of the Lunar Science Institute.

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NEWS RELEASE
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
MANNED SPACECRAFT CENTER
Houston 1, Texas

483-5111

September 6, 1970

RELEASED BY NASA HEADQUARTERS

The National Aeronautics and Space Administration in conjuction with Purdue University has been coordinating an effort in Indiana the past three weeks aimed at establishing whether the current corn blight infestation can be spotted from sensing devices carried aboard aircraft.

First data analyzed shows that the fungus infection, "southern leaf blight," can be identified from aircraft in its severe stage and it appears to show up at earlier stages as well.

Analysis has not been completed, but color photographs as well as multispectral scanner pictures and data show what photo interpreters call "signature keys" to the crop disease. That is, various gradations in color in the photos appear only when the blight is present.

Successful identification can be important to agriculture in the future because it promises that remote sensing can give farmers warning of crop diseases approaching or even present in their fields before they are aware of it.

Another promising aspect is that large areas of farmland may be quickly and accurately surveyed from the air and probably, in the future, by satellite. The knowledge gained (type of crop in each field, size of the field, crop vigor, detection of any damaging agents and eventually yield-per-acre) may be used regionally and nationally on a timely basis by private and government interests to help keep the supply of essential foods or fibers in balance with demand.

-more-

Add 1

NASA's Manned Spacecraft Center, Houston, and Purdue University, Lafayette, Ind., are the principal participants in the experiment, with an aircraft from the University of Michigan, Ann Arbor, and an Air Force C-131 also involved.

The test site extends from Michigan City in north Indiana to the Evansville area in the southernmost part of the state.

High altitude coverage from 60,000 feet, was provided by NASA's Earth Resources aircraft, an RB-57F, from MSC, which took both visual and infrared color photos as well as black and white.

A Purdue Beechcraft with multiband cameras aboard, flew between 5 and 10,000 feet, the University of Michigan C-47 with a multispectral scanner flew at 3,000 feet and the Air Force C-131 covered the area with cameras at an altitude of 17,000 feet.

Weather conditions were good during all flights, except that of the Michigan flight when they were considered marginal.

More missions are scheduled to be flown at seven to ten-day intervals until the corn crop is ready for harvest. In some cases harvesting is underway or has been completed.

Analysis of these data is being done by Purdue's Laboratory for Applications of Remote Sensing (LARS).

Within a week or ten days, LARS is expected to have a better understanding of how well the blight can be detected by remote sensing at various stages.

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NEWS RELEASE
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
MANNED SPACECRAFT CENTER NASA Houston 1, Texas

483-5111

MSC 70-97
September 8, 1970

NASA AIRCRAFT AIDS
OSU IN "PROJECT ALBACORE TUNA"

The gray and white four engine NASA aircraft cruised along 1,500 feet over the wave tossel Pacific Ocean, 20 miles off the rugged coast of Oregon.

NASA Manned Spacecraft Center pilot Jerry Cobb called over the aircraft intercom, "Nine miles to the Judy K, somebody watch for the boat." The aircraft flew over the 35-foot boat, the instruments recorded the data and then the aircraft flew towards its next target, 100 miles away.

The NASA aircraft followed this pattern for seven days recently as a part of a cooperative effort with Oregon State University. The aircraft, a converted Lockheed Electra NP3A, logged more than 11,000 miles over the Pacific collecting data which may prove helpful in catching the elusive fast-swimming albacore tuna.

-more-

The NP3A, equipped with sophisticated electronic gear, traced a zigzag path for seven days 1,500 feet above the surface of the ocean recording sea temperatures and water color differences for OSU oceanographers. The NP3A is one of three aircraft utilized in Earth Resources Surveys Program by the NASA Manned Spacecraft Center, Houston, Texas.

Aboard the NP3A was a team of NASA and OSU engineers and scientists who operated and monitored the special sensing and recording instruments. The aircraft gathered data -- water color and sea temperatures -- was relayed daily by marine operators to the tuna fleet and used by OSU's extension Marine Advisory Program "Project Albacore" to learn more about water conditions in an attempt to derive workable methods of predicting where and when albacore will be found.

The "real time" data collection and distribution operation which is part of OSU's "Albacore Central" was originated in 1969 to provide fishermen helpful water and weather conditions. "Albacore Central" makes no pretense to being a fish "prediction" service, according to OSU coordinator Dan Panshin.

Panshin, whose group correlates information from the NASA aircraft as well as other inputs from extension agents along the coast, fishermen and weather agents, explained "Albacore Central attempts to help the fisherman by gathering information about factors that may affect the fishery. It leaves to the individual fisherman the judgement about where and when he should fish."

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An "Albacore Central" representative who was aboard each flight monitored the sea temperature measuring device (PRT 5 - Precision Radiation Thermemeter) and relayed data to the central operations center located at OSU campus at Corvallis, Oregon. It was correlated with other data and relayed via marine operator to the fishing fleet twice daily (10:15 p.m. and again early the following morning).

The long range look of "Project Albacore" is being brought into focus by Dr. William Pearcy and Dr. June Pattullo of OSU's Oceanography Department. "Fishermen know that in the waters off the Pacific Northwest they'll find albacore in the water that is between 58 and 65 degrees Farenheit. In our research, we're attempting to relate in a systematic way the factors that determine whether albacore will be present in a particular area and just how abundant they will be," Dr. Pearcy explained.

Their studies focus on such factors as sea-surface temperature, water color, presence of forage animals (feed), and oceanographic phenomena including the upwelling of cold, salt water from the depths and the plume of relatively fresh water expelled into the ocean by the Columbia River.

NASA's role in "Project Albacore" consisted of the four engine aircraft flying over the two OSU oceanographic ships -- the 85 foot Cayuse and the 35 foot chartered fishing vessel Judy K -- which formed two points of a triangle. The aircraft, with its complement of scientists and engineers, flew over the two ships and then went out as far as 150 miles to the imaginary point in the Pacific to complete the triangle.

The Cayuse and Judy K, each equipped with instruments to gather water temperature, salinity, water color data, changed position after each pass of the NASA aircraft. Position changes were directed by aircraft radio by James Mueller, chief OSU oceanographer. The two research ships provided the "water truth" data which OSU later correlated with the aircraft data.

"Project Albacore" flights were concentrated along the path of the Columbia River 'plume', outflow of the river into the Pacific. The 'plume', a distince section of water with lower salt content, higher nutrients and warmer temperature, is believed by scientists to form a 'corridor' which albacore favor.

This is the second year of the OSU cocperative effort which in addition to the NASA has brought into play numerous other information gathering government and state agencies. Most important, perhaps, is the fishermen themselves, the "customer" of the "Project Albacore."

Hundreds of the 750 fishermen which comprise the Oregon tuna fleet have cooperated in this effort with OSU and NASA. Each day the fishermen write in their log sea temperature, water color, weather, and most importantly, the number and location of each albacore catch.

NASA mission manager for "Project Albacore" was Leon Ballinger, of the Aircraft Project Office of MSC's Science and Applications Directorate. Aircraft personnel were from the Flight Crew Operations Directorate, with Cobb as pilot and Ed Mendenhall co-pilot. Elements of the Engineering and Development Directorate also took part in the mission.

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Staging from Portland, the NASA NP3A first flew an instrument calibration run over the Astoria airport. Next was a run over the Judy K, normally positioned about 20 miles off the coast near the Columbia River plume, with the aircraft moving along at about 300 mph, pilot Cobb announced "Nine miles to Judy K, somebody watch for the boat."

A 35-foot chartered fishing vessel, the Judy K was difficult to pick out amidst the rolling white caps of the Pacific. Co-pilot Mendenhall came on the intercom "Two o'clock I think we have it in sight."

The Judy K, a tiny dot between the rolling waves, is faintly visible as the NP3A races along its instruments gathering vital oceanographic data.

As the tiny target appears dead ahead pilot Cobb announces over the intercom, "Boat in 30 seconds, 10 seconds . . ."

As the aircraft zoomed over the Judy K, mission manager Ballinger called over the intercom "Right down the smoke stack, beautiful."

Cobb banked the NP3A sharply and headed for its rendezvous with the Cayuse, some 90 miles away. New coordinates were fed into the on-board guidance system and systems manager Gerald Flannagan was heard over the intercom system, "Data on tape looks really good."

A quick look at the data aboard the aircraft prompted OSU oceanographer Mueller to comment. "Everything went well, everything went the way it was designed."

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Subsequent passes over the Cayuse and Judy K took the remainder of the scheduled six hour flying time. Between passes over the two ships the NP3A relayed frequent weather reports to Albacore Central.

At the close of the day -- normal flying time was 12 noon to 6:00 p.m. -- the engineers and scientists looked over the accumulated tapes and strip charts and planned the next day's mission. New position coordinates for the next day were relayed to the two research vessels.

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NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

MANNED SPACECRAFT CENTER

Houston 1, Texas

483-5111

September 8, 1970
MSC 70-98

Two European companies will join with U. S. firms in design studies of a space shuttle for possible manned flight missions of the late 1970s and beyond.

Messerschmitt-Boelkow-Blohm, of West Germany, and the British Aircraft Corp. (BAC) will conduct sub-systems studies as subcontractors to North American Rockwell's Space Division, which heads one of two U. S. industrial teams under contract to the National Aeronautics and Space Administration for shuttle definition and preliminary design studies.

The European companies work will be financed by their respective governments at no cost to North American Rockwell. They will assign portions of their engineering teams to work at North American's Space Division in Downey, California.

Messerschmitt-Boelkow-Blohn will study the shuttle's attitude-control rocket system, and BAC will investigate structures, aerodynamics, flight-test instrumentation, and data handling.

The space shuttle is envisaged as a reusable airplane-like vehicle for carrying people and cargo between Earth and low Earth orbit at greatly reduced costs compared with present expendable launch vehicles.

Definition and preliminary design studies for the shuttle are also being made for NASA by a team of U. S. aerospace firms headed by McDonnell-Douglas Corp., St. Louis.

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NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
MANNED SPACECRAFT CENTER
NASA
Houston 1, Texas

483-5111

September 9, 1970
MSC 70-99

HOUSTON, TEXAS---Athletes, typists, musicians and many other professions must use their talents on a regular basis or face the loss of the acuity that makes them first rate, and so it is with flight controllers for a mission in space.

With the extended periods between space flights, to allow more time for analysis of information acquired, and assimilation of this into follow-on flight plans, there is a period of time when the activity level in flight control drops off.

To counteract the possible loss of the keen vigilance required on the consoles in Mission Control Center, the Flight Control Division at the Manned Spacecraft Center has instituted a proficiency simulation program for flight controllers.

Prior to the time period when active simulations begin for a flight, a series of proficiency simulations will be scheduled. At least two full simulations will be conducted in Mission Control Center each month, normally at two-week intervals.

Flight controllers scheduled to be assigned to the upcoming mission, in this case Apollo 14, will man their consoles in MCC during these bi-weekly simulation sessions for an eight to ten hour proficiency exercise designed especially to keep them up-to-speed in the respective disciplines.

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Add 1

The simulations will alternately be the Apollo Command Module and Lunar Module during some mission phase, with a computer program furnishing the spacecraft telemetry readouts for the flight controller consoles.

The first of these simulations was conducted late last month for the Apollo 14 flight controllers.

This proficiency simulation program is now planned as a part of the flight controller training for all subsequent Apollo missions.

In addition to these simulations, flight controllers have other tools available to them, notably the Command and Lunar Module cockpit familiarization units maintained and operated by the Crew Station Trainer Systems Group. These units are available for flight controller scheduling on a daily basis and have been very valuable in familiarizing the flight controllers with the inner workings of the spacecraft cockpit on previous missions.

Classroom sessions and smaller group meetings are also utilized by the Flight Control Division to help the flight controllers maintain a level of knowledge and proficiency necessary to the performance of their job.

When the world next hears the call "Apollo 14 this is Houston" the trained and proficient team of controllers behind the scene will not have materialized by chance, but by design.

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NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
MANNED SPACECRAFT CENTER
Houston 1, Texas

483-5111

September 9, 1970
MSC 70-100

HOUSTON, TEXAS---The National Aeronautics and Space Administration is establishing an Earth Resources Laboratory at the Mississippi Test Facility, Hancock County, Mississippi effective today.

The laboratory is to be directed by the NASA Manned Spacecraft Center in Houston and will employ about 75 government and contractor personnel initially, with a planned growth to about 185 over the next two years.

Robert O. Piland, Deputy Director of Science and Applications at MSC, has been named to head the new laboratory.

The effort at MTF will stress research in the applications of remote sensing techniques using data generated by Earth Resources aircraft flying out of Houston, the Earth Resources Technology Satellites (first launch planned for 1972), and on the manned orbiting Skylab spacecraft scheduled to be launched in 1972.

The information gathered by aircraft and spacecraft will be correlated with data gathered on the surface and will be analyzed for potential benefits to such area interests as seafood, forestry, and agriculture, as well as erosion and pollution monitoring of the Gulf Coast and area growth planning.

The new laboratory will complement and supplement Earth Resources programs underway at NASA's Goddard Space Flight Center, Greenbelt, Md., and at the Manned Spacecraft Center.

Experts in physics, geoscience, instrumentation, and data handling will be brought in to staff the facility.

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NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

MANNED SPACECRAFT CENTER

Houston 1, Texas

483-5111

MSC 70-101
September 15, 1970

HOUSTON, TEXAS---The National Aeronautics and Space Administration has selected Singer-General Precision Inc., Link Division, Houston, Texas for award of a contract to design, develop, install, and support a Skylab simulator for astronaut and ground crew training at the Manned Spacecraft Center, Houston.

