SPACE BUSINESS Daily

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INTERIM COMMITTEE APPROVES COMSAT APOLLO SYSTEM. The Interim ComSat Committee, negotiating agent for the International Telecommunications Satellite Consortium that ComSat represents, has endorsed the **APOLLO**-support satellite system the Corporation is now establishing (SPACE Daily, Aug. 2 and Oct. 11). NASA will contract with ComSat for the system's services on behalf of the DOD, which operates the support network for the **APOLLO** flights.

The Committee also approved ComSat's contract with Hughes for the satellites (SPACE Daily, Aug. 16), which will be called **BLUE BIRD**s (SPACE Daily, Nov. 1) and be deployed over the Atlantic and Pacific in synchronous orbits. FCC approval of both the system and the contract is expected this week or next (SPACE Daily, Oct. 29). Each satellite will provide 6 voice channels (assuming small-antenna support) for NASA. 180 channels for transpacific communications, and 100 channels for transatlantic traffic.

FIRST MANNED APOLLO IN '66 ON SCHEDULE. There is plenty of official optimism that the first manned flight of an **APOLLO** Command Module (**SA-204**) in Earth orbit can be accomplished between October and December of 1966 (SPACE Daily, Aug. 2 & Sept. 9). While it had earlier been hoped that the first flight of the **SATURN IB** could be met before the end of the year, its accomplishment early next year is in keeping with the original schedule.

SA-204 will also provide the first opportunity for scientific experiments. It will, in addition to the Command and Service Module, possibly orbit a Lunar Excursion Module (**LEM**). It will be launched from Cape Kennedy at a 72-degree azimuth into an approximately 100-mile orbit from which the Service Module will propel the combination out to 140 miles. A 10-14 day-mission is currently envisioned. Of interest to the scientific community will be the **APOLLO** Experiment Pallet (SPACE Daily, Sept. 9) aboard the Service Module. The **SA-204**'s predecessors will include two suborbital flights (**SA-201** and **SA-202**) to test the heat shield of the Command Module, while the third (**SA-203**) will be orbital and unmanned for test of hydrogen systems.

NAVY SEEKS NEW SOUNDING ROCKET. The Naval Research Laboratory is in the Pre-RFP phase of a program to obtain an improved sounding rocket, liquid or solid. The contractor to be selected by the Navy would research the required improvements and fabricate the vehicles. Capability sought is in the 100 pounds to

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200 miles-300 pounds to 115 miles category with launching site specified as White Sands. The vehicle is to have a diameter not to exceed 15 inches and a propulsion unit length not to exceed 270 inches.

PROTON II--POSSIBLE SOVIET MOL IN ORBIT. Up from Baykonur-Karsakpay has gone the second 26,900-pound target station, **PROTON II**, in what could be the prelude to renewed manned activities by the Soviet Union. This key to the next few years of manned Soviet missions (SPACE Daily, July 20) is also the second test by a new booster system. **PROTON II**'s parameters are very similar to those of **PROTON I**, exceeding **PROTON I**'s distance out by a few miles. This latest space station test, which may weigh slightly more than the first (The Soviets say it "is the biggest put into an orbit around the Earth thus far."), is in an orbit of 118.6/395.7 miles, an inclination of 63.5 degrees and a period of 92.6 minutes. **PROTON I** orbited at 114/375 miles and 63.5 degrees. Included in the payload is "a set of control and measuring instruments" and other equipment for measuring cosmic particles, solar cosmic rays and other environment conditions.

PROTON II, as was its predecessor, is more than an attractive candidate for manned space station development. To attribute its massive weight to an accumulation of dense scientific equipment is to go far beyond the realm of practicality. The Soviets have admitted earlier that the **PROTON**s are the beginning of a new phase in the exploration and "domestication" of space (SPACE Daily, Aug. 9). While **PROTON I** seems to have been the test vehicle for the new space transportation system which has thrust up to 4 million pounds (SPACE Daily, Aug. 9), its successors can be expected to be target stations for **VOSKHOD**-type shuttle vehicles carrying cosmonauts seeking rendezvous, docking and flight transfer. Meanwhile, the optimum launch conditions for manned operations are fast drawing to a close on the plains of Kazakh USSR.

