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SOVIETS PREPARE FOR TESTS OF "LANDING SPACE VEHICLES." The Soviet Union has reserved a section of the Pacific Ocean between the Hawaiian and Aleutian Islands between Dec. 16 and June 1, 1966, for flight testing of a "system of landing space vehicles." The Soviets warn that some elements of the booster rockets will fall in the impact area.

The Soviets may be preparing to test a model of a lifting-body space shuttle, a very vital system for the establishment of very long duration or operational space stations such as the **PROTON**-type of canister might provide. It is not reasonable to believe that the Soviets would be interested in the development of a water recovery because they have already perfected the parachute/retro land system and mainly because of their inaccessibility to large water areas.

Another possibility is that the Soviets might be in need of the test of a much larger retro-rocket landing system for Earth re-entry which the intercontinental range would provide, reflecting the growth to the **PROTON** rocket vehicle family of spacecraft.

LANGLEY WILL CONDUCT NEW "FIRE" TEST. NASA-Langley is planning to acquire by competitive procurement three spacecraft for the flight test measurement of turbulent convective heating at velocities of 20,000 fps. A cost-plus-incentive-fee-type contract will be awarded for the spacecraft. Only one of the three will be flight tested. The other two will serve as prototype and back-up. The test will be brought to velocity by a **SCOUT** three-stage vehicle arcing from Wallops for re-entry near Bermuda. No recovery of the spacecraft is planned. The contractor will provide, in addition to the spacecraft, the field support for launch including the necessary equipment.

SOVIETS PROVE SPACE CONDITIONING NEED. The Soviets, with the three-man orbit test of **VOSKHOD I**, have tentatively proven that astronauts need a degree of space conditioning before being subjected to space flight. The motion sickness of the two non-pilot members of the **VOSKHOD**'s crew highlights the possibility that space travel for the untrained may be farther in the future than had generally been supposed. This would also indicate that our scientist-astronauts would have to have special stress training to prepare them for the long-duration flights of the **APOLLO** and **APOLLO** Applications programs. There remains, however, the lack of explanation for Major Titov's space sickness when he was supposed to be an experienced pilot.

SARNOFF FORECASTS WORLD-WIDE MEDIA NETWORK

A world-wide, integrated media network--utilizing communications satellites--and combining all of the separate electronic instruments and printed means of communications has been forecast by David Sarnoff, chairman of the board of RCA.

"With the introduction of microwave channels and the appearance of communications satellites and high-capacity cables, there is no longer any distinction among the various forms of communications," Sarnoff said. "This same process of unification will inevitably occur, I believe, in all media of communications (television, telephone, books, magazines and newspapers)."

Addressing the annual dinner of the Advertising Council, he predicted that all communications information will be converted into identical electronic signals which will be converted into any form desired, either visual display or recorded sounds or printed pages. "Today's console and table model furniture may be displaced by an all-purpose television screen, mounted on the wall," Sarnoff said. "It would be coupled to a sound system and a high-speed electronic printer for recording any information the viewer wishes to retain."

Sarnoff, picked by the Council for the 1965 Public Service Award, said " this means that the major channel of news, information, and entertainment in the home will be a single integrated system that combines all of the separate electronic instruments and printed means of communications today." Sarnoff forecast that one major result of this system would be the emergence of a universal language, which would "derive largely from English."

Plans For the Foundation of the System Made

Foundations for the world-wide, integrated communications system are already on the planning boards, the RCA executive said, predicting that they should reach practical form in the 1970's. These foundations include:

1.) Transmitting satellites of "vastly greater power and versatility." In synchronous orbit, they will broadcast directly to individual television sets and FM radio receivers in the home, anywhere on Earth. (See SPACE Daily, November 29.)

2.) Laser communications systems. These systems will have a total capacity "million of times greater than the most advanced systems today."

3.) Continental and global networks of computer centers. These will serve as instant sources of all known and recorded data on any conceivable subject.

4.) Microwave channels carrying television, telephone, facsimile newspaper, telegraph message and computer data into the home or office.

"The development of these tools is already beyond the theoretical stage," Sarnoff emphasized. "They are, in fact, fast approaching reality. Ultimately, a master communications system will emerge utilizing all of them."

Broadcast Satellites

"Individual broadcast satellites, for instance, would normally broadcast programs to a limited portion of the Earth. But on occasions of universal significance, all of them could be linked for simultaneous transmission of a single program," Sarnoff said. "A summit meeting of world leaders, a critical session of the United Nations, a telecast from men on the Moon could be seen and heard at the same moment by people everywhere.