The estimated value of the cost-plus-award-fee contract is $4 million. Five companies submitted proposals for this work. Delivery of the Skylab simulator is scheduled for late 1971.

The Skylab simulator will operate as a ground based trainer for controls and displays utilized during manned operation of the Skylab, and also will be operated in conjunction with the command module simulator and the Mission Control Center to provide full mission training.

Tasks included under the contract are collection of solar data for the production of solar image graphics; production of computer programs for simulation of various mission phases including active controls and displays; review of spacecraft changes and incorporation of appropriate changes into the simulator design; and preparation of operations and maintenance manuals and interface control documents.

Skylab, scheduled to be launched in November 1972, consists of a modified Saturn V third stage outfitted on the ground as living and working quarters for three astronauts and includes a solar observatory called the Apollo Telescope Mount, an air-lock module, and a multiple

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docking adapter. The first flight crew will occupy and work in the Skylab for up to 28 days, with two subsequent crews remaining in the Skylab for periods of up to 56 days.

In addition to solar astronomy experiments, the Skylab will provide facilities to develop data on man's capabilities to operate for extended periods in Earth orbit, to make meteorological and Earth resources observations, and to carry out medical, scientific, and technical experiments.

The contract will be administered by the Manned Spacecraft Center, Houston, under the direction of NASA's Office of Manned Space Flight, Washington.

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NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
MANNED SPACECRAFT CENTER
Houston 1, Texas

483-5111

September 16, 1970
MSC 70-102

HOUSTON, TEXAS---The Apollo 15 lunar module and rover mockups for crew training were the object of close scrutiny by crewmen David R. Scott, Alfred M. Worden and James B. Irwin during a trainer readiness review in Building 5 at the Manned Spacecraft Center on September 15.

Apollo 15 Commander Scott and his crew will spend many hours training in these mockups between now and the scheduled launch of their lunar mission in July 1971.

The lunar rover vehicle was built by Boeing at the Marshall Space Flight Center, Huntsville, Alabama.

The LM-10 (MSC-12 mockup) was the product of a five-month in-house project here at MSC by a team of engineers headed by Ralph Foster of the Flight Crew Support Division, EVA Branch Mockup Section. Louie Richard, chief of the EVA Branch and Thomas Barrow head of the mockup Section commended Foster for the excellent job done in constructing the mockup at a considerable cost saving to the government.

Starting with a lunar module which was originally built by Grumman in 1963 as a flight-type production model, Foster, along with Joel Lissauer engineering the ascent stage changes, William R. Acres handling the loose stowage equipment engineering, tackled the task of converting the early model LM to the current or Apollo 15 configuration.

The team of engineers along with a group of Link contractor fabrication technicians in a five-month period turned out a much modified

-more-

shiny detailed mockup of the vehicle the Apollo 15 crew is scheduled to land on the moon next year.

Major modifications to the original early configuration of the LM decent stowage bays were necessary. One of the bays was reworked so as to accommodate the lunar roving vehicle which will provide the Apollo 15 crew mobility on the lunar surface, another for the MESA (modular equipment stowage assembly) and still another for the ALSEP (Apollo Lunar Surface Experiments Package). In addition the latest configuration for the ladder and flight-type landing gear was added to the descent stage.

External geometry of the ascent stage required a considerable number of changes to conform to the configuration of the Apollo 15. In addition the Mockup Section designed and engineered the construction of a compact two-man instructor console station in the aft section of the ascent stage which normally is filled with electronic gear. This instructor station, just back of the crew as they stand at the LM control stations, will literally permit the instructors to look over the shoulder of the astronauts during training exercises as well as monitor what is taking place on their consoles.

Other modifications included installations of the capability for pressurizing the astronauts space suits, plus equipment to enable the crew to use their water cooled garments in the LM while suited.

All new instrument panels to conform with the Apollo 15 LM were constructed and installed along with stowage bags, mockup controls, environmental system panels, and close-out netting (debris guards in the cabin).

Add 2

The new LM mockup will become a part of the Lunar surface training area in the black-walled confines of the large room formerly housing the docking simulator. In addition to the LM and rover, the room contains a lunar-like surface complete with craters for ALSEP deployment and training for other lunar surface chores.

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NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
MANNED SPACECRAFT CENTER
Houston 1, Texas

483-5111

September 22, 1970
MSC 70-103

HOUSTON, TEXAS--The balloon borne scientific payload which crash landed in a Canadian field over the weekend suffered little if any damage.

Scientists at the NASA Manned Spacecraft Center said the payload "miraculously came through it in excellent condition." The 1,200 pound instrument package landed in a flax field 20 miles west of Regina, Canada, after being separated from its 600-foot long balloon.

The balloon and scientific package drifted for more than 347 hours, covering a distance of about 4,800 miles -- 1,700 over the Pacific Ocean -- following its launch from Minneapolis, Minnesota on September 4. The experiment was scheduled to be concluded 48 hours after launch; however, a faulty descent system kept the balloon aloft for more than two weeks.

The project, part of MSC's investigations of cosmic rays, is the Cosmic Ray Emulsion Plastic Experiment. The experiment consisted of 240 square feet of detectors housed in 20 by 12 foot package.

The detectors -- plastic track, nuclear emulsion, and fast-film Cernekov -- are designed to record the intensity and direction of transiron primary cosmic rays in the upper atmosphere (130,000 feet altitude). The balloon and payload was launched by the Winzen Research Corporation in cooperation with the National Center for Atmospheric Research (NCAR).

-more-

Add 1
MSC 70-103

The payload was recovered from Canada by NASA, Winzen and NCAR scientists and taken to the University of California, Berkley, where preliminary analysis is being conducted under the supervision of U of C Professor Berford Price, coinvestigator. It will be another 90 days before detailed analysis is completed.

Dr. Zack Osborne, MSC co-investigator, said "Although the payload hit hard, preliminary examination of the detectors indicates we were very lucky."

The balloon and its payload drifted west for several days after launch and then crossed over the Pacific Ocean where it drifted west for about 750 miles. Westerly winds then caught the package and returned it to the states.

It crossed into Canada sometime Friday night and crashed into a series of power lines the following morning where the balloon was separated from the payload. The balloon, still containing a portion of its 20.8 million cubic feet of helium, drifted eastward and fell to a point near Brandon, Canada -- about 100 miles north of Winnipeg.

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NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

MANNED SPACECRAFT CENTER

Houston 1, Texas

483-5111

September 30, 1970
MSC 70-104

HOUSTON, TEXAS--A new program designed to minimize possible exposure of future Apollo flight crews to disease or illness will be introduced 21 days prior to the launch of Apollo 14.

The program, called the Flight Crew Health Stabilization Program, will provide close medical surveillance of the crew and those persons with whom they work closely. The program also will control and limit the number of persons having contact with the crew and limit the crew to areas where microbial contamination is minimized.

Dr. Charles A. Berry, Director of Medical Research and Operations at the NASA Manned Spacecraft Center, said "The most important factors in making this plan to reduce the possibility of crew illness effective, are awareness of, acceptance of, and emphasis on preventive medicine by all management levels and by flight crews."

The program generally provides for:

- Crew health to be stabilized by implementation of epidemiology, clinical medicine, and immunology programs, and limitation of the number of outside contacts with the flight crews.

-more-

- Crew members (prime and backup) will reside solely in the Crew Quarters while at the Kennedy Space Center for a period of 21 days prior to launch.

- Access to primary training areas utilized by crew members will be controlled by the KSC security forces while occupied by flight crews.

- Access to areas during crew occupancy will be limited to properly badged primary contacts, or by waiver from the Director of Flight Crew Operations and subject to medical clearance from the Director of Medical Research and Operations.

- The major scope of crew activities will be limited to the primary areas of the Manned Space Operations Building (MSOB) and Flight Crew Training Building (FCTB), the flight line, and launch pad white room during the 21 day prelaunch period. Primary areas of the MSOB and FCTB are those areas with special air conditioning. Crew access to other than these areas requires special approval.

- Crew members will use personal vehicles when traveling from one primary area to another. The transfer van will be used when crew members travel from MSOB to the launch pad.

In the event crew members are required to be at MSC for training purposes they will reside in their own residence or the crew reception area of the Lunar Receiving Laboratory. Appropriate security controls will be implemented if crew members choose to stay in their homes while at MSC and children and everyone but the wife who is a primary contact will be excluded.

Add 2
MSC 70-104

During 60 days prior to launch all illnesses occuring in family members of prime, backup, and support crews, as well as close contacts of these families will be reported to medical officials.

Primary contacts (wives, backup crew members, mission essential personnel) will be given physical examinations as early as 90 days prior to launch. Those stationed at Houston will receive their physicals 45 days prior to launch.

The follow-on medical surveillance which will be supervised by the Medical Research and Operations Directorate is expected to maximize the possibility that those who come in contact with the crew prior to launch are healthy. The medical personnel at MSC and KSC will maintain and evaluate information relating to crew movements, crew health, primary contact and family health and community health as well as environmental monitoring of the primary areas, food and water.

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NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

MANNED SPACECRAFT CENTER

Houston 1, Texas

483-5111

September 24, 1970
MSC 70-105

HOUSTON, TEXAS--Brazilian space teams will launch two separate scientific payloads for the National Aeronautics and Space Administration from Natal, Brazil, to evaluate the radiation environment over the South Atlantic. The launches are scheduled for September 25 and September 30.

The scientific experiments were developed by NASA and the University of California. Purpose of the two flights is to provide detailed scientific measurements of the charged particle environment in the South Atlantic Anomaly region, a region of trapped radiation located over the South Atlantic Ocean.

Scientists and engineers from two NASA centers -- the Manned Spacecraft Center at Houston, Texas, and the Goddard Space Flight Center, Greenbelt, Maryland -- and the University of California are working together on the projects.

NASA is being assisted in the program by the Brazilian Air Force, the Brazilian National Space Commission (Commisao Nacional de Actividaes Espaciaia) and working with personnel at the Barreria de Inferno range.

Launch vehicle for the two separate scientific probes is the Black Brant IV, a two-stage solid-propellant vehicle. Each payload will be boosted to an altitude of about 530 nautical miles above the South Atlantic.

The payloads and flight parameters are identical. Each payload weighs 110 pounds and the mission duration from launch to impact is 15½ minutes.

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The first flight, scheduled for launch between midnight and two a.m. on September 25 carries a Positive Ion Telescope (PIT), Integral Flux Spectrometer (IFS), and two magnetometers.

The Positive Ion Telescope, developed by the University of California, is designed to obtain data pertaining to protons trapped at low altitudes.

The Integral Flux Spectrometer (IFS), developed by scientists at the NASA Manned Spacecraft Center, is designed to gather detailed information relating to the distribution of charged particles in the anomaly.

The magnetometers -- flight one carries two and three will be aboard the payload on flight two -- are designed to determine the magnitude and direction of the magnetic fields at points along the 507 mile long trajectory.

Flight two, in addition to carrying a PIT and the magnetometers, will have the Corona Discharge Experiment (CDE). The CDE, developed by the NASA Goddard Space Flight Center, is intended to provide a representative pressure within the experiment hardware during flight.

Measurements within the Anomaly will begin when the rocket and payload reach 447,500 feet at 57 seconds into the flight. The experiments will transmit data to the ground stations at Barreria do Inferno range. Data will be collected on magnetic tapes for evaluation by NASA and university scientists.

-more-

The second stage and its payload is scheduled to land in the ocean 225 miles downrange from the launch site. It is not planned to recover either of the instrument packages.

MSC's Space Physics Division, of the Science and Applications Directorate, which designed and fabricated the experiment instrumentation, is directing the program. The Sounding Rocket Branch of NASA's Goddard Space Flight Center, Greenbelt, Maryland, is assisting in the launch and data recovery.

The Black Brant is manufactured by Bristol Aerospace Limited, Winnipeg, Canada. In addition to furnishing the rockets and related hardware, Bristol trained the Brazilian launch crews at Natal.

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NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

MANNED SPACECRAFT CENTER

Houston 1, Texas

483-5111

September 24, 1970
MSC 70-106

HOUSTON, TEXAS--The National Aeronautics and Space Administration has modified its contract with RCA, Camden, N.J., for final development and production of lunar communications relay units.

Estimated value of the cost-plus-fixed-fee contract is $3 million. Total value of the contract is estimated at $10 million.

The lunar communications relay units (LCRU) will transmit astronaut voice, television, and telemetry communications from the Moon directly to Earth. The first of the flight units is scheduled for delivery in June 1971.

Currently, these transmissions are relayed to Earth through the lunar module. Beginning with Apollo 15, however, astronauts will ride an electrically powered vehicle called the Lunar Rover which will take them out of line of communications with the lunar module. The LCRU will be carried on the Lunar Rover and will relay transmissions directly to Earth. It will also receive voice communications and telemetry commands from Earth.

The relay unit will consist of a VHF AM receiver and transmitter, S-band receiver and transmitter, VHF voice antenna, S-band low-gain antenna and S-band high-gain antenna. It will be powered by a self-contained battery or by lunar rover electric power. The entire LCRU less antennas will have an Earth weight of about 50 pounds (less than nine on the Moon), and it will be packaged in a container about the size of a small suitcase (13 x 21 x 5 inches).

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The LCRU will permit live color television coverage of astronauts exploring the lunar surface. It will also make possible television coverage of the lunar module liftoff from the Moon's surface.