NEWSPAPERS/WIRE SERVICES WANT ACCESS TO COMSAT SERVICES. Commenting to the FCC on the "authorized user" matter (SPACE Daily, Oct. 14), the American Newspaper Publishers Association has said that "a basic policy determination (should) be made at this time, assuring access by the press to ComSat facilities for news media dissemination." Both newspapers and wire services have a critical concern with communications satellites, the ANPA filing said, and "the availability of adequate communications facilities at reasonable charges is a matter of high priority interest to ANPA members."

AT&T URGES COMMON CARRIER USE OF COMSAT SERVICES. AT&T has told the FCC the "authorized users" of ComSat services ought to be common carrier companies only, not any communications organization that wishes to rent satellite channels. The "only interpretation. . .consistent with the specific language of the Communications Satellite Act of 1962," said AT&T, is " the view that ComSat is to function as a 'carriers' carrier,' except possibly in the case of the U. S. Government. . ."

SECOND TITAN III-C APPARENTLY EXPLODED. NORAD is now tracking at least 60-odd objects from the second **TITAN III-C** shot. The Air Force will release its explanation of the apparent Transtage explosion today. "Many factors" will be blamed, including a malfunctioning engine valve that may have effected excessive tumbling.

NYC BANK URGES GOVERNMENT TO STABILIZE ECONOMY

The First National City Bank of New York (Citibank) has urged the Government to think less about economic expansion and more about economic stability. The bank, after a study of third quarter sales and earnings for 1080 nonfinancial corporations, reports that the Administration is actively stimulating demand at a time when the economy, in terms of manpower and productive capacity, is pressing close to the limits of orderly expansion. Citibank's report concludes that the Government, which claims credit for such stimulation when it is needed, must also assume responsibility when it is excessive.

The bank's tabulation of the 1080 corporations shows after-tax earnings of $5.2 billion, up 17 per cent over the third quarter of 1964 and down 8 per cent from the second quarter this year. For the first nine months of 1965, these firms earned $16.1 billion, 16 per cent above the corresponding period last year. Citibank pointed out that profits normally decline from the second to the third quarter because of the vacation-time slowdown, but this year they dipped less than seasonally and showed a substantial gain from the year-earlier period. This is the eighteenth consecutive business quarter which has showed a gain in corporate earnings.

Credit Demands Press Hard Against Available Funds

Although the money supply has increased over the past months, Citibank says that credit demands continue to press hard against available funds. Banks have met the loan demand so far this year, even though the demand is up more than 50 per cent from last year. Some upward adjustments in interest rates have occurred in response to supply and demand, and it is Citibank's contention that such adjustments would help allocate funds in a free market and postpone marginal projects.

The Gross National Product, which has advanced $11 billion to a seasonally adjusted rate of $677 billion in the third quarter, is in line with the average quarterly growth during the preceding two years--a rise which has been relatively uniform except for the quarters affected by last year's automobile strike.

HAWAIIAN NATIONAL BUSINESS CONFERENCE: FEB. 3-4

The Defense and Commerce Departments will hold a business opportunities conference February 3 and 4 in Honolulu "to assist Hawaii's industrial and scientific community in developing state sources for government contracts," especially sources for small business procurement. Conferees will meet in Turner Hall at the Army Reserve Armory at Fort Derussey.

Also participating in the conference's sponsorship are the Interior and Agriculture Departments, NASA, AEC, SBA, GSA, FAA, and major defense and space contractors. A preliminary meeting is being held today at the Honolulu Chamber of Commerce to plan the conference. Coordinating the conference for the DOD is Thomas Casey, special assistant for economic utilization to the Assistant Secretary of the Air Force for Installations and Logistics, and coordinating for civilian agencies is Robert Kerr, a trade specialist for the Commerce Dept.

