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FRANCO-RUSSIAN COMSAT TESTS EXPECTED SOON. M. Marette, the French Ministre des Postes et Telecommunications, told President Charles de Gaulle during the latest Ministers' weekly meeting that everything was in readiness for the exchange of TV communications between Russia and France by way of one of the **MOLNIYA** communications satellites (SPACE Daily, Oct. 26).

The first test for black and white and color transmissions was earlier scheduled for late December. However, technical difficulties have now been eliminated and the decision, now a political one, could be advanced. The installations at Pleumeur-Bodou, French Britanny, have been completely checked out and test patterns have already been received.

A-1-1 READY FOR LAUNCH. A DMA (Delegation Ministerielle pour l' Armement) official has told SPACE Daily that technicians at Hammaguir are ahead of schedule and that launch of France's first satellite could come at anytime, with the 25th still the target date (SPACE Daily, Oct. 8 & Nov. 9). **A-1-1** may not stay in orbit more than two revolutions. If it fails to orbit, **A-1-2** will be standing by to try again before the month is out. Plans to attempt the launch yesterday (SPACE Daily, Nov. 10) were delayed until mid-week.

FOUR APOLLO EXPERIMENT PALLET AWARDS ISSUED. NASA has selected Lockheed Missiles & Space, McDonnell Aircraft, Martin-Denver, and Northrop Space Laboratories to perform separate and concurrent four-month design studies (Phase I-A) on the Experiment Pallet for the **APOLLO** Service Module (SPACE Daily, Sept. 9 & 13). The pallet will occupy one of the six pie-shaped segments in the Service Module and will house scientific, technological and engineering experiments which will be carried on **APOLLO** long-duration missions beginning in 1968. The fixed-price $375,000 contracts call for the design, development of detailed specifications, and production of mockups of the pallet. The pallet will be 146 inches high, 50 inches deep, and 63 inches wide on the outer surface, with a total volume of 170 cubic feet (for further details see SPACE Daily special report, Sept. 9).

LANGLEY TO ISSUE EXTRAVEHICULAR CAPABILITY STUDY. NASA-Langley is issuing RFPs for a program to study such operational extravehicular capabilities as maintenance and assembly. An experimental simulation program is contemplated where simple and complex tasks of assembly, erection, and maintenance by extravehicular astronauts will be performed with water immersion weightless techniques.

The RFP 96342) has a December 13 due date. A mission, fitting the requirements of the Langley investigation, would be the erection and maintenance of the large antenna structures which would be needed for the manned spaceflight network experiment of the **AA (APOLLO** Applications) program in 1968 or 1969 (SPACE Daily, yesterday & Aug. 31).

NORTHROP TO BE AWARDED NEW HYDRA LAUNCH STUDY. The Naval Missile Center at Point Mugu is issuing a new sole source procurement to Northrop Norair for extension of the research and development program which the company has conducted over the past several years for hydra-launch (**HYDRA**) of ballistic missile systems. The last contract to precede this new contracting effort was awarded to Norair in May 1964 (SPACE Daily, May 28, '64) for a program to "zero in on problems and approaches" of remote launch of free-floating vehicles from the sea, including vehicles ranging in size far below and far above the **POLARIS** configuration. The Air Force (BSD) (SPACE Daily, May 22, '64) as well as the Navy has been exploring the hydra-launch concept for possible hydra-ICBM application.

COMSAT CONSTRUCTION CONTRACTOR SELECTION IMMINENT. ComSat has chosen the construction contractor for its Brewster (Wash.) ground station and is expected to choose the constructor for its Paumalu (Hawaii) station next week. The winner from the six RFP respondees for Brewster will be announced this week as reported (SPACE Daily, Nov. 17), once present negotiations are concluded, and the winner from the respondees to the Paumalu RFP (which was due yesterday) is likely to enter negotiations this week to enable the Corporation to announce the selection next week.