"To the advanced nations, satellite broadcasting will open broad new avenues for direct sharing of information, ideas and cultures. MORE

SARNOFF FORECASTS WORLD-WIDE MEDIA NETWORK - Contd.

To the developing nations, they will provide instruments of tremendous power for education, knowledge and self expression." (He said low-cost, single-channel television receivers could be easily developed for use in underdeveloped areas. "If they were programmed from regional stations transmitting through a few broadcasting satellites, the tragic effects of illiteracy could be virtually abolished in ten years.")

"This application of broadcast satellites," he said, "will represent a major achievement of the communications revolution."

NEW GEMINI/APOLLO INCENTIVE CONTRACT AWARDED

TRW Systems Group, has been awarded a new $47,655,103 cost-plus-incentive/-award fee contract by NASA-Houston for work on the **GEMINI/APOLLO** Mission Trajectory Control Program and the **APOLLO** Spacecraft Systems Analysis Program. TRW Systems has just completed work on the **PIONEER** spacecraft under an incentive fee contract (SPACE Daily, Dec. 14).

3M TO SUPPLY ARIA TAPE RECORDERS

Bendix, teamed with Douglas for work on the Air Force's eight **ARIA** (**APOLLO** Range Instrumented Aircraft)(SPACE Daily, July 27 and Oct. 13), has awarded 3M-Revere-Mincom (Camarillo, Calif.) a $553,170 contract for 17 wideband magnetic tape recorders--two for each aircraft and one training unit. Each recorder, a modified Mincom PC-500, will have a direct frequency response of 400-1,500,000 cycles and a DC-to-500-kilocycle FM capability. The first recorder will be delivered to Bendix Radio in Baltimore on March 26, '66.

PHILCO TO PROVIDE DATA UNITS FOR AF TRACKERS

The Air Force Oklahoma City Air Materiel Area, on behalf of the Eastern Test Range, has awarded Philco-Communications & Electronics a $738,300 contract for microminiature digital data transmission equipment for missile tracking facilities. The equipment will be used to send data over wire lines and HF single sideband radio lines, and the wire line units will be able to send data over microwave and tropospheric scatter circuits.

FAIRCHILD AWARDED RECON EQUIPMENT CONTRACT

The Air Force has awarded a $394,000 contract to Fairchild Hiller for design and fabrication of an Airborne Central Data Tape Recorder (ACDTR) which will record reconnaissance data from an airplane on magnetic tape. The equipment is designed to accompany the Auxiliary Data Annotation Set (ADAS) equipment, presently being supplied to the Air Force and used on advanced reconnaissance aircraft such as the RF-4, which automatically marks sensor film with all flight data required to identify the photographs, including aircraft speed, direction, altitude, pitch, roll, etc.

AEROJET-SACRAMENTO ORGANIZES EXECUTIVE COMMITTEE

Aerojet-General's Sacramento Plant has created an executive committee, to be headed by the plant's vice president and general manager, Robert B. Young. The committee, which will serve as the senior management group for the Sacramento facility, also includes Dr. Werner R. Kirchner, vice president and Sacramento Plant assistant general manager; Dr. C. C. Ross, vice president and manager, Rocket Engine Operations-Nuclear; R. C. Stiff Jr., vice president and manager, Liquid Rocket Operations; and Richard F. Cottrell, manager of Solid Rocket Operations.

Other new appointments include the promotion of J. W. Keating, formerly head of the Solid Rocket sales effort, to manager, New Products/Programs, a consolidation of liquid and solid rocket operations sales activities. Dr. Karl Klager, who previously served as manager of Propellant Research and Development, has been named manager of the new Research and Technology operations, which includes both liquid and solid activities. Dr. P. L. Nichols Jr., formerly manager of Solid Rocket Research and Development, has been appointed assistant manager of Research and Technology, and Dr. C. W. Tait, formerly manager of New Products/Programs, Liquid Rocket Operations, has been named manager, Plant Management and Control Review Activities.

ADVANCED PLANNING BRIEFINGS TO EXHIBIT COST CUTTING

Examples of cost reduction ideas devised for Department of Defense programs will be exhibited by seventy major defense contractors at five regional Advanced Planning Briefings for Industry starting next March.

The exhibits (350 per briefing) are intended to provide a "cross fertilization" of cost reduction ideas among contractors, to promote cost consciousness and to stimulate additional contributions by personnel in government and industry. The exhibits and briefings, jointly sponsored by DOD and the National Security Industrial Association, are scheduled for Boston, March 3-4; Atlanta, March 9-10; St. Louis, March 16-17; San Francisco, April 12-13; and Washington, April 27-28.