Eugene J. Tanner, former corporate controller of Ling-Temco-Vought, has been named executive vice president of Instruments For Industry, Hicksville, N.Y.

CARGO ROCKETS ARE COMPETITORS OF SST

"Rockets can be built to deliver any amount of cargo, mail, or passengers to any point on Earth from any other point," and the only major threat to implementing such commercial rocket systems is the competition from sub- and supersonic jet transports. These are the opinions of R. L. Johnson, director of Douglas's MOL subdivision.

He points out that the feasibility of cargo rockets was demonstrated as early as 1931 when Frederick Schmiedl, an Austrian engineer, conducted about 12 flights of mail rockets between Austrian cities, primarily Schockel and Radegund. Although his effort was given semiofficial status, it was ended two years later, and only a few similar flights were tried by other people.

Despite relatively little development of commercial rockets, however, Johnson says they will come of age "when the time is ripe." They will be "the next major stride forward in man's historic quest for faster ways to move goods over great distances."

AVCO BEGINS NEW MHD GENERATOR PROGRAM

AVCO-Everett's Research Lab has begun a program for the Air Force "to demonstrate experimentally the feasibility of producing repeated, short-duration impulses of high-energy electric power with a magnetohydrodynamic (MHD) generator." The program follows the Lab's development of its Mark V self-excited, steady-state, rocket-driven MHD generator, which is located at Haverhill, Mass., and will be modified for the present program.

The Mark V has put out a record 31.3 million DC watts gross (23.6 net, the balance being used to energize the magnetic field). It was built for ARPA, the DOD's Advanced Research Projects Agency.

The present program is being done for the AF Aero Propulsion Lab at Wright-Patterson. (AVCO is also building a generator similar to the Mark V for the AF's Arnold Engineering Development Center.)

THIOKOL EARNINGS UP 39 PER CENT

Thiokol's sales for the first nine months of 1965 were $134,348,842, down from last year's $150,100,298. Although sales were down, earnings rose 39 per cent from $3,017,207 to $4,206,410. The drop in sales was attributed to reduced sales in the Aerospace Divisions.

In view of the increased earnings, the board of directors has declared an initial cash dividend of 25 cents per share payable January 3, 1966, to stockholders of record December 10.

NASA TO BUY SCOUTS

NASA-Langley will negotiate with Ling-Temco-Vought for an $8 million firm fixed price contract for 12 SCOUT launch vehicles. LTV, who will be prime contractor as well as contractor for motor procurement, will place several major subcontracts.

WEBB STRESSES PREPAREDNESS FOR SPACE INDUSTRY

NASA Administrator James E. Webb, in dedicating Boeing's new Space Simulation Facility at Kent, Wash. (SPACE Daily, Oct. 27), said that NASA plans to increase its aeronautical research and to increase the benefits which the space industry has already derived from space research and development programs.

Webb went on to point out that there have been ups and downs in the space and defense industries. Forecasts have even been so gloomy that from time to time studies have been conducted of what to do and how to diversify. He told those attending the Boeing dedication that "While similar fluctuations in space program requirements may occur, my view is that both the aeronautical and space segments of this industry will be a steadily expanding field of effort. Expanding horizons in space exploration and the application of our emerging know-how to needed operational systems means that there will be space business for those who prepare for it and who contribute new ideas and new achievements."

Government and Industry are a Partnership

Webb declared that while the industry-Government relationship sometimes appears to be that of vender and buyer, it is actually a partnership with all its inherent problems

Significant influences on this partnership in recent years have included: 1) The demand on industry for faster rates of technical advance; 2) The increased complexity and technical difficulty of major programs with consequent delays and cost overruns; 3) The decreasing volume of production work and increasing volume of research and development contracts; 4) The steady increase in the requirements for technical and program management personnel; 5) The requirement for Government to better define its objectives and requirements; 6) The emphasis in the procuring agencies on increasing competition at all stages including research and development; 7) Changes in contracting methods which offer more incentives but impose more risk on contractors; and 8) Necessary increases in Government controls on configuration, on quality, and on financial data in multiple-contract, large and long-lead-time projects. These influences have produced several results including the trend to incentive contracting, which is consistent with the withdrawal of the Government from all but essential participation in management.