The LCRU will be operated primarily from the Lunar Rover. It could also be operated from the modularized equipment transporter -- a two wheel handcart, or in an emergency it may be carried by an astronaut.

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NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

MANNED SPACECRAFT CENTER

Houston 1, Texas

483-5111

September 28, 1970
MSC 70-107

HOUSTON, TEXAS-- Firefighters suits, hospital garments and playing cards may seem far afield from each other, but a group of materials experts at the National Aeronautics and Space Administration Manned Spacecraft Center are looking at ways to make these items virtually fireproof in all conditions.

The firefighters garments will be made in the Center's Crew Systems Division crew equipment shop and provided to the Houston Fire Department for evaluation under actual field conditions by firemen answering residential and industrial fire alarms.

Scheduled for delivery to the Houston Fire Department in early December, the firefighters garments will be made of a five-layer sandwich of fire-resistant materials evolving from the nation's manned space flight program. The outer layer is of a material called Durette, with inner layers of Fluorel on Durette, woven Fypro, batt Fypro, and a liner of woven Fypro.

Costs of making the suits will be borne by NASA, and the Houston Fire Department will provide the agency with a report on their field testing of the garments.

In another application of space-evolved fire-resistant materials, patient gowns, bed linens and mattress covers of Beta cloth will be tested by the University of Texas M. D. Anderson Hospital and Tumor Institute in

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Houston. The gowns and linens will be used in the Radio-Therapy Unit at Anderson for patients receiving cobalt radiation treatment in a chamber pressurized to three atmospheres of 100 percent oxygen. The high-pressure oxygen environment enhances receptivity of tumors to radiation therapy.

A potential hazard in any kind of pure oxygen environment is that the intensity of a fire is increased by oxygen saturation of the fuel; flammable materials such as regular hospital clothing burn faster. By eliminating flammable materials in high-level oxygen applications, the risk of fire is minimized.

Beta cloth for the hospital's evaluation garments is being donated by Owens-Corning Fiberglas.

Fireproof playing cards grew out of a need for some sort of leisure time recreational facilities for crews on long-duration space missions --- again, in spacecraft cabins with 100 percent oxygen atmosphere.

Printed on fireproof paper supplied by Scheuffelen Paper Company of West Germany, the playing cards have applications in other types of closed spaces filled with a high percentage of oxygen, such as in deep-sea diving decompression chambers. Recently, a crew in a simulated space station 90-day run at McDonnell-Douglas Corporation, Huntington Beach, Calif., plant whiled away part of off-duty hours with fireproof playing cards.

-more-

Add 2
MSC 70-107

The U. S. Playing Card Company of Cincinnati, Ohio is printing 200 decks of standard Bicycle playing cards on fireproof paper for potential use in the Skylab earth-orbital manned workshop, now scheduled for flight in late 1972 and early 1973. The cards also will be provided to other agencies for evaluation in confined quarters where flammable material such as ordinary paper would be a hazard.

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NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

MANNED SPACECRAFT CENTER

Houston 1, Texas

483-5111

September 28, 1970
MSC 70-108

HOUSTON, TEXAS--Richard S. Johnston has been named Deputy Director for Biomedical Engineering for the Medical Research and Operations Directorate.

MSC Director Dr. Robert R. Gilruth said this appointment has been made in recognition of the large medical responsibility in Skylab and advanced manned flight programs with increased medical experiment hardware requirements. The new appointment follows a center decision to have the Medical Directorate totally responsible for these medical experiments.

As Deputy Director for Biomedical Engineering, Johnston will report directly to the Medical Director Dr. Charles A. Berry and be responsible for all program-oriented biomedical engineering efforts. This includes medical experiment hardware, diagnostic and therapeutic systems, and monitoring systems.

Johnston has held numerous top management positions since he joined NASA in 1959. His previous assignments have included manager of the Experiment Office of the Apollo Spacecraft Program Office, Special Assistant to the Director and Chief of Crew Systems Division.

In addition to serving as Deputy Director he will also serve as Acting Manager (Chief) of the newly formed Skylab Project Support Office in the Medical Directorate.

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NEWS RELEASE
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
MANNED SPACECRAFT CENTER
Houston 1, Texas

483-5111

September 29, 1970
MSC 90-109

HOUSTON, TEXAS--Eight firms have submitted proposals for a new institutional support services contract at the NASA Manned Spacecraft Center, Houston.

The contract is the first of a series of MSC contracts to be restructured and consolidated to utilize personnel more efficiently and to reduce support contract overhead.

The new institutional support contract will combine the functions of two existing contracts with Service Technology Corporation (STC), valued at about $11.4 million and an existing contract with ITT Federal Electric Corporation valued at about $3.3 million. It will include responsibility for facility support, public affairs support and logistical and technical information support.

Industry proposals will be evaluated and a contract will be awarded early in 1971.

About 900 personnel will be employed under the new consolidated contract compared with about 1,100 contract employees required under the three existing contracts.

The Manned Spacecraft Center announced plans in August to reduce the number of support service contracts from 28 to about 17 through restructuring and consolidation.

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NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

MANNED SPACECRAFT CENTER

NASA

Houston 1, Texas

483-5111

October 1, 1970
MSC 70-110

HOUSTON, TEXAS---The NASA Manned Spacecraft Center is nogotiating with Lockheed Missiles and Space Company, Sunnyvale, California for a study of space shuttle cryogenic systems.

The contract calls for an engineering study aimed at making shuttle cryogenic systems as functional and effective as possible.

Major objectives of the 18-month study is to review and define mission requirements, and then select system concepts to meet these requirements.

Also called for is an analysis of tank configurations, pressurization and insulation concepts and other factors which might significantly influence cryogenic system performances.

Estimated value of the cost-plus-fixed contract is $699,000.

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NEWS RELEASE
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
MANNED SPACECRAFT CENTER
Houston 1, Texas

483-5111

October 1, 1970
MSC 70-111

HOUSTON, TEXAS--In 1969, following the Apollo 11 mission, nine and possibly ten additional lunar landings were planned.

Since then one mission, Apollo 12, has been completed successfully, another, Apollo 13, has been aborted without landing, and three other missions have been dropped from the lunar program.

The determination of scientific objectives and landing locations for each flight has taken on added significance with only four lunar missions remaining and only two landing sites still to be selected.

From the original lists of a dozen or more candidate landing sites, five locations have been discussed most actively as potential sites for Apollo 16 and 17 by NASA site selection groups and at scientific meetings such as the September conference in Houston on The Structure, Composition and History of the Lunar Surface.

These potential sites are the very ancient volcanic terrain of Descartes in the central lunar highlands; the very bright crater Tycho in the southern lunar highlands; the crater-rille chain at Davy in the northeastern corner of Mare Nubium; the Marius Hills, which sit astride the Moon's largest continuous ridge system, radiating out from the Fra Mauro formation -- an area similar to volcanic structures in Iceland or at Flagstaff, Arizona; and the three-thousand-foot-high central peaks of the crater Copernicus.

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The proposed site at Descartes (8 degrees 51 minutes south and 15 degrees 34 minutes east) is between two small craters on a highland plain near ejecta which comprises some of the brightest material on the lunar surface. The site offers the opportunity to sample typical old highland terrain from the central mass of the highlands rather than from the periphery.

It has been suggested that this region of the Moon, with its fissures, grooves and hills, was formed by volcanic activity. The occurrence of such processes would be of fundamental importance in understanding the origin of lunar highlands. Even more interesting is the possibility of finding surfaces that have remained essentially unchanged since the Moon was first formed.

Samples from the Descartes site would be important in determining whether or not highlands were formed by a very early differentiation of the Moon or whether they represent a primitive, undifferentiated planetary surface.

The suggested target at the Davy site (10 degrees 52 minutes south and 6 degrees west) is a chain-of-craters rille with its eastern end in highland material forming the rim of the crater Davy Y and its western end in the floor of Davy Y in upland basin fill. Davy would offer an excellent opportunity to sample at once old highland fill, old highland ridge material and young craters. It is suggested that the craters forming the rille were caused by explosive eruptions which ejected material from 100 kilometers (60 miles) or more beneath the lunar surface. Such deep-seated material would provide direct evidence of the age, composition and physical properties of the lunar interior and

would be of great importance in understanding the past and present physical state of the Moon.

A major problem with the Davy site is that neither Lunar Orbiter photography nor Apollo photography to date provides adequate coverage for mission planning. It does not appear likely that adequate photography of Davy will be obtained on Apollo 14 or 15.

Marius Hills, a group of domes and cones near the center of Oceanus Procellarum, is the most westerly site proposed for an Apollo landing. The tentative landing site (14 degrees 36 minutes north and 56 degrees 34 minutes west) is in the vicinity of the greatest variety and most complete collection of volcanic-like forms on the lunar surface. The volcanic complex lies along a major ridge system which has been compared to terrestrial mid-ocean ridges with volcanic plateaus such as Iceland and the Azores. The age of the Marius Hills complex will establish a minimum age for the internal generation of lunar magma, a required step in determining the thermal history of the Moon. Samples from this site may also show changes in magma composition which can be correlated with time to reconstruct the history of interior lunar processes.

Unlike other sites which offer both highland and mare materials for sampling, Marius Hills appears to offer little hope of yielding any highland material.

The crater Tycho, 80 kilometers (nearly 50 miles) in diameter, is the most prominent of all rayed lunar craters, and at full moon it dominates the southern part of the lunar highlands and is visible to the naked eye.

The proposed landing site is on the crater rim (40 degrees 56 minutes south and 11 degrees 15 minutes west) near the area where Surveyor VII landed January 10, 1968. No other crater is like Tycho in that it is the focus of the most extensive system of bright rays on the lunar earthside. Tycho is also the last major impact event in lunar history. Samples from ejecta of the crater could provide material from 5 to 10 kilometers (3 to 6 miles) beneath the lunar highlands.

Tycho is farther from the lunar equator than any landing site thus far proposed and would require a spacecraft trajectory far removed from a free-return flight path. It is also the most difficult landing terrain to be considered.

The risks of landing at Tycho would have to be weighed against the scientific return from this very interesting site, returns which may, in part be obtainable at other sites.

The crater Copernicus is similar in many respects to Tycho. It is a large crater (diameter 95 kilometers or about 57 miles) with terraced walls, central peaks and brightly rayed ejecta. The proposed landing site is on the crater floor about three kilometers (less than two miles) from one of the central peaks (9 degrees 52 minutes north and 19 degrees 55 minutes west). Scientists believe Copernicus may have been formed by the explosive impact of a meteorite which punched a hole through the lunar crust, exposing underlying material and causing the floor of the crater to rebound and uplift into the central peaks which have drawn

material from 5 to 10 kilometers (3 to 6 miles) beneath the lunar surface. Copernicus is also thought to have been formed by one of the younger events in lunar history and to be a key in dating other lunar features. Samples from the floor of Copernicus will give clues as to the differentiation or layering of the Moon. And material which has come from the central peaks may answer questions on the Moon's interior composition and structure.

Copernicus, like Tycho, presents a difficult landing problem; however, experience gained on the Apollo 14 and 15 missions could overcome these problems.

Other landing sites have also been discussed and are not ruled out for future missions.

Selection of future sites will depend in large part on the results and scientific findings from preceding missions.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
MANNED SPACECRAFT CENTER
Houston 1, Texas
483-5111
October 2, 1970

RELEASED AT NASA HEADQUARTERS

The National Aeronautics and Space Administration has awarded a contract in the amount of $380,000 to the Ralph X. Parsons Co., of Los Angeles, to provide various engineering services in the development of an overall plan for space shuttle ground facilities.

Associated with the Parson company in the work as subcontractor will be Booz Allen Applied Research of Silver Springs, Md., a division of Booz, Allen, & Hamilton, Inc., of New York City.

The contractor will be responsible for compiling a master catalog of facilities, including those needed for manufacture, assembly, engine testing, flight testing, launch, and operations.

As requirements for the shuttle program are identified the contractor will evaluate the need and recommend a candidate site or sites to accomplish the work. Cost analysis and engineering evaluations will support each site recommendation. The final product of the contract will be a facilities master plan encompassing all phases of the program.

The contractor will be under the technical direction of the Space Shuttle Facilities Group, which is directed by the NASA Director of Facilities in NASA Headquarters, Washington.

The space shuttle is envisaged as a reusable launch vehicle and transport to carry people and cargo between Earth and low Earth orbit. The concept calls for airplane-like booster and orbiter stages for piggyback vertical launch and separate horizontal landing.

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Add 1

Shuttle missions could include deployment of unmanned spacecraft, space station supply, satellite repair and retrieval, propellant delivery, space rescue and short duration orbital science and applications missions.

Operational flights could begin in the late 1970's.

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NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
MANNED SPACECRAFT CENTER
Houston 1, Texas

483-5111

October 7, 1970
MSC-70-111

HOUSTON, TEXAS---The National Aeronautics and Space Administration has signed a supplemental agreement with the Grumman Aerospace Corp. valued at about $7,784,000 for changes in the Apollo lunar module contract.

The agreement formally incorporates into the Grumman contract 107 changes previously authorized by NASA for modification to the contractor's procedures for: flight anomaly investigations, for modification to flight and ground test hardware, for additional ground support equipment, and for incorporation of the LM System Safety Program Plan. The modifications bring the total estimated value of the Grumman contract since January 1963 to approximately $1,717,498,000.

Grumman performs the majority of work on the lunar module contract at its Bethpage, N. Y. facility with support from its offices in Houston, White Sands, N. M., and at the Kennedy Space Center, Fla.