All exhibitors are participants in the Defense Contractor Cost Reduction Program which was established in response to President Johnson's (December 2, 1963) request for cost cutting in defense programs. Guidelines for the program, issued May 15, 1964, apply to contractors having an annual volume of defense sales in excess of $5 million exclusive of firm, fixed-price contracts. Certain other contractors specifically designated by DOD are included in the program. Contractor performance in reducing costs under this program is evaluated by DOD and used in making source selections and in determining profit and fee rates in negotiating contracts.

Companies participating in the cost reduction briefings/exhibits last year received commendatory letters from the President.

New Douglas appointments include: **K. H. Boucher** named senior director of manufacturing, Missile & Space Systems; **F. T. MacKay** as director of manufacturing at MSSD; and **J. R. Franks** as director of manufacturing for the Space Systems Center.

S. Mark Lovell has been appointed as division manager for the new Shreveport plant of Baifield Industries. Lovell has been manager of Baifield's contracts and legal department.

SST DELAY COULD ADVERSELY AFFECT PAYMENTS BALANCE

Roy H. Dickerson, vice president in charge of the aerospace and electronics department at New York's First National City Bank, warns that the failure of the United States to market a supersonic transport by 1972 could add $10 billion to our balance of payments deficit. Dickerson told a forum on forward planning for correspondent bankers that although the aerospace and electronics industries had net favorable trade balances of $1.7 billion in 1964, this positive trade position could be completely wiped out if the United States does not deliver a supersonic transport within two years after the British-French Concorde goes into production.

MOL Cited As Space Business Potential

Dickerson also pointed out that these industries are playing a dynamic and dramatic role in this age of scientific revolution and cited the development of the Manned Orbiting Laboratory as an indicator of the great potential of these industries. "We are witnessing the beginnings of a new kind of navy--literally a space navy--that will cruise the skies a hundred or more miles above the Earth."

S-IC-T FIRED AGAIN AT FULL DURATION

S-IC-T, the Tooling nonflight model of the **SATURN V** booster stage (SPACE Daily, Oct. 13), was fired for the 14th time at NASA-Marshall last Thursday. It was a full-duration (150 seconds) burn with 7.5 million pounds of thrust achieved.

COMSAT PICKS ITT TO SUPPLY GROUND ELECTRONICS -- II

ComSat's contract with ITT Federal Labs for ground station electronics (yesterday's SPACE Daily) calls for, in part, demodulating, receiving, ground control, testing, monitoring, and transmitting equipment (as indicated in the RFP: SPACE Daily, Sept. 2). Sylvania, supplier of the master antennas for the two stations (Brewster, Wash., and Paumalu, Hawaii), will integrate the electronics with the other station systems (SPACE Daily, Dec. 3 & 6). The remaining procurement is of multiplex equipment (SPACE Daily, Dec. 3, p. 194).

SYLVANIA AWARDED MINUTEMAN II TEST CONTRACT

Continued testing of the **MINUTEMAN** command and control system will be carried out by Sylvania Electric Products under a $1.8 million contract from the Air Force Ballistic Systems Division.

In addition to checkout of its own systems, Sylvania, which is ground electronic systems contractor for the **MINUTEMAN II**, will perform verification checks on related equipment produced by other contractors. Portions of a communications system which links underground command posts with higher Strategic Air Command units will be included in the tests.

Testing will be conducted by Sylvania Electronic Systems in specially constructed facilities at Waltham, Mass., and at West Roxbury, Mass.

GEMINI VII INITIATES LASER ATTENUATION STUDIES

The attempts at vocal communication via laser beam from **GEMINI VII** (SPACE Daily, Dec. 8, 14) marks the beginning of a series of laser beam attenuation studies to be conducted for NASA by Electro-Optical Systems. The purpose of the experiments will be to develop practical spacecraft laser communications, ranging and navigation systems and meteorological probing techniques.

The equipment being used in the **GEMINI** communications experiment includes three stations: Ascension Island, White Sands, and Hawaii. The laser beacon in use at White Sands utilizes an ionized argon laser built for the **GEMINI** project. The equipment at the Hawaii base was designed for use with the **GEOS** satellite (**EXPLORER 22**) which contains corner reflectors for passive laser beam experiments.

These experiments will employ not only the ionized argon laser but a ruby crystal and neodymium glass oscillators in Q-switched, frequency-doubled and Raman shifted operating modes. The ruby and neodymium lasers will be used to determine the aerosol and humidity content in the atmosphere and the ionized argon laser will be used for atmospheric aberration pattern investigations.

THE LOG OF GEMINI VII/VI

December 13, 1965-- Before Midnight EST: Astronauts Borman and Lovell pass the total time-in-space mark of astronaut Gordon Cooper (225 hours, 16 minutes).