TITAN III WTR LAUNCH FACILITY RFP ISSUED. Martin-Marietta-Denver has been issued the request for proposal for the design, development, fabrication and test of the **TITAN III** launch vehicles, ground support equipment, activation of launch facilities, systems integration, and launch services (RFP 04-695-66-179) for the Western Test Range (SPACE Daily, Aug. 5). The two-year program includes the modification of the **ATLAS** launch pad at Vandenberg (PALC 2, Pad 3). The design study contract for the WTR **TITAN III** launch facility was awarded Martin more than a year ago (SPACE Daily, Sept. 2 & 30, '64). The program activitation RFP was awarded by Space Systems Division.

NEW HARDPOINT STUDY TO DOUGLAS. The Army Missile Command has issued Douglas Missile and Space Systems division a new Advanced Research Projects Agency Hardpoint defense system research study contract. The $850,000 study is to be completed in 14 months.

WELSH AND NASA DOUBT SOVIET "FAKERY". "I can't justify any report that concludes that the Soviet 'walk in space' was anything but a legitimate and significant space performance," Dr. Edward C. Welsh told SPACE Daily yesterday in reference to an article in Science and Mechanics magazine which charged that the March 18 Soviet space flight was "a hoax." NASA officials are also skeptical.

STRIKING GEMINI WORKERS RETURN TO WORK

The 200 striking McDonnell employees at Cape Kennedy have made a local agreement with NASA to return to work on the GEMINI VII/VI mission preparations. Although the strike between the 17,000 International Association of Machinists members and McDonnell still continues at St. Louis and other sites, the workers at Cape Kennedy agreed to return to work to avoid holding up checkout preparations on the GEMINI spacecraft for the scheduled December 4 launch.

The GEMINI preparations, still on schedule, included a test of the fuel cell which had to be replaced last week due to a procedural error. Checkout has been performed since Saturday by 43 "supervisory personnel" flown to the Cape by McDonnell.

The President has "expressed concern" over the progress of negotiations still underway in Washington attempting to settle the strike, which continues to hold up work on two GEMINI spacecraft and 50 Phantom jet planes in St. Louis.

HYDAC & SIROCCO TESTED

Lockheed has tested its HYDAC and SIROCCO missiles in a series of experiments at Eglin AFB, Florida. The first launch was a 9-inch-diameter, 610-pound HYDAC solid propellant rocket, which is capable of reaching 400,000 feet altitude. The second launch tested a HYDAC as the fourth stage of a multi-stage launch vehicle. The third launch tested the 5.5-inch-diameter, 152-pound SIROCCO rocket which is capable of reaching 200,000 feet altitude. The solid propellant sounding rockets are designed to provide a wide flexibility in payload capacity.

READINESS SERGEANT FIRINGS SET FOR NEXT WEEK

Two hundred artillery troops left Fort Sill, Okla., yesterday to go to Tyndall AFB in Florida to conduct a practice firing next week of SERGEANT missiles to test the battalion's readiness. The missiles will be fired out over the Gulf of Mexico toward Eglin AFB's off-shore bomb range some 60 miles distant. It will be the first time a major American missile has been fired from the Gulf coast.

The 3rd Battalion of Fort Sill's 38th Artillery is traveling in a 55-vehicle convoy and will stop at Brookley AFB in Alabama for Thanksgiving before going on to Tyndall Friday. The return trip will begin December 6. The firings will be part of the Army's annual proficiency practice under simulated combat conditions.

RAYTHEON TO SUPPLY WEAPONS EVALUATER TO AF

The Air Force has awarded Raytheon an $11.4 million contract to design, build, and install the WET (Weapons Effectiveness Testing) system at Eglin AFB's Air Proving Ground Center to monitor and evaluate tactical weaponry in simulated battles in a zone 100 miles in diameter and 70,000 feet high. The system will include sensing, computing, processing, display, and communications equipment and will be operational by mid-1967. Raytheon's subcontractors are IBM Federal Systems, Hayes Interantional, and Vitro. The Air Force has been developing the system for two years. Pertinent weaponry includes rockets and missiles.