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NEWS RELEASE
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
MANNED SPACECRAFT CENTER
Houston 1, Texas

483-5111

October 8, 1970
MSC 70-113

HOUSTON, TEXAS---A man considered by many in the scientific community to be one of the pioneers of modern remote sensing, is personally convinced man must change his ecology in order to survive.

"And we here at the Manned Spacecraft Center can prove helpful in the process of change," says Marvin R. Holter new Chief of the Earth Observations Division of the Science and Applications Directorate. A veteran of 25 years in remote sensing development systems, Holter said NASA's earth resources program is one of the tools which can be utilized in expanding man's understanding of his environment.

"The program (earth resources) is entering a change of phase," he explained. "I anticipate we will be putting our technology, as it exists today, to practical applications."

Holter who admits man has made ecological mistakes said, "we've reached the point where we can't make any more mistakes. We have to change our ecology in order to survive."

The earth resources survey program, a small but major activity at MSC for the past six years has developed the technology and has amassed photographic and sensing data useful in man's understanding of his enviroment.

"We now have the power (through aircraft and spacecraft sensing) to predict change, in advance," Holter explained "and at the same time to be able to predict what effect such changes will have on our ecology."

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MSC aircraft have during the past six years logged thousands of hours flying missions for government and university scientists gathering data on agriculture, forestry, geology, geography, hydrology and oceangraphy.

"During the next year," Holter said, "we will be applying this ability and technology to the Lake Ontario project, among others. The lake project is part of the work being carried out by the International Hydrological Decade (IHD). The IHD, a group of international organizations dedicated to advance our knowledge of the extent and amount of rainfall, depth and desity of snowpacks and levels of rivers, lakes and irrigation reservoirs.

Primary purpose of the Lake Ontario project, Holter said, is a study of the lake and its water shed; including agriculture, industrial and urban activities along the 180 by 60 mile lake. The RB57, one of the three MSC aircraft used in the earth resource survey program has already made one flight over the lake and is tentatively scheduled to fly early several missions early next year and gather photographic and other sensing data over a 100,000 square mile area.

"We welcome the request to take part in this project,"Holter explained. "The program (earth resources) cannot be a success unless there are a number of activities--such as hydrology decade-- which succeed, " he said.

Holter, who came to MSC from the University of Michigan where he was a professor on remote sensing, said the technology and data is available, the next step is to put this practical application.

Author and co-author of about two dozen publications on remote sensing and data systems, the Earth Observations Division Chief is "tremendously excited and interested" in MSC's future role in earth resources.

"Personally," Holter said, I feel we are involved in the survival of the human race."

Holter, his wife Frances and their two pre-school daughters now call El Lago home, far from the campus of the University of Michigan where he spent 23 years.

Born in Fairport, N. Y. in 1922, Holter said he will miss his 13-acre farm which he worked as a hobby in Ann Arbor. However, he is looking forward to pursuing his other hobbies amateur radio, photography and reading.

Holter received a BS in physics from the University of Michigan in 1949, an MS in math in 1951 and an MS in physics in 1958. He held numerous positions at the university, the most recent being professor of remote sensing and head of the sensing laboratory.

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AFS 3

NEWS

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION (202) 962-4155
WASHINGTON, D.C. 20546 TELS: (202) 963-6925

FOR RELEASE: IMMEDIATE
October 12, 1970

RELEASE NO: 70-173

U.S.-SOVIET MEETING

Five National Aeronautics and Space Administration representatives will meet with their Soviet counterparts in Moscow Oct. 26-27 for preliminary technical discussions on possible compatible space docking arrangements.

The discussions are an outgrowth of correspondence exchanged during the past year between the heads of NASA and the Academy of Sciences of the USSR on ways to develop U.S./Soviet space cooperation.

If such arrangements can be realized, it would be possible for American and Soviet manned spacecraft to rendezvous and dock with each other. This would open the way for a wide range of cooperative activities in space.

Dr. Thomas O. Paine, former NASA Administrator, formally proposed joint consideration of compatible docking arrangements in a letter July 31 to President M. V. Keldysh of the Soviet Academy. Keldysh replied Sept. 11 proposing the meeting in Moscow and inviting NASA to select dates. On Sept. 25 Dr. George M. Low, Acting NASA Administrator, accepted Moscow as the site for the talks and suggested that the meeting be held Oct. 26-27. Academician Keldysh has confirmed that these dates are acceptable.

NASA representatives who will attend the meeting in Moscow are: Dr. Robert R. Gilruth, Director, Manned Spacecraft Center, Houston; Arnold W. Frutkin, NASA Assistant Administrator for International Affairs; George B. Hardy, Chief, Program Engineering and Integration Project, Marshall Space Flight Center, Huntsville, Ala.; Caldwell C. Johnson, Chief, Spacecraft Design Office, Manned Spacecraft Center; Glynn S. Lunney, Chief, Flight Director's Office, Manned Spacecraft Center.

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NEWS RELEASE
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
MANNED SPACECRAFT CENTER
Houston 1, Texas

483-5111

October 15, 1970
MSC 70-114

HOUSTON, TEXAS---An audible alarm to alert flight controllers of potentially hazardous conditions onboard the Apollo spacecraft, has been added in Mission Control Center to augment the caution and warning system used on past flights.

The critical limit/event alarm system was implemented by the Flight Support Division of the NASA Manned Spacecraft Center as part of the preparations for the MCC internal validation to ready the control center for the upcoming Apollo 14 simulations and mission.

Augmentation of the dual limit sense/alarm requirement was based on the Apollo 13 Review Board recommendations and was developed as a part of the Real Time Computer Complex (RTCC). Flight controller requirements for the system were supplied by the Flight Control Division.

Eleven consoles in Mission Control are equipped with a varying number of visual and audible alarms to warn when a given parameter exceeds a preset value. Four of the consoles are in the Mission Operations Control Room and the remainder are located in the staff support rooms located around the main control room.

The eleven consoles are all systems engineering consoles and include the following flight control functions concerned with the command and service module (CSM) and the lunar module (LM): CSM environmental/electrical communications engineer (EECOM); CSM guidance/navigation/control systems engineer (GNC); LM environmental/electrical systems engineer (TELMU); and LM guidance/navigation/control systems engineer (CONTROL).

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Software and hardware for the critical alarm system were tested this week during the MCC internal validation to certify that the control center is all up and ready to support simulations for Apollo 14.

When a parameter monitored by one of the above groups of flight controllers indicates an alarm (out-of-limits or event) an audible alarm will sound and a red indicator on the console will light.

The audible alarm is an 800-cycle-per-second tone interrupted six times per second emitting a bleeping sound which transmits a sense of urgency. All critical alarm lights for this system are grouped on the consoles to avoid possible confusion with other warning lights.

The above tone was selected because it does not interfere with the normal voice transmissions. Once an event has exceeded limits, the alarm sounds for a preset period and then turns off, but the warning light remains on until the event is back within limits.

Reconfiguration of MCC for Apollo 14 started in May of this year in accordance with mission requirements. This required implementing all events, analogs, digital television, and communication requirements that are unique or different for Apollo 14.

Work on the Dual Limit Sense/Alarm System was begun the latter part of July. The internal MCC validation after weeks of individual system testing was completed October 13 by the Flight Support Division.

MCC internal validation testing includes integrating the RTCC, CCATS (communications, command and telemetry system), display systems, and the Apollo simulators at Kennedy Space Center in Florida. The Apollo simulators in Houston were tied-in and validated earlier to facilitate flight controller proficiency sims which began early in September.

Other tests to be conducted prior to the mission include interface with the Apollo Launch Data System (ALDS) which is the telemetry system at KSC. This is scheduled for sometime next week.

The MCC/Launch Pad interface test with the Goddard Space Flight Center MILA Unified S-Band (USB) station is scheduled early in December. This will be followed by the launch vehicle redundancy tests and the flight readiness test (FRT).

Two days of testing in the middle of January of next year will be required for the MCC/Network Validation. This testing will be completed three days prior to the CDDT (Countdown demonstration tests) at KSC. These tests will consist of running communications, command telemetry, air/ground, and tracking tests with each station on the MSFN (Manned Space Flight Network). When this is completed the entire data system will be ready to support the Apollo 14 mission.

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NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
MANNED SPACECRAFT CENTER
Houston 1, Texas

483-5111

October 15, 1970
MSC 70-115

HOUSTON, TEXAS---The date is October 15, 1970.....F minus 108 days and counting for a January 31, 1971 launch of Apollo 14.

October 15 is the beginning of simulations in Mission Control Center for the Apollo flight that will land Alan Shepard and Edgar Mitchell in the mountainous section of the moon called Fra Mauro. The landing is scheduled to take place early on the morning of February 5, 1971, when most Americans would normally be asleep, and while Stuart Roosa maintains his lonely virgil in lunar orbit.

To make certain there are no hitches in controlling the mission, the flight controllers will rehearse, rehearse and rehearse again the mission events. The simulations will sometimes utilize a math model of the mission from the computer, but most of the time will be with Apollo crewmen in their simulators in Houston and at Kennedy Space Center in Florida.

Simulations for Apollo 14 are getting underway a little earlier than normal in order to make possible for the flight controllers and support personnel to take a break for the Christmas holidays.

The first simulation on October 15 will be conducted by M. P. "Pete" Frank, the lead flight director for Apollo 14. The flight control team will lead off with a FIDO/BSE simulation. Flight dynamics officers (FIDO) and booster system engineers (BSE) will be faced with a series of launches and translunar injection exercises utilizing a mission math model supplied by the computers.

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Add 1

The other two flight directors for the mission, Gerald Griffin and Milton Windler and their teams of flight controllers will get into the act in the weeks that follow with at least four 8 to 10-hour simulation sessions scheduled each week.

During the early simulations the Apollo 15 crewmen will substitute for the usual math model type simulations and get in a little advance training in the Houston simulators. Dave Scott's Apollo 15 crew is scheduled to take part in five simulations the first three weeks of MCC simulations.

Simulations the first three weeks with the command module and lunar module trainers at Houston and KSC include LM activation and descent, launch, LM ascent, LM descent, lunar orbit insertion/descent orbit insertion, translunar insertion and translunar coast. The first sim with Shepard's Apollo 14 crew in the KSC simulators is scheduled for October 22.

Other simulation sessions scheduled later will include lunar surface exercises by the crew, extravehicular (EVA) sims at Flagstaff, Arizona, reentry, lunar orbit insertion aborts, transearth insertion, lunar photo sims, and some sims open for crew option in selection of the subject.

The flight controller teams will also take part in the countdown demonstration tests scheduled for late January or about 10 days before the terminal count is started for the January 31 launch.

NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

MANNED SPACECRAFT CENTER

Houston 1, Texas

483-5111

October 19, 1970
MSC 70-116

HOUSTON, TEXAS--A special space science program for school groups has been established at the NASA Manned Spacecraft Center.

Invitations to participate have been mailed to administrators of the 927 schools in the 23 counties within 100 miles of Houston.

The lecture-demonstration will be given each Wednesday throughout the school year to acquaint students with space science concepts, applications, major accomplishments, and future objectives. A question and answer period will be included in each program, followed by an opportunity to view a current NASA film and the exhibits and artifacts of manned space flight on display in the Visitor Orientation Center.

An optional self-guided tour through several operational facilities is available, also.

The program will be presented for grades one through six on the first and third Wednesdays of each month and for grades seven through twelve on the second and fourth Wednesdays of each month.

Reservations must be made by writing the Manned Spacecraft Center, Special Events Office, Code AP5, Houston, Texas 77058, or by calling area code 713, 483-4321.

Invitations have gone to schools in the following counties: Austin, Brazos, Chambers, Colorado, Fort Bend, Galveston, Grimes, Hardin, Harris, Jackson, Jasper, Jefferson, Liberty, Matagorda, Montgomery, Orange, Polk, San Jacinto, Victoria, Walker, Waller, Washington, and Wharton.

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NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

MANNED SPACECRAFT CENTER

Houston 1, Texas

483-5111

October 20, 1970

RELEASED AT NASA HEADQUARTERS

The National Aeronautics and Space Administration has asked the Post Office Department to look into a delay in delivery of two shipments of lunar samples from Nassau Bay, Texas, to New York City.

The samples, totaling about 13 grams, were brought from the Moon by the Apollo 12 mission in November 1969. They were sent by registered mail on September 28, 1970, from the NASA Manned Spacecraft Center, Houston, addressed to the Lamont-Doherty Geological Laboratory of Columbia University, and to the Army Post Office number in New York of the American Embassy in Saudi Arabia for delivery to a scientist of the U. S. Geological Survey currently working there. Neither package has been received.

The shipments were made under a program for study of returned lunar samples by about 200 teams of university, government and industrial scientists in the United States and abroad.

The NASA Inspections Division is participating with Post Office inspections in the investigation.

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NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

MANNED SPACECRAFT CENTER

Houston 1, Texas

483-5111

October 20, 1970
MSC 70-117

HOUSTON, TEXAS--The NASA Manned Spacecraft Center today announced plans for construction of a barge dock and waterway in Clear Lake adjacent to MSC to handle shipments of large Skylab test articles.

It is expected contracts will be awarded and construction begun early in November on the project, which will cost between $100,000 and $130,000.

A contract will be awarded by MSC for construction of a barge dock adjacent to NASA Road 1 at the east side of the MSC site. A separate contract will be awarded through the Corps of Engineers for dredging of a waterway 7 feet deep, 60 feet wide and about 3,000 feet long, from the proposed dock to the existing Federal waterway in Clear Lake.