Webb pointed out that these problems mean that Government and industry must reinforce their efforts to find better ways of working together. The head of the space agency said that "Implicit is the need for greater mutual confidence, greater frankness, and early and full disclosure of problems on both sides of the table. NASA is trying to do all these things, and will try harder." In this effort, Webb says that contractors must achieve more effective internal program controls, better forecasting, and quicker reaction time in problem situations. Also the government agencies, in awarding new business, "must judge contractors on measurable results, as well as take into account a contractor's prior management performance."

In conclusion, Webb pointed out that the only way to assure that the United States benefits from the space industrial base is for both Government and industry to keep management capability in step with technology.

NEWELL LOOKS TO SPACE SCIENCE FUTURE

Satellite systems that will enable us to increase the capability to forecast weather from one day to two weeks; traffic control, air safety, air and sea navigation satellites; data collection satellites; TV direct broadcasting satellites; and scientific satellite laboratories are but some of the foreseeable possibilities for the next decade. This is the view expressed by Dr. Homer E. Newell before the IEEE Symposium in Miami Beach in a discussion of the future of the Space Science and Applications field.

Cited as one of the most outstanding projects by Newell was **TOSS.** This **TIROS** Operational Satellite System, soon to be put up, will improve our surveillance of cloud cover and improve the present one to one-and-one-half day forecasting ability. Supplementing **TOSS, NIMBUS** will soon be testing out advanced instrumentation for future weather satellite systems. With a true global weather data collection satellite system, however, it would be possible to increase our forecasting ability to as much as two to three weeks within the next ten years.

Newell says that "with strong support and vigorous application it might be possible to shorten (the forecasting) significantly." He emphasized that three major advances are needed: the development of high capacity computers capable of handling large and complex quantities of data; the development of satellites to collect the needed observational data; and the refinement and recasting of theory to use the data from the satellites and computers. In addition the necessary automatic ground, sea and airborne automatic sensors would have to be developed. Such a system could provide meteorologists with a continuous record of the energy input to the atmosphere and the initial values of pressure, temperature, winds and humidity at a number of levels in the atmosphere, at the lattice points of a several hundred kilometer mesh covering the entire world.

Although smaller in scope the future of communications satellites is seen as equally bright. After the establishment of the **APOLLO** communications satellite network, the DOD communications satellite network, and the commercial communications satellite network, Newell sees the next step as the use of specialized satellites for traffic control and air safety, air and sea navigation, **(NAV-TRAF SATs)**, data collection, and direct TV broadcasting to home receivers.

In the field of space sciences Newell foresees the use of manned satellites as especially important for making geophysical observations. Such satellites will also be used for studies of geology, mineralogy, glaciology, snowfields, potential water resources, oceanography, meteorology, and agricultural surveillance of grass, crop and forest cover. He points out that our present knowledge of astrophysical theory is based primarily on observations in the visible wavelengths and that perhaps the most important information about the birth, evolution, and demise of stars and galaxies is to be found in the infrared and ultraviolet wavelengths. Therefore we can expect that large orbiting telescopes of various types will be utilized, probably associated with manned space stations. Ultimately, bioscience experimentation will be an important activity in manned space stations.

AF SECRETARY BROWN TO ADDRESS LA C OF C

Secretary of the Air Force Harold Brown will address the Los Angeles Chamber of Commerce's Ninth Annual Air Force Luncheon today. Brown's speech, entitled "Air Force Planning," will give local contractors a report on the military's plans for the future.

DOD NEGOTIATIONS

Hughes Aircraft Co.--with Army Missile Command for advance production engineering on the **TOW** weapon system.

Hughes Aircraft Co.--with Aeronautical