ALOTS TO BE TESTED FOR POSSIBLE GT-7 USE

The first of Northrop's two ALOTSs (Airborne Lightweight Optical Tracking System) was delivered to Patrick AFB last week as planned (SPACE Daily, Oct. 13) and is now being calibrated preparatory to tests to qualify it for employment during the GT-7 mission early next month. It will be mounted on a KC-135 aircraft, which will be flown from Wright-Patterson AFB to Patrick this week, and tested on eight flights.

During each acceptance flight, it will photograph a 3-inch-square National Bureau of Standards resolution chart mounted on the side of a B-57 that is flying five miles away. Developed to track and photograph both launch vehicles and missiles, ALOTS has a manual and an automatic mode (SPACE Daily, Oct. 18) and is based on the Northrop navigation system designed for the SKYBOLT missile (SPACE Daily, March 23).

NASA MAKES "VENUS FLYTRAP-CLASS" FLIGHT

NASA-Ames has successfully completed the second of its sounding rocket launches of Venus Flytrap-type payloads to collect micrometeoroid dust from the annual Leonid meteor shower (SPACE Daily, Nov. 16). The **AEROBEE 150** rocket carried the payload--designated Luster--to a 100-mile zenith from the White Sands Missile Range last Tuesday, and the Luster package descended under parachute to an impact some 50 miles downrange. The flight lasted about 11 minutes.

Venus Flytrap is the temporarily-halted Air Force project to collect cloud particles and micrometeorites in the 100-mile-out vicinity with **AEROBEE 150** payloads almost identical to Luster (SPACE Daily, July 9 and Aug. 11). The experimenters for the Flytrap project are largely the same ones now participating in Luster. Eleven organizations are contributing to Flytrap while 14 are working on Luster.

Electro-Optical Systems has built four Lusters for Ames, the first being used for environmental testing and the second being launched from White Sands exactly a year before this latest shot. The fourth payload will be arced in like fashion next year. Contracting for the first two totaled about $300,000, and for the second two about $116,000.

AVCO STUDIES ABLATORS FOR HOUSTON

Evaluation of the thermal properties of spacecraft materials will be carried out by Avco's Research and Advanced Development Division under an $89,000 contract from NASA-Houston. Materials to be studied include ablators, insulators and metal honeycombs. Work under the one year contract will be performed by the division's Materials Technology Directorate under the supervision of Michael E. Ihnat.

Dr. Jack A. Green, formerly head of the Geoscience Laboratory of North American's Space and Information Systems Division, has joined the staff of the Douglas Advanced Research Laboratory. Green will continue his studies of the origin and character of the Moon and the planets.

BASSETT AND CERNAN BRIEFED ON AMU FOR GT-9

Astronauts Charles Bassett, GT-9's pilot, and Eugene Cernan, his backup, were briefed last week on the AMU (Astronaut Maneuvering Unit) one of them will use during the ninth GEMINI mission to perform an extravehicular experiment (SPACE Daily, Nov. 9 & 12). Major Edward Givens, an Air Force project officer for the AMU, gave the briefing at LTV-Aerospace's Dallas plant where it is being developed by the Astronautics Division.

As part of AF experiment D-12, Bassett or Cernan will propel himself with the AMU from the GEMINI capsule to the AGENA target vehicle that has rendezvoused and docked with the spacecraft. In addition to his space maneuvers, he will carry a micrometeorite experiment (S-10) to the AGENA and install it there. The AMU has 12 hydrogen peroxide-fueled jets, a stabilization system, communications and power equipment, and oxygen and life support systems.

First of Three AMUs Delivered Friday

Also last week, on Friday, came the delivery of the first of the three AMUs LTV is providing the Air Force for use on GEMINI missions (the second will be used on GT-12 and the third is a backup). LTV program manager Fred Randall presented the unit to Colonel Daniel McKee, head of Detachment 2 at NASA-Houston for the AFSC Space Systems Division and supervisor of DOD GEMINI experiments. It will now go to McDonnell for integration and testing with the GT-7 spacecraft.