The project is to provide a docking facility and waterway for the S-IVB barge and Skylab test articles being shipped to MSC for testing from NASA's Marshall Space Flight Center, Huntsville, Ala.

The first test article -- a 22-foot-diameter, 36-ton Orbital Workshop Dynamic Test Article -- is scheduled for delivery to MSC in mid-December for acoustic and vibration testing the first quarter of next year. A second article -- an Orbital Workshop one-G trainer weighing 50 tons -- is scheduled for delivery the first of April, 1971. Other Skylab test articles, including the Apollo Telescope Mount, the Airlock Module and the Multiple Docking Adapter will also be shipped between MSC and MSFC via barge during 1971.

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Add 1
MSC 70-117

NASA selected an over-water transportation route for the large, heavy Skylab hardware after a survey showed this to be the most practical means of shipment.

Combined water and over-land routes were also considered but were found to be impractical because of the high cost and the need to move large numbers of overhead electric, telephone and traffic light cables along the overland portion of the route.

The barge dock will be constructed of steel and concrete and will be 60 feet long. A 30-foot concrete apron will be constructed between the dock and NASA Road 1 to permit hauling test articles from the dock, across the road and through the MSC east gate on a tractor-trailer rig.

Spoil material dredged from the channel in Clear Lake will be pumped through a pipeline, under NASA Road 1 and into a relatively low 22-acre area of the MSC site north of Building 222.

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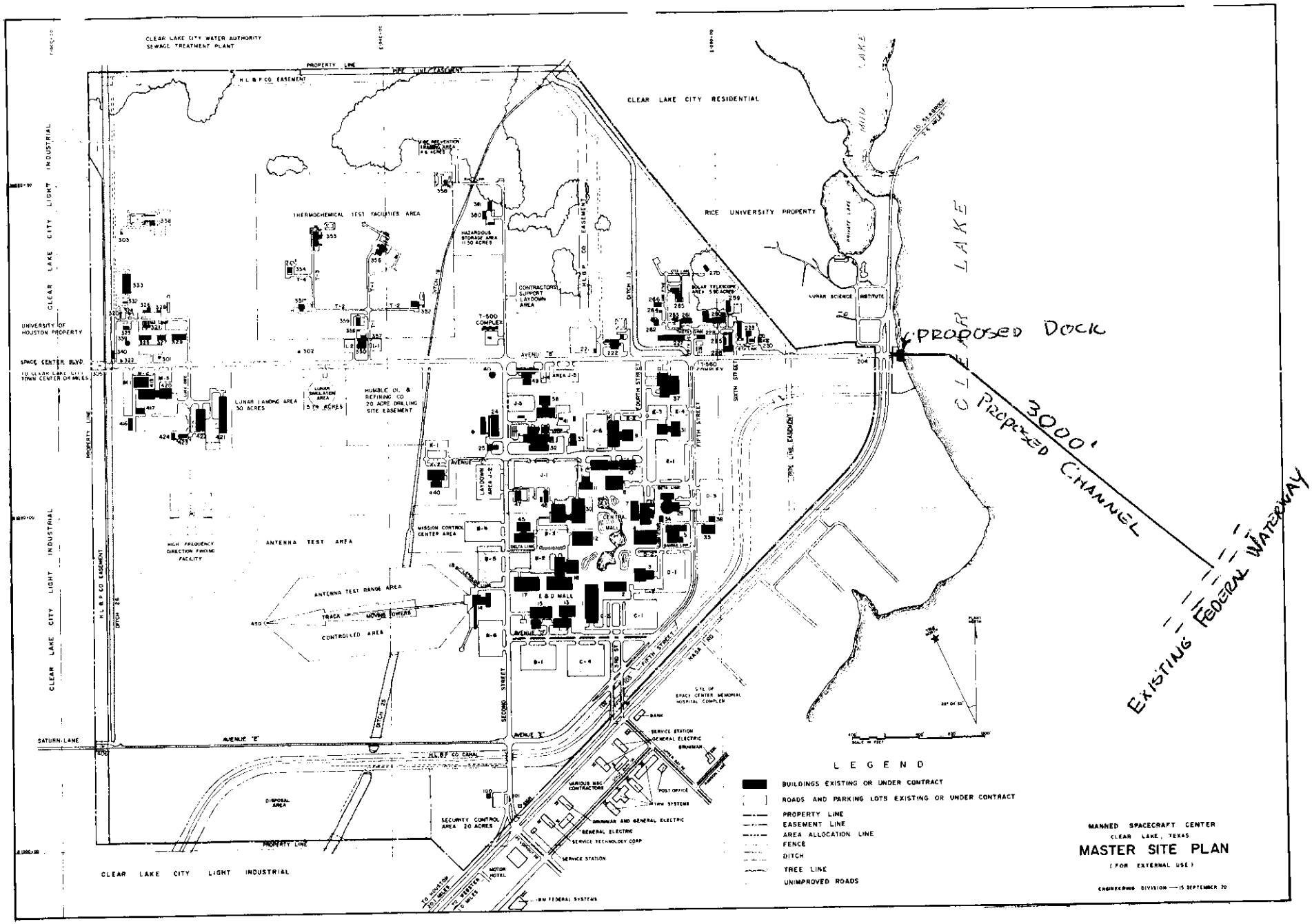
CLEAR LAKE CITY WATER AUTHORITY SEWAGE TREATMENT PLANT
PROPERTY LINE
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CLEAR LAKE CITY RESIDENTIAL
RICE UNIVERSITY PROPERTY
CLEAR LAKE CITY LIGHT INDUSTRIAL
UNIVERSITY OF HOUSTON PROPERTY
SPACE CENTER BLVD
THERMOCHEMICAL TEST FACILITIES AREA
HAZARDOUS STORAGE AREA 11.50 ACRES
CONTRACTORS SUPPORT LAYDOWN AREA
T-500 COMPLEX
LUNAR LANDING AREA 30 ACRES
LUNAR SIMULATION AREA 5.74 ACRES
HUMBLE OIL & REFINING CO 20 ACRE DRILLING SITE EASEMENT
LUNAR SCIENCE INSTITUTE
SOLAR TELESCOPE AREA 5.96 ACRES
AVENUE "H"
FOURTH STREET
FIFTH STREET
SIXTH STREET
AVENUE "J"
LAYDOWN AREA J-2
MISSION CONTROL CENTER AREA
HIGH FREQUENCY DIRECTION FINDING FACILITY
ANTENNA TEST AREA
ANTENNA TEST RANGE AREA
TRACK
MOVING TOWER
CONTROLLED AREA
E & D MALL
AVENUE "D"
SECOND STREET
NASA RD 1
SITE OF SPACE CENTER MEMORIAL HOSPITAL COMPLEX
BANK
SERVICE STATION GENERAL ELECTRIC
BRAUNIGAN
SATURN LANE
AVENUE "E"
H L & P CO CANAL
DISPOSAL AREA
SECURITY CONTROL AREA 20 ACRES
VARIOUS MSC CONTRACTORS
POST OFFICE
BRAUNIGAN AND GENERAL ELECTRIC
GENERAL ELECTRIC
SERVICE TECHNOLOGY CORP
SERVICE STATION
MOTOR HOTEL
IBM FEDERAL SYSTEMS
TO HOUSTON 20 MILES
TO WEBSTER 10 MILES
CLEAR LAKE CITY LIGHT INDUSTRIAL
Proposed Dock
3000' Proposed Channel
Existing Federal Waterway
LEGEND
BUILDINGS EXISTING OR UNDER CONTRACT
ROADS AND PARKING LOTS EXISTING OR UNDER CONTRACT
PROPERTY LINE
EASEMENT LINE
AREA ALLOCATION LINE
FENCE
DITCH
TREE LINE
UNIMPROVED ROADS
MANNED SPACECRAFT CENTER
CLEAR LAKE, TEXAS
MASTER SITE PLAN
(FOR EXTERNAL USE)
ENGINEERING DIVISION — 15 SEPTEMBER 70

NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

MANNED SPACECRAFT CENTER

Houston 1, Texas

483-5111

October 23, 1970
MSC 70-118

HOUSTON, TEXAS--Sigurd A. Sjoberg, Director of Flight Operations at the National Aeronautics and Space Administration's Manned Spacecraft Center, Houston, and Mrs. Sjoberg will visit Sweden October 26-30.

Sjoberg directed the MSC team which played a major role in the safe return from space of the Apollo 13 astronauts last April when their spacecraft was damaged by an explosion. Sjoberg accepted from President Nixon the Medal of Freedom on behalf of the Apollo 13 ground support team.

Of Swedish descent, Sjoberg will visit engineering societies, aeronautic facilities, and his mother's ancestral home in Tockfors.

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NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

MANNED SPACECRAFT CENTER

Houston 1, Texas

483-5111

October 29, 1970
MSC 70-118

HOUSTON, TEXAS--Two small rockets, carrying experiments to study the infrared airglow at 50 miles altitude, will be launched for the NASA Manned Spacecraft Center from the U. S. Army White Sands Missile Range during the first two weeks of November.

Purpose of the twin launches is to provide a firm basis for scientific studies of the atmosphere from either Space Station or Shuttle. Plans are being considered to conduct similar airglow experiments from Space Station or Shuttle.

The airglow is a dim luminosity produced by chemical reactions among atmospheric gases. The airglow can be seen near the horizon on clear nights and is clearly visible to astronauts in orbit who view the glowing layer edge-on.

The experiment payloads weigh about 110 pounds each and will be launched by Nike-Cajun two stage-rocket. The Nike-Cajun, a solid propellant rocket is 21 feet tall and its two stages have a total thrust of 51,000 pounds.

One of the rockets is to be launched at 4:30 p.m. to measure the daytime airglow profile, and the other is to be launched at about 2:30 a.m. to measure the night-time profile. The airglow is the brightest in the infrared part of the spectrum, where the measurements are to be made.

-more-

Add 1
MSC 70-118

Dr. Andrew E. Potter, Jr., Staff Scientist in the Space Physics Division at MSC is principal investigator for the airglow experiment. A special detachment of the U. S. Navy 'Desert Ship', located at the Army Missile Range, provides the launch facilities and launch crews for NASA.

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NEWS RELEASE
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
MANNED SPACECRAFT CENTER
Houston 1, Texas
483-5111
November 4, 1970
MSC-70-120

HOUSTON, TEXAS---When it's chow time on Skylab, astronauts who will spend four to eight weeks in Earth orbit, will have a menu which is as close to 'home-cooking' as modern food technology can make it.

Aerospace doctors and technicians are developing a food system designed to compensate partially for astronauts' long absence from the usual fare of Earthlings and the warmth and delight of home-cooked meals with family and friends.

Dr. Malcolm C. Smith, Chief of Food and Nutrition at the NASA Manned Spacecraft Center said "For the first time, a diet will be provided (for astronauts) which is conventional in appearance, superb in taste and yet satisfies the most rigorous nutritional requirements. The food system is so designed that the Skylab crews will have a relatively wide range of selection from a set of conventional food items while still rigidly adhering to experimental requirements."

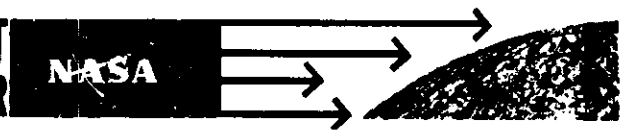
For the first time, astronauts will prepare their meals from an assortment of frozen as well as dehydrated conventional space foods similar to that carried on manned Gemini and Apollo missions.

Astronauts will 'cook' their own meals on a special food tray now being developed for Skylab. Frozen foods will be stored in a freezer in the Skylab orbital workshop.

NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

MANNED SPACECRAFT CENTER



Houston 1, Texas

-more-

Add 1

In addition to being the most palatable menu carried into space thus far, the Skylab food system is designed to meet the requirements and objectives of an important series of medical investigations. Dr. Smith explained that the medical experiments are profoundly influenced by the nature and amount of food that the astronauts consume.

One of the experiments which is in the area of Nutrition and Musculoskeletal Function includes at least three different investigations which demand precise knowledge of nutrient and mineral intake. One such investigation, Mineral Balance, depends upon the complete and accurate knowledge of everything the crew member consumes and of everything he excretes. Another investigation, Assay of Body Fluids, is also dependent upon close surveillance of certain types of nutrient intakes.

In addition to these inflight experiments there are a number of pre and post-flight medical experiments which are dependent on a detailed quantitative knowledge of what each crew member consumes throughout his exposure to orbital flight.

The Skylab food system will maintain a caloric level between 2,000 to 2,800 calories. The diet will be baselined to provide at least the minimum dietary allowances of protein, carbohydrate, fat, minerals, and vitamins which are recommended by the National Academy of Science.

More than 70 different items are now under consideration for use during Skylab missions. The final selection will be made by each crew member.

Add 2

The Skylab menu will consist of the following food types:

Dehydrated - ready to eat rehydratable foods such as cream of tomato soup, scrambled eggs, salmon salad, beverages and deserts.

Intermediate Moisture - precooked, thermally stablized or fresh food with moisture content partially reduced such as dry roasted peanuts, cookies, and bacon wafers.

Wetpack - precooked, or thermally stablized food with approximately 30 to 95 percent moisture content such as turkey and gravy, meat balls with sauce and chili without beans.

Frozen - precooked, thermally stablized or fresh food stowed below minus 10°c to retard spoilage such as prime rib of beef, filet mignon, shrimp cocktail and lobster Newburg.