December 14, 1965--10:05 AM EST: **GEMINI VII** astronauts go into orbit number 148, having completed 4 million miles in space.

Morning--Fuel and oxygen levels are reported OK for full flight of 14-15 days (splashdown tentatively set for 9:00 AM EST, December 18).

During 148th Orbit--Astronauts spot a rocket sled firing at Holloman Air Force Base. "We saw a little smoke, that's about all," Borman said.

During 149th Orbit--Astronauts report sighting of a **MINUTEMAN** rocket as it re-enters the atmosphere at Kwajalein after launch from Vandenberg.

LTV AWARDS COMPUTER CONTRACT TO BUNKER-RAMO

A $339,443 contract for a digital computer system (133 Computer) has been awarded to Bunker-Ramo by LTV Aerospace-Range Systems Division. The computer equipment is part of a system being supplied by Ling-Temco-Vought to the BuShips.

156 FIRING SUCCESSFUL

Lockheed successfully static demonstration fired its second full-length 156-inch-diameter solid propellant rocket motor at 3:00 PM EST yesterday (SPACE Daily, Dec. 1).

Norman Gutlove has rejoined Fairchild Camera's Space and Defense Systems division as a member of the technical staff. Gutlove, previously assistant program manager for Fairchild Hiller's Republic Aviation, will be responsible for the management of engineering proposal efforts.

NASA NEGOTIATIONS

Martin-Marietta Corp., Denver Division--with Marshall for nonseverable continuation and expansion of work being performed on an investigation of longitudinal oscillation instabilities of the **SATURN V LOR** vehicle.

General Dynamics/Convair--with Marshall for nonseverable continuation and expansion of work previously performed in hydrogen-oxygen reaction studies.

Litton Systems--with Goddard for the redesign of sampling devices for biological sampling of the terrestrial diosphere.

Philco Corp., TechRep Division--with Edwards to perform administrative support services in the facility's maintenance and property management area.

Rocket Research Corp.--with Houston to develop hydrazine-based monopropellant jet gun thrust assembly for astronaut extravehicular activity.

DOD CONTRACTS

Air Force

Raytheon Co.--$8.6 million for Air Force Weapons Effectiveness Testing instrumentation system.

Booz-Allen Applied Research--$63,620 for study of weapons effectiveness assessment concepts.

General Electric Co., Missile and Space Division, Valley Forge Space Technology Center--$70,000 for research to determine the feasibility of utilizing a vacuum distillation with vapor pyrolysis process for the recovery of potable water from human urine, wash water and condensate.

Air Products and Chemicals, Allentown, Pa.--$50,360 for oxygen supply system for manned space enclosures.

Avco Corp., Avco-Everett Research Laboratory--$25,666 for research in hypersonic effects on clotting.

Temple University, Research Institute--$30,000 for development of a rocket payload for the release of barium vapor.

NASA CONTRACTS

Cambridge

GCA Corp., GCA Technology Division--$44,385 for atmospheric nitric oxide measurement techniques.

MORE

NASA CONTRACTS - Contd.

Cambridge - Contd.

GCA Corp., GCA Technology Division--$44,385 for atmospheric nitric oxide measurement techniques (SPACE Daily, Oct. 12).

Sperry Rand Research Center--$46,854 for ultrahigh temperature electronic measuring techniques (SPACE Daily, Oct. 7).

General Precision, Aerospace Group Research Center--$35,367 for research to develop flight displays suitable for use under wide variations in ambient illumination levels (SPACE Daily, Oct. 15).

Dunlap and Associates--$35,800 for investigation of the capabilities of peripheral vision for improving information transfer to operators involved in complex control tasks (SPACE Daily, Oct. 7).

General Precision, Aerospace Group--$39,750 for continuation of beam alignment techniques based upon current multiplication effect in photoconductors.

Houston

Electro-Optical Systems, Inc.--$275,000 for equipment and services for S-26 GEMINI plasma wake experiment.

Kennedy

Martin-Marietta Corp., Denver Division--$34,750 for a study of the effect of transporting the mobile service structure on the Crawler/Transporter at launch complex 39.

Lockheed-Georgia Co.--$83,962 for supplies and components for SATURN V Q-Ball cover removal system.

Northrop Corp., Northrop Space Laboratories--$584,916 for expansion and revision of the operational intercommunication system.

Goddard

Rocket Research Corp.--$99,481 for development and fabrication of AIMP-E altitude control thruster system.

Honeywell, Inc.--$215,000 for design, development and fabrication of a nonredundant breadboard spacecraft digitized controller.