The AMU will be stored in the capsule's aft equipment adapter section because the astronauts' quarters are too small to include it. Bassett or Cernan will use a small chest pack called the MMU (Modular Maneuvering Unit) to move from the capsule to the aft section to get the AMU. While using the MMU, he will have an umbilical cord to the spacecraft, but the AMU will make him autonomous. His extravehicular activity will last about 50 minutes, although the AMU could operate much longer if necessary.

EOS DEVELOPS MODULAR NUCLEAR SOUNDING ROCKET PAYLOAD

Electro-Optical Systems has developed a modular payload for sounding rockets which is easily installable and quickly exchangeable. The instrument and support modules were tested on a sounding rocket firing in the series of experimental firings conducted by the Defense Atomic Support Agency (DASA).

DASA utilizes sounding rockets in monitoring experimentation in preparation for any future resumption of nuclear testing. The modular units are expected to reduce the cost of experimental payloads when produced in quantity.

GT&E AWARDED MINUTEMAN II HARDENED ANTENNA INCREMENT

General Telephone has received $5 million in funding for the multi-million contract to install hardened underground antennas for backup communications between the 150 MINUTEMAN II missile sites and 15 command posts in North Dakota. This brings total funding to $9 million.

BEECH EARNINGS UP 61 PER CENT

Beech Aircraft had sales of $122,482,994 for FY 1965, up from last year's $107,198,-966. Earnings, which set a new all-time high record, rose 61 per cent from $3,417,-483 to $5,506,180.

During FY '65 the company delivered space and defense products totaling $48,153,989 as compared to deliveries totaling $52,928,633 in FY '64 and $28,561,-212 in FY '63. During the past year, additional firm contracts were secured for a total of more than $44 million, and negotiations are in progress for work programs for production this year and over the next several years. Beech's space projects include: SAM-D airframe, flight control system, propulsion system, and launching container; GEMINI cryogenic equipment; APOLLO Command Module cryogenic storage subsystem; and liquid helium equipment for the Lunar Excursion Module.

AIRESEARCH STUDYING REGENERATIVE COOLED STRUCTURES

AiResearch-Los Angeles is studying for NASA-Langley regeneratively cooled, composite panels for Mach 8 aircraft structures. The study will focus on optimizing panel design and building and testing coolant-circulation panel sections. The external temperature of the panels is to be maintained at 1600 degrees F or under during operation. AiResearch hopes that "the integration of the heat exchanger (section of the panels) with the structure required to withstand the aero-dynamic loads may lead to an overall system weight that is lower than that of completely separate thermal protection and structural systems."

YANCEY NAMED AERONAUTICAL SYSTEMS VICE COMMANDER

Brig. Gen. William R. Yancey, former Deputy for Reconnaissance of the AF Aeronautical Systems Division, has been named Vice Commander. Yancey succeeds Brig. Gen. H. B. Manson who was named Commander of the Research and Technology Division's Systems Engineering Group at Wright-Patterson.

SYLVANIA OFFERING NEW REFRACTORY METAL COATING

Sylvania-SYLCOR (Hicksville, N.Y.) has developed a refractory metal coating for use on rocket nozzles and thrust chambers. Designated R-515, it will temporarily protect such metals as columbium and tantalum at temperatures up to 4000 degrees F. Tests in an arc plasma and on rocket surfaces have been "extremely successful," and it has a demonstrated ability to cover "edges and corners of clad Hf-Ta materials ...without difficulty." It can be applied in any thickness, but 10 to 20 mils "appears to be an extremely useful range."

Leonard J. Corti has been appointed vice president and director of planning for the Guidance and Control Systems division of Litton Industries. Corti joined Litton two years ago as director of administration for the division.

FIRST TWO BURNER II SHROUDS DELIVERED

Goodyear Aerospace-Arizona has delivered two of five shrouds for the five developmental models of Boeing's **BURNER II** transtage (SPACE Daily, Sept. 16). The two are for the two ground-test models, which are now in use, and the three to be delivered are for the three flight-test models, which will enter employment next year. The first of these three will be delivered in January.