All food and water for the three manned Skylab missions -- one 28 day mission and two 56-day missions - will be stowed aboard the Orbital Workshop which will be launched by the Saturn V. Dr. Smith estimates approximately 2,000 lbs of food and about 6,000 lbs. of water will be required for the three manned missions.

The food tray will measure about $13\frac{1}{2}$" X 15" by $4\frac{1}{2}$" thick. There will be six of the trays, one for each crewmember, carried aboard the OWS when it is launched from Cape Kennedy. The tray has individual recessed compartments into which the canned food item is placed for heating.

At meal time the crew member selects his meal -- filet mignon, a vegetable, beverage and desert -- from food compartment. He places the items to be warmed in the food tray and then flips the warmer switch and presto he has a three course meal.

-more-

Add 3

Dr. Smith said "We have every expectation that the Skylab food system will provide the most palatable food that has ever been taken into space, and will at the same time support the most rigidly defined metabolic experiment ever conducted on man in space."

(Photograph # S-70-52518)

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NEWS RELEASE
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
MANNED SPACECRAFT CENTER
Houston 1, Texas
483-5111
November 5, 1970

RELEASED BY NASA HEADQUARTERS

A series of aircraft flights at various altitudes to detect corn blight infestation in Indiana via onboard sensing devices have proved successful, the National Aeronautics and Space Administration announced today.

During the final weeks of August and early September, NASA and Purdue University, Lafayette, Ind., coordinated a corn blight sensing experiment which also involved an aircraft from the University of Michigan, Ann Arbor, and a USAF C-131.

Although cameras aboard the various aircraft, including infrared cameras, turned up significant results, the most precise data came from the multispectral scanner flown at 3,000 feet by the University of Michigan's C-47.

Combined with ground computer readouts the scanner was able to classify corn as (1) healthy; (2) very mild blight; (3) mild blight; (4) moderately severe blight; and (5) severe.

Although infrared photographs showed little difference between severely damaged cornfields and a maturing normal field, the scanner data, after being run through a computer, could make the distinction.

-more-

A computer printout clearly shows cornfields and the amount of infestation based on a digital system from 1 to 5 indicating healthy to severely infested corn blight. In addition, each field was classified according to number based on the numerical averages of each field. Some fields show very little to severe damage from the blight and this is reflected in the numbers printed out in the chart. Ground inspection has shown the accuracy of the numerical printouts.

Because the affected leaves of the corn are low on the stalk in the beginning stages of infestation, the system to identify this from overhead must be very sensitive.

Where numbers show up in pastures or soybean fields it is incorrect classification. However, by repetitive coverage the number of errors decrease rapidly to the vanishing point. Another way to eliminate this type of error is to make repeated runs through the computer which would change the numbers to blank spots meaning "I don't know" or dashes meaning "all other categories" - soybeans, wheat or other crops.

The cornfields show almost uniform numbers so that they are easily identified.

In addition to the Michigan aircraft, high-altitude coverage from 60,000 feet was provided by NASA's Earth Resources aircraft, an RB-57F from the Manned Spacecraft Center, Houston. It took both visual and infrared color photographs as well as black and white.

A Purdue Beechcraft with multiband cameras flew between 5,000 and 10,000 feet. An Air Force C-131 covered the Michigan City to Evansville test area at 17,000 feet.

Analysis of the data was done by Purdue's Laboratory for Applications of Remote Sensing (LARS).

Two Earth Resources Technology Satellites will be launched by NASA in 1972 and 1973 to evaluate the economics and uses of an Earth Resources operational satellite system.

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NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
MANNED SPACECRAFT CENTER
Houston 1, Texas

483-5111

November 12, 1970

RELEASED BY NASA HEADQUARTERS

A space station assembled in Earth orbit one module at a time has been studied by the National Aeronautics and Space Administration at the Marshall Space Flight Center, Huntsville, Ala., and at the Manned Spacecraft Center, Houston. The space station would provide a centralized space facility for research, applications and operations for a 10-year period.

Individual modules of the six-to 12-man facility would be carried into orbit by the reusable space shuttle vehicle, with the complete station being assembled over a period of months.

The space station is envisioned as being composed of cylindrical modules 14 feet in diameter and up to 58 feet long joined together to form any one of a number of final shapes.

The station could be assembled in a 200-to-300-mile-high circular orbit inclined 55 degrees to the Earth's equator. The two studies focused on incorporating the simplest systems into the initial station while providing the capability for larger and more sophisticated systems later.

According to one study, a small crew could man the station after five modules had been combined, but a full 12-man crew could not operate the station until the 17th module had been joined to the cluster.

-more-

Add 1

A shuttle flight bringing up an additional module for space station could also bring up scientists to operate experiments or conduct Earth resources photographic and remote sensing surveys.

The first portion of such a space station would be an airlock and manipulator module carrying electrical power supplies, communications gear, maneuvering thrusters and propellants, and a life support system. The airlock would allow spacesuited crewmen to pass from pressurized compartments into space for assembly work.

The second shuttle launch would ferry a central assembly module into position for hard docking with the airlock-manipulator section. The assembly module would have multiple docking collars for attaching subsequent modules of the space station.

An electrical power boom, with a solar-cell array providing 25 kilowatts of power, would be flown to join the cluster. In addition to the four solar arrays, the power boom would have two high-gain communications and data antennas.

The remainder of the shuttle launches would place into position basic structural modules outfitted as crew quarters, medical and experiment labs, control station, galley and dining room, or other specialized uses. Each basic module would weigh between 11,000 and 16,000 pounds.

Crew staterooms in the basic modules would provide about 50 square feet of living space for each man. Later, the basic modules could be returned to Earth by the shuttle for refurbishment.

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NEWS RELEASE
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
MANNED SPACECRAFT CENTER
Houston 1, Texas

483-5111

November 12, 1970

RELEASED BY NASA HEADQUARTERS

Vice President Spiro T. Agnew will present the National Aeronautics and Space Administration's highest award -- the NASA Distinguished Medal --to nine Apollo astronauts and Dr. Thomas O. Paine, former Administrator, at the agency's 12th Annual Awards Ceremony Friday.

Thirty-eight other NASA employees will receive awards for exceptional service, exceptional scientific achievement, exceptional bravery, outstanding leadership and group achievement from Dr. George M. Low, acting NASA Administrator, in ceremonies at 2:30 p. m. at the Dept. of Health, Education and Welfare Auditorium, 300 Independence Ave., S. W.

Apollo astronauts who will receive the Distinguished Service Medal from Vice President Agnew, chairman of the National Aeronautics and Space Council, are: Neil Armstrong, Michael Collins and Edwin E. Aldrin, Jr., Apollo 11; Charles Conrad, Jr., Richard F. Gordon, Jr., and Alan L. Bean, Apollo 12; and James A. Lovell, Jr., John L. Swigert, Jr. and Fred W. Haise, Jr., Apollo 13.

Three men from the Manned Spacecraft Center Flight Operations Directorate will receive the NASA Exceptional Service Medal. They are: Gerald D. Griffin of Flight Control Division who was cited for his role as prime flight director in the Apollo 12 mission; John W. Aaron, also of Flight Control Division, for his rapid assessment of the Apollo 12

-more-

electrical anomaly shortly after liftoff while manning the Apollo spacecraft systems console in Mission Control Center; and Floyd V. Bennett of Mission planning and Analysis Division for his role in designing the Apollo 12 trajectory which resulted in a pinpoint lunar landing less than 600 feet away from the Surveyor III spacecraft.

Apollo lunar sample principal investigators Dr. James R. Arnold, Dr. Robert M. Walker and Dr. Gerald J. Wasserburg will receive the NASA Exceptional Scientific Achievement Medal for their investigations of the Apollo 11 and 12 lunar samples.

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NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

MANNED SPACECRAFT CENTER

Houston 1, Texas

483-5111

MSC 70-121
November 20, 1970

HOUSTON, TEXAS--Ten employees of the NASA Manned Spacecraft Center in Houston have applied for a joint patent on a simple and practical device and process for recovering water and its constituent elements, hydrogen and oxygen, from lunar soil.

The device is based on a chemical process using hydrogen and solar energy to reduce oxides containing iron, which are constituents of lunar soil, to produce water vapor, which can in turn, be electrolyzed to yield oxygen and hydrogen.

Samples of lunar material returned by the Apollo 11 and 12 astronauts contain significant proportions of an iron-titanium oxide called ilmenite.

The apparatus described in the patent application uses a mirror to focus the sun's rays on a container of lunar soil, heating the soil to between 600 and 1,300 degrees Centigrade. Hydrogen is then introduced into the container and reduces oxygen atoms present in the ilmenite to form steam. The steam is passed through an electrolysis cell which separates the constituent elements of oxygen and hydrogen.

The hydrogen used in the reaction must be supplied initially from Earth, but may be recirculated a number of times to produce more oxygen.

The chemical process has been tested in a laboratory at the Manned Spacecraft Center using simulated lunar soil and has been found feasible.

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Add 1
MSC 70-121

The simulated lunar soil was produced in MSC's Lunar Receiving Laboratory by grinding and mixing the proper proportions of a basalt from Hawaii and ilmenite, obtained from Canada.

The patent application notes that while neither water nor uncombined oxygen has been found on the lunar surface, both can be produced from lunar resources, offering the potential of supporting lunar exploration as well as broader space exploration. Oxygen, for example, could be used not only to support life, but also as a propellant for space vehicles.

Calculations show, with the hydrogen process, 100 pounds of lunar soil would yield nearly a pound of water; and if the iron-bearing oxides are first concentrated magnetically the yield increases to nearly 14 pounds of water from 100 pounds of lunar material.

A number of other chemical reagents are being considered in addition to hydrogen. Fluorine, for example, provides a much greater yield of oxygen, but requires a more complicated process and does not yield water directly.

The hydrogen technique and the fluorine technique for recovering oxygen from lunar soil are being investigated further at the Manned Spacecraft Center and at NASA's Lewis Research Center in Cleveland.

MSC employees named as co-inventors of the hydrogen production process and related apparatus are David S. McKay, Everett K. Gibson, Patrick Butler, Jr., Norman H. Chaffee, Edward I. Chimenti, Alfred P. Sanders, Andre J. Meyer, Hoyt McBryar, T. R. Wellman, and Robin Brett.

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NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

MANNED SPACECRAFT CENTER

Houston 1, Texas

483-5111

MSC-Houston
70-122

HOUSTON, TEXAS---The National Aeronautics and Space Administration has selected Technicolor Inc., Hollywood, Calif., for award of a contract to provide photographic and audiovisual support services at the Manned Spacecraft Center, Houston.

Estimated value of the cost-plus-award-fee contract for one year is $1.5 million. The contract begins Dec. 1, 1970 and contains provisions for four one-year extensions.

The new contract consclidates work presently being performed under two existing contracts and portions of three other contracts.

Six firms submitted proposals for this work.

Technicolor, Inc. will provide photographic sciences, high precision and general photographic laboratory services, film library and audiovisual services in support of the MSC Photographic Technology Laboratory.

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NEWS RELEASE
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
MANNED SPACECRAFT CENTER
Houston 1, Texas

483-5111

November 17, 1970

RELEASED BY NASA HEADQUARTERS

A major milestone in the manned lunar roving vehicle (LRV) program was reached today when a special training vehicle was delivered to the NASA-Marshall Space Flight Center by the Boeing Co., LRV prime contractor.

The vehicle, called a "1-G trainer" because it will operate in Earth's gravity, was built for Boeing by its major LRV subcontractor, the Delco Electronics Division of General Motors Corp.

"This milestone is second in importance only to the final accomplishment of delivery of the first flight LRV," said S. F. Morea, LRV project manager from the Marshall Center, during brief delivery ceremonies at the GM Defense Research Laboratories, Santa Barbara, Calif., where the trainer was built.

Morea, Astronauts Charles Duke and Robert Parker, and officials of both Boeing and Delco Electronics were present at the informal ceremony.

The 1-G trainer will be shipped to NASA's Manned Spacecraft Center, Houston, and arrive there in about a week. The vehicle will be used in a training program to teach astronauts how to operate the vehicle under many simulated situations.

The 2-man trainer is similar in appearance to the operational version of the lunar roving vehicle, with certain major differences. The biggest of these are that the trainer weighs about twice what the flight LRV will weigh, and the trainer is equipped with automobile-type and wire mesh tires. It is the only operating vehicle that closely duplicates the operational LRV in Earth environment.

-more-

The trainer's extra weight comes from additional strength in the frame, wheels, drive motors, and suspension system, caused by the fact that astronauts and their equipment weigh six times more on Earth than they will on the moon. The trainer can carry a total weight of 800 pounds, including two astronauts, scientific equipment and samples. The auto-type tires are necessary because of the trainer's extra weight. Flight LRVs will have speical wire mesh wheels.

The trainer is 10 feet, 7 inches long, almost six feet wide, and has a 7.5-foot wheelbase. Each wheel is powered by an electric motor, in conjunction with a three-stage planetary gear box instead of the harmonic drive that will be used on flight models.

The trainer will be operated with an aircraft-like "stick" hand controller and can stop, turn, move forward and reverse at variable speeds. Top speed will be about nine miles an hour on a relatively smooth surface.

Power for the trainer will come from two nickel-cadmium rechargeable batteries. Thermal mirrors and heat sinks, used to cool batteries in the moon's environment, will not be used on the Earth vehicle. Thermal control will be provided by circulating air with small electric fans. (Two silver-zinc, nonrechargeable batteries will power flight models.)