The shroud is 11 feet tall, 62.5 inches in diameter at its base and 35 inches in diameter at its top, 208 pounds, made of fiberglass and a plastic honeycomb material, and priced at $8000. It was developed under Goodyear contracts totaling over $270,-000, with the Unidynamics Division of Universal Match as the subcontractor for its explosive jettison system.

The three flight-test **BURNER IIs** will be flown next year atop Air Force **THOR** vehicles from Vandenberg with experimental payloads. The AF has already ordered production models, although Boeing's development program will not formally end until late next year after the test flights.

Fueled but shroudless, **BURNER II** weighs 1697 pounds and can orbit small-to-medium payloads (up to, roughly, 5000 pounds). It uses a modified **SURVEYOR** motor made by Thiokol (SPACE Daily, Nov. 8) and has 9000 pounds of thrust. Improved versions are already in the works to carry loads of up to 6000 pounds. Boeing reports a number of organizations have expressed interest just in the shroud because of its low cost and simplicity.

LEWIS SEEKS NIMBUS/OGO SHROUDS

NASA-Lewis will hold a technical briefing on November 30 at Moffett Field for firms interested in competing for the fabrication of eight fiberglass shroud systems for protecting the **NIMBUS ATS** and **OGO-E** spacecraft during launch. The first shroud must be delivered to Lewis 182 days after purchase order. The shrouds will measure 65 inches by 18 feet.

SOLRAD IX BECOMES EXPLORER XXX

The Navy's ninth **SOLRAD** satellite (SPACE Daily, Nov. 12 & 19) was launched last Thursday night with only 23 seconds left in its launch window to become NASA's 30th successful **EXPLORER**. The solar-radiation-measurement payload was lifted off Wallops Island at 11:48:27 PM EST by a **SCOUT** and put into a 440/548-mile orbit with a 59.72-degree inclination and a 102.75-minute period. The experiments were turned on Friday afternoon. (The launch window, incorrectly reported here Nov. 19, was 10:19 to 11:49 PM EST.)

The following executive appointments have been made at Bendix: **J. E. Bevins**, group manager of the Eclipse-Pioneer Division; **R. A. Hedden**, group manager of the Sheffield Corp., the Industrial Controls Division, the Micrometrical Division, and the Besly-Welles Corp.; and **D. S. Jones**, group manager of the Bendix Scintilla Division, Dage Electric Co., and Microwave Devices.

Future Space Business

ASM NAVIGATION/GUIDANCE COMPUTER

The Air Force Systems Engineering Group is planning a research and development program for a standardized, very low cost, air-to-surface missile (**ASM**) navigation and guidance computer for a wide range of **ASM** missions.

Contact: Directorate of R&D Procurement, Systems Engineering Group, RTD, Wright-Patterson Air Force Base, Ohio. Reference: KEB-4421-66-18. Due date: Nov. 25.

CONSTRUCTION OF RADAR TARGET RANGE

The Army Missile Command has issued invitations for bid for the construction of a radar target range.

Contact: Purchasing and Contracting Office, U.S. Army Missile Support Command, U.S. Army Missile Command, Bldg. T-3152, Redstone Arsenal, Ala. Reference: IFB DAAH0366B0035. Due date: Dec. 3.

SPACE RFP LOG

This is a reference of the government requests for proposals which are coming due. For additional information see SPACE Daily issues as noted.

Design, development, fabrication, flight qualification and delivery of **APOLLO** crew survival equipment, RFP BG721-26-163P, NASA-Houston, due Nov. 26 (SPACE Daily--Nov. 12).

SPACE R&D LOG

This is a reference of the government requests for letters of interest which are coming due. For additional information see SPACE Daily issues as noted.

Program to obtain data on the capability of a decoy to have basically the same radar return as a re-entry vehicle at high altitudes, BSY KB-2, Air Force Ballistic Systems Division, due Nov. 26 (SPACE Daily--Nov. 17).

DOD NEGOTIATIONS

General Dynamics Corp., General Atomic Division--with Air Force Special Weapons Center for the preparation of shielding samples.

General Dynamics Corp., General Atomic Division--with Air Force Special Weapons Center for an experimental study of heavy ion charge exchange in air.