The trainer, like flight LRVs, is designed to negotiate, from a standing start, step-like obstacles one foot high with both front wheels in contact. It can cross, also from a standing start, 22-inch crevasses, even if both wheels rest across the crevasse. The fully loaded vehicle will be able to climb, descend and stop on slopes as steep as 31 degrees.

The trainer has a ground clearance of about 14 inches, pitch and roll stability of at least 45 degrees with a full load, and a turn radius of 122 inches.

Side-by-side seating will enable either astronaut to operate the trainer, navigating with a dead reckoning system that determines the direction and distance between the vehicle and a simulated lunar module, and total distance traveled at any point during a training sortie. Apollo crews can do their training fully suited or in shirt sleeves.

The first flight model lunar roving vehicle is planned as a major part of the Apollo 15 lunar exploration mission, scheduled for launch in July 1971 to the Hadley Rille-Apennines Range area. The LRV will be used in up to three extravehicular activities (EVA) of that mission.

During the first EVA the lunar vehicle will be deployed from its folded stowage position in the lunar module's descent stage. It will then be taken on a relatively short geological traverse, lasting about an hour or more.

No special EVA has been set aside just to check LRV performance; the vehicle will fulfill science objectives on its first traverse. During this EVA the vehicle's performance will be carefully monitored, however, before committing it to a more ambitious EVA.

During the second and third EVAs the vehicle will travel between nine and 12.5 statute miles on each traverse. One sortie is planned along Hadley Rille; the other to the Apennines Ridge, and each sortie could extend up to 6 hours. Photographs will be taken and samples collected on both of these excursions.

Add 3

Communications with Earth will include voice and color television. Voice communication can be made at any time during a sortie, but TV transmission, requiring a high-gain antenna, can be made only while the vehicle is stopped.

During the three missions that will use lunar roving vehicles (Apollos 15, 16, and 17), astronaut energy and consumables will be greatly conserved, stay-time away from the lunar module will be increased, more equipment can be taken on sorties, and more lunar samples collected than on any previous Apollo missions.

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NEWS RELEASE
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
MANNED SPACECRAFT CENTER
Houston 1, Texas

483-5111

November 23, 1970
MSC 70-123

HOUSTON, TEXAS--The National Aeronautics and Space Administration has awarded a one-year contract extension valued at about $12,000,000 to Brown and Root-Northrop Corp. of Houston, a joint venture, to provide operational support services to laboratories and test facilities at the NASA Manned Spacecraft Center in Houston.

The award extends the BRN-contract through November, 1971 and contains provisions for an additional one-year renewal.

BRN has provided laboratory support services to MSC under the existing contract since December 1967.

About 700 BRN employees work at MSC, assisting in the operation of the Center's Space Environment Simulation Laboratory, Crew Systems Laboratory, Experimental Mechanical Laboratory, Lunar Receiving Laboratory, Toxicology Laboratory, and Thermochemical Test Area.

BRN also provides clinical laboratory support, assists in operation of the MSC centrifuge and aids in a wide variety of tests performed on space equipment.

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NEWS RELEASE
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
MANNED SPACECRAFT CENTER
Houston 1, Texas

483-5111

December 2, 1970

RELEASED AT MARSHALL SPACE FLIGHT CENTER

A Saturn Workshop will be shipped from the McDonnell Douglas Astronautics Co. facility at Huntington Beach, Calif., Dec. 4 to the NASA Manned Spacecraft Center in Houston, Texas, for extensive ground tests.

This workshop is a ground test version of one which will be used in the Skylab program to accommodate teams of three astronauts for stays up to 56 days in earth orbit. The space agency plans to launch the Skylab cluster with a Saturn V vehicle in 1972.

Called a "dynamic test article," the workshop model will undergo a series of tests at MSC to verify its bending and vibration characteristics.

McDonnell Douglas technicians loaded the workshop aboard the Point Barrow for shipment to the Michoud Assembly Facility in New Orleans, La. The Point Barrow is scheduled to arrive in New Orleans on Dec. 17.

The workshop will be loaded aboard a NASA barge at Michoud for shipment on Dec. 30 to Houston. It is scheduled to arrive at the Houston port on Jan. 6.

The workshop model is a Saturn S-IVB stage converted by McDonnell Douglas, manufacturer of the flight workshop, for its ground role. The structure was formerly the third (S-IVB) stage on the Saturn V facility vehicle used to checkout assembly and ground test equipment at the NASA-Kennedy Space Center.

-more-

Add 1

McDonnell Douglas has changed the stage to a workshop configuration by installing crew quarters floors and other partitions. Actual or simulated equipment has been used to give the model the same mass and dynamic characteristics as a flight version.

At MSC, the highly instrumented vehicle will first be placed in an acoustic chamber and subjected to sound waves which simulate the Saturn V launch acoustic environment. After a series of tests at different sound intensities, it will be moved to another chamber and connected to electromagnetic "shakers" which will simulate elements of the launch environment such as vibration.

The test program at MSC is to last from about the end of Jan. to the middle of May, 1971.

Following these tests, the vehicle will be moved to the Marshall Space Flight Center where static load testing will be done in MSFC's Astronautics Laboratory. Leads placed on the vehicle will simulate the forces which the main structural elements of the workshop will encounter prior to launch and during launch and orbital flight.

The Marshall Center directs the workshop development program.

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NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

MANNED SPACECRAFT CENTER

Houston 1, Texas

483-5111

December 2, 1970
MSC 70-124

HOUSTON, TEXAS

The National Aeronautics and Space Administration has selected Service Technology Corp., Dallas, Tex., for award of a contract to provide institutional support services at the Manned Spacecraft Center, Houston.

Estimated value of the cost-plus-award-fee contract is $14 million. The one-year contract is effective April 1, 1971, with provisions for two one-year extension periods.

STC will provide maintenance and operations, engineering and construction, technical information, supply and public affairs support services. The new contract consolidates efforts now being furnished under three separate contracts.

Eight firms submitted proposals for this work.

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NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

MANNED SPACECRAFT CENTER NASA Houston 1, Texas

483-5111

December 7, 1970
MSC 70-125

HOUSTON, TEXAS--Sharing a tank of compressed air on the way back to the surface is a standard emergency procedure among Scuba divers. The mouthpiece is passed back and forth between the divers who share the air remaining in a good air tank. It's called, logically, the "buddy system."

Now the buddy system approach has been adapted to moonwalks through the use of connecting lines that could feed cooling water from an astronaut's backpack life support system to the space suit worn by his companion. The connections would give men enough time to return to their moon landing craft if the water cooling system of one of the backpacks failed.

Called the Buddy Secondary Life Support System (BSLSS), the life-sustaining pair of flexible hoses will be provided for the first time in Apollo 14 the third United States manned lunar landing mission, scheduled for launch by the National Aeronautics and Space Administration on January 31, 1971.

The connecting hoses will be used in the second and longest of the two moonwalks of the mission. They will be carried, readily accessible in an emergency, on the two-wheeled cart that the astronauts will pull across the lunar surface to transport their tools and rock samples.

During moon walks or other operations in the hard vacuum of space, the PLSS supplies the astronauts with breathing and suit-pressurizing oxygen

-more-

and water flow for the liquid cooling garment -- a suit of knitted long underwear with thin tubing woven in the torso and limbs. The tubes carry water from a reservoir in the PLSS, and the circulating water serves to carry the astronaut's metabolic heat to a heat exchanger in the PLSS.

If the oxygen system in the PLSS fails, emergency oxygen is supplied by a small oxygen tank atop the PLSS. Before the buddy secondary life support system was devised, the emergency tank was required to furnish not only suit pressure and breathing oxygen, but also cooling through a high oxygen flow rate. The buddy secondary life support system by sharing the water supply between two crewmen, stretches the time the emergency oxygen will last from about 40 minutes to 1 to $1\frac{1}{4}$ hours.

"On the Lunar surface, "Apollo 14 Lunar Module Pilot Edgar D. Mitchell explained recently "one of the greatest problems of the work is dissipating the metabolic heat that you build up. You don't want to build it up and store it in the body, and the buddy secondary life support system allows us to tie these two cooling systems together and get a greater distance from the lunar module than we could without it. Without the buddy system, we have to use oxygen for cooling as well as breathing and that's a rather inefficient way of doing it."

The BSLSS hoses are eight and a half feet long, but are prevented from reaching their full length when connected from one PLSS to the other by a four and a half foot tether. The tether snaps to the waist restraint straps of both men's spacesuits, and would prevent damage to the water hoses or to the spacesuits during the trek back to the Lunar Module.

Each man assists the other in making the connections.

NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

MANNED SPACECRAFT CENTER

Houston 1, Texas

483-5111

MSC 70-126
December 8, 1970

HOUSTON, TEXAS--A 34-million-cubic-foot volume balloon will be launched by the Air Force Cambridge Research Laboratories in support of NASA's CRISP (Cosmic Ray Ionization Spectrograph Program) from Holloman AFB, New Mexico, on or about December 8, 1970.

It is the largest balloon ever built--442 feet taller than the Washington Monument--and will carry a two-ton payload to an altitude of about 108,000 feet. The CRISP balloon will provide a stable high altitude platform that will enable scientists of NASA's Manned Spacecraft Center, Houston, Texas, to measure the intensity of cosmic radiation in the upper atmosphere. This is the seventh experiment in a series designed to provide significant new scientific information about the high energy cosmic radiation and to develop future scientific experiments to be conducted in later space station missions.

CRISP 7 is a project of the Science and Applications Directorate of the NASA Manned Spacecraft Center, Houston, Texas. Air Force Cambridge Research Laboratories, headquartered at L. G. Hanscom Field, Bedford, Mass., is providing the balloon system and is responsible for the launching, operational control, and recovery of the balloon system and its scientific payload. AFCRL is an element of the Office of Aerospace Research, U. S. Air Force.

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Add 1
MSC 70-126

Dr. Richard Kurz of the Science and Applications Directorate at MSC heads up the CRISP scientific team for NASA and Arthur O. Korn is AFCRL's Flight Test Director for CRISP.

The CRISP balloon and payload--which will stand 997 feet tall-- will be launched from Holloman Air Force Base, New Mexico, and prevailing winds are scheduled to carry the drifting balloon and gondola eastward on a course across several southern states at a 20-mile high altitude.

It is scheduled for lift-off at approximately 11:00 p.m. MST (10:00 p.m. CST). It will require $2\frac{1}{2}$ hours for the payload to reach design altitude of 108,000 feet where prevailing winds will move the package eastward for approximately 12 hours. Recovery is scheduled for 12 noon CST the following day.

The exact recovery location depends on the speed of the prevailing winds.

The mammoth balloon is a two-part interconnected system with main balloon surmounted by a smaller launch balloon. Both balloons are made of mylar scrim.

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NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

MANNED SPACECRAFT CENTER

Houston 1, Texas

483-5111

December 10, 1970
MSC 70-126

HOUSTON, TEXAS--The NASA Manned Spacecraft Center has modified its space shuttle study contract with Space Division, North American Rockwell, Downey, California to include a structural test program.

Estimated value of the fixed price modification is $2 million. Total value of the contract is estimated at $10.8 million. This includes $8 million for definition and preliminary design studies; a $500 thousand add-on to study use of expendable second stages, and a $300 thousand increment of Department of Defense funds to study requirements for the U. S. Air Force.

The contractor has been requested to establish a test program on cryogenic tank structure and insulation; high-temperature fasteners; static and dynamic seals; bulk insulation packaging and attachment; thermal protection; wing structure and fuselage structure. Work will be done at plants in Downey and Seal Beach, California and at a subcontractor facility in San Diego.

North American Rockwell is one of two aerospace firms making detailed studies of the space shuttle transportation system. A similar study by McDonnell-Douglas Corporation, St. Louis, Missouri is monitored by the Marshall Space Flight Center.

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NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

MANNED SPACECRAFT CENTER

Houston 1, Texas

483-5111

December 11, 1970
MSC 70-127

HOUSTON, TEXAS--More than 100 employees of the NASA Manned Spacecraft Center will be recognized in an award ceremony, December 14 for their contributions to the Apollo 13 mission and the safe return of the astronauts following the explosion and loss of oxygen and electrical supplies aboard the spacecraft.

Apollo 13 astronauts Fred W. Haise, Jr., and John L. Swigert, Jr. will receive the NASA Distinguished Service Medals awarded them and Apollo 13 Commander James A. Lovell, Jr. at NASA Awards Ceremonies in Washington last month.

Ten persons will receive awards for contributions to last year's successful Apollo 12 mission.

MSC Associate Director Frank A. Bogart will be master of ceremonies and Deputy Director Christopher C. Kraft, Jr. will make the presentations to MSC employees of 47 Certificates of Commendation, and 73 Certificates of Superior Achievement. Ten Certificates of Appreciation will be awarded to officials of contractor firms. One Group Achievement Award will be made.

The awards ceremony will be held in the MSC Auditorium, Building 1, beginning at 3 P.M. Monday.

(See attached list of award recipients)

EMPLOYEES NOMINATED FOR AWARDS

NASA Distinguished Service Medal (Apollo 13)

Fred W. Haise, Jr.
John L. Swigert, Jr.

MSC Certificate of Commendation (Apollo 12)

*Maj. Charles J. Tringali

Mission Planning and Analysis Division
Emil R. Schiesser

Flight Support Division
James C. Stokes, Jr.

Lunar Missions Office
John G. Zarcaro

MSC Certificate of Commendation (Apollo 13)

Public Affairs Office
Brian M. Duff

Flight Control Division
Arnold D. Aldrich
Melvin F. Brooks
Gerald D. Griffin
James E. Hannigan
Eugene F. Kranz
Glynn S. Lunney
Jones W. Roach
Milton L. Windler

Astronaut Office
Vance D. Brand
Maj. Charles M. Duke, Jr.
Lt. Comdr. Joseph P. Kerwin
Maj. Jack R. Lousma
Lt. Comdr. Thomas K. Mattingly
Comdr. John W. Young
Col. Thomas P. Stafford.

Mission Planning & Analysis Division
Ronald L. Berry
Carl R. Huss

Flight Crew Support Division
Stanley Faber
Tommy W. Holloway
Riley D. McCafferty
John W. O'Neill

*Presently assigned to AF - Space & Missiles System Organization, Los Angeles, California.

MSC Superior Achievement Award (Apollo 12) CONTINUED

CSM Project Engineering Division
Jerry S. Lowe
Gary G. Metz

MSC Superior Achievement Award (Apollo 13)

Astronaut Office
Capt. Eugene A. Cernan
Dr. Anthony W. England
Lt. Col. Joe H. Engle
Comdr. Ronald E. Evans
Comdr. Edgar D. Mitchell
Lt. Col. William R. Pogue
Maj. Stuart A. Roosa
Maj. Harrison H. Schmitt
Col. David R. Scott

Flight Control Division
John W. Aaron
William C. Burton
Charles F. Deiterich
Harold M. Draughon
Charles L. Dumis
Edward I. Fendell
William E. Fenner
Neil B. Hutchinson
Robert H. Heselmeyer
Larry W. Keyser
Jack Knight, Jr.
Seymour A. Liebergot
Harold A. Loden
W. Merlin Merritt, Jr.
William L. Peters
Donald R. Puddy
H. David Reed
Kenneth W. Russell
William M. Stoval, Jr.
Larry W. Strimple
Richard A. Thorson
John A. Wegener
Briggs N. Willoughby

Information Systems Division
Gary W. Johnson

Crew Systems Division
James V. Correale
Edward L. Hays
Elton M. Tucker

Guidance and Control Division
Cline W. Frasier

Propulsion & Power Division
Bobby J. Bragg
William R. Hammock, Jr.

Structures & Mechanics Division
James A. Smith, Jr.

Landing and Recovery Division
Sheridan J. Berthiaume
Richard W. Blakley
Edward C. Bullock
Charles C. Filley
John E. Hoover

Mission Planning & Analysis Division
Martin L. Alexander
Troy J. Blucker
Robert S. Davis
*Charles A. Denham
Rocky D. Duncan
Quentin A. Holmes
Martin D. Jenness
Alfred N. Lunde
Robert E. McAdams
Charles W. Pace
Vernon S. Ritchey
Robert T. Savely
Walter Scott, Jr.
Richard M. Swalin
Kenneth T. Zeiler

Systems Engineering Division
Richard H. Kohrs

LM Project Engineering Division
Donald M. Corcoran
John G. Presnell, Jr.
John Vincze

Flight Support Division
James E. Mager

*Is presently at Ent AF Base, Colorado, 14th Aerospace Force

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MSC Certificate of Commendation (Apollo 13) CONTINUED

Apollo Spacecraft Program Office
Aaron Cohen
Ronald W. Kubicki
James A. McDivitt
Scott H. Simpkinson
Owen G. Morris

Engineering & Development Directorate
Robert P. Burt
Philip M. Deans
John B. Lee

Systems Engineering Division
John R. Sevier, Jr.

Information Systems Division
Arturo B. Campos

Test Division
Sidney C. Jones, Jr.
Donald D. Arabian

Crew Systems Division
Robert E. Smylie

Guidance and Control Division
John F. Hanaway

Propulsion & Power Division
Richard B. Ferguson

Flight Operations Directorate
Sigurd A. Sjoberg
Howard W. Tindall, Jr.

Goddard Space Flight Center
Richard J. Augenstein
Dale W. Call
George A. Cassels
William A. Pfeiffer
Robert H. Plaumann
Robert L. Owen
Robert E. Spearing
Robert C. Taylor

MSC Superior Achievement Award (Apollo 12)

LM Project Engineering Division
William C. Fischer
Daniel T. Lockard

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MSC Superior Achievement Award (Apollo 13) Continued

CSM Project Engineering Division
Robert E. Bobola
Jerry S. Lowe
Daniel A. Nebrig
William H. Taylor, Jr.

MSC Certificate of Appreciation (Apollo 12)

Robert E. Breeding, Hamilton Standard
Leonard F. Shepard, International Latex Corporation

MSC Certificate of Appreciation (Apollo 13)

Willard R. Bischoff, Grumman Aerospace Corporation
Joseph G. Gavin, Jr., Grumman Aerospace Corporation
George W. Jeffs, North American Rockwell Corporation
Donald J. Markarian, Grumman Aerospace Corporation
George B. Merrick, North American Rockwell Corporation
Gray E. Smith, Grumman Aerospace Corporation
Ralph H. Tripp, Grumman Aerospace Corporation

MSC Certificate of Appreciation (Awarded 11/70)

North American Rockwell Corporation, Tulsa Division
Carl A. Hawthorne

MSC Group Achievement Award (Apollo 13)

Public Affairs Office

NASA Medal for Exceptional Scientific Achievement

Dr. Paul Gast

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
MANNED SPACECRAFT CENTER
Houston 1, Texas

483-5111

December 14, 1970
MSC 70-127

HOUSTON, TEXAS...A second attempt to launch a six ton scientific package designed to study cosmic ray activities in the upper atmosphere is scheduled for 11 p.m. (CST) December 14 from Holloman Air Force Base, New Mexico.

An earlier attempt, on December 9, to put the package to the proper altitude (108,000 feet) was aborted when the main balloon developed a leak following a successful launch from Holloman. The main portion of the 1,000 foot tall tandem balloon developed a leak at about 25,000 feet. The descent system was activated and the package descended to the ground.

The gondola with its scientific package was successfully recovered near Roswell, New Mexico. Preliminary examination indicates the gondola and its instrument package suffered little or no damage.

The project, Cosmic Ray Ionization Spectrograph Program (CRISP), is managed by the NASA Manned Spacecraft Center, Houston, Texas.

A backup balloon will be used for the new launch which is scheduled to be launched for NASA by the U. S. Air Force Cambridge Research Laboratories. The balloon and its payload will drift toward the east and recovery of the package is scheduled to be made somewhere west of the Appalachian Mountains (Alabama, Georgia or Tennessee). Flight duration is scheduled to be approximately 12-18 hours.

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NEWS RELEASE
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
MANNED SPACECRAFT CENTER
Houston 1, Texas

483-5111

December 15, 1970
MSC 70-129

HOUSTON, TEXAS---The NASA Manned Spacecraft Center requested a proposal from Space Division, North American Rockwell Corporation, Downey, Calif. for design and planning studies of a modular space station.

Major effort of the extension study will be the preliminary design of an Earth-orbital station capable of accommodating a crew of six with an operational date of early 1978. The station also shall have the potential for growth up to 12 scientists and crew.

The station will consist of individual modules carried into space in the payload bay of a shuttle, assembled in orbit operating at altitudes of 240 to 270 nautical miles. They will be designed for an extended lifetime, subject to resupply of expendables and rotation of crews.

According to the Request for Proposal (RFP), the initial station includes a general purpose laboratory, the capability to support two research modules, crew quarters and a command and control area. The growth version will include additional crew quarters and laboratories for experiments in life sciences, astronomy, earth resources and physics.

A similar study contract with McDonnell Douglas will be directed by NASA's Marshall Space Flight Center in Huntsville, Alabama.

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NEWS RELEASE
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
MANNED SPACECRAFT CENTER
Houston 1, Texas

483-5111

December 15, 1970
MSC 70-131

HOUSTON, TEXAS---Wayne E. Koons, 36, formerly of Lyons, Kansas, has been appointed Manager of the Payloads and Operations section of the Space Shuttle Program Office at NASA's Manned Spacecraft Center.

Koons is responsible for shuttle mission planning, for facilities and refurbishment of the vehicle, and for laision with potential payload customers.

He graduated from Ottawa, Kansas University in 1956 with degrees in physics and mathematics, and later was recognized by the university for distinguished service in the space program.

A veteran of Marine Corps, he specialized in helicopter aircraft.

Koons married the former Joy Kathryn Cooper of El Dorado, Kansas. They have three children and live in Pasadena, Texas, a community near the space center.

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NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

MANNED SPACECRAFT CENTER

Houston 1, Texas

483-5111

December 16, 1970
MSC-70-131

HOUSTON, TEXAS------ NASA today rescheduled the launch of a balloon borne scientific instrument package for no earlier than January 15, 1971.

Poor weather conditions both in the launch area (Holloman Air Force Base, New Mexico) and in the proposed recovery area (eastern seaboard) forced cancellation of the scheduled launch late Tuesday night. Dr. Richard Kurz, manager of the Cosmic Ray Ionization Spectrograph Program CRISP, said the new launch window for the six-ton payload is now January 15 through February 21, 1971.

The balloon borne payload, designed to study the cosmic rays in the upper atmosphere, is scheduled to rise to an altitudeof 108,000 feet and drift east. The program is managed by the NASA Manned Spacecraft Center and is launched by the US Air Force Cambridge Research Laboratories.

This is the seventh in the series of CRISP flights.

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NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

MANNED SPACECRAFT CENTER

NASA

Houston 1, Texas

483-5111

December 17, 1970
MSC 70-133

HOUSTON, TEXAS---R. Bryan Erb, former manager of Lunar Receiving Laboratory (LRL), has been named to the position of Manager of the Applications Office at MSC's Earth Observation Division.

The promotion to the newly established office includes responsibility for the development and application of remote sensing techniques and direction of the sensing program at the Houston test site.

Prior to his new assignment, Erb served both as assistant manager and manager of the LRL. He held those positions during the historic Apollo 11 and 12 missions. He was responsible for the operation of the laboratory in the functions of crew quarantine, biological containment and scientific testing of returned lunar samples.

Erb entered NASA in May, 1959 as an aerospace technologist. His early assignments included assessment of heating on the Mercury spacecraft. He also studied thermal protection and research on spacecraft during the Gemini and Apollo programs.

Special honors to Erb include the Athlone and Sloane Fellowships. He is a member of the American Institute of Aeronautics and Astronautics and the Ontario, Canada Professional Engineers.

Erb's education includes degrees from the University of Alberta, Edmonton, Canada; from the College of Aeronautics, Cranfield, England and from the Massachusetts Institute of Technology, Cambridge.

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Add 1

He was born April 12, 1931 in Calgary, Canada.

Peter J. Armitage, of the Science and Applications Directorate, assumes management of the LRL for the Apollo 14 mission.

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NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

MANNED SPACECRAFT CENTER

NASA

Houston 1, Texas

483-5111

December 24, 1970
MSC 70-134

HOUSTON, TEXAS.....The NASA Manned Spacecraft Center has requested proposals from the aerospace industry for development of a computer program for a study of space Shuttle Reaction Control System (RSC) engines.

The study calls for a math program to evaluate design of an oxygen/hydrogen engine, RCS subsystems and component parts. It will be conducted in three parts. They are (1) techniques for analysis, (2) development of a program model, and (3) development of the digital program.

MSC has alloted approximately $100,000 for use in the study. Eleven companies have been invited to submit proposals which are due by January 6, 1971.

The proposal calls for a fixed-price research and development contract, and it is to be completed approximately ten months after contract award.

The Shuttle is one of the key elements of the agency's manned space flight program. The vehicle could be flight operational as early as 1978. It is completely reusable; a plane that can fly into space and return, landing like a conventional jet aircraft.

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NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
MANNED SPACECRAFT CENTER
Houston 1, Texas

December 31, 1970

RELEASED AT NASA HEADQUARTERS

The Apollo 14 flight crew, following splashdown in the Pacific on February 9, will be flown home from Samoa rather than from Hawaii, as previously planned.

This revision in recovery procedures by the National Aeronautics and Space Administration will reduce the return time to the Manned Spacecraft Center, Houston, by five or six days.

As in Apollos 11 and 12, the three astronauts, after emerging from their spacecraft into a liferaft, will be transferred by helicopter to the recovery carrier and immediately enter a Mobile Quarantine Facility (MQF) resembling an aluminum camping trailer.

When the carrier arrives within helicopter range of Samoa, 40 to 45 hours later, they will leave the MQF through a recently designed double airlock. In the airlock they will put on clean flight suits and respirators, then board an adjacent helicopter, and be flown to Samoa.

There the helicopter will be towed to the rear of a waiting C-141 transport plane carrying a second MQF, into which the men will transfer for the flight to Houston with only a refueling stop in Hawaii. The crew will remain in the MQF at all times during the flight from Samoa to Houston.

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Add 1

Previously, the plan had been for the carrier to steam to Hawaii, as in Apollos 11 and 12, where the MQF would have been transferred to a plane for the flight to Houston.

On arrival in Houston, probably February 12, the MQF will be trucked to the Lunar Receiving Laboratory, in which the crewmen will remain under quarantine until February 26 as part of a program to prevent any possible contamination of Earth by lunar materials.

Apollo 14, planned as the third manned lunar landing mission, is scheduled for launch on January 31, 1971, from Kennedy Space Center, Florida, with Alan B. Shepard as Spacecraft Commander, Stuart A. Roosa as Command Mdoule Pilot, and Edgar D. Mitchell as Lunar Module Pilot.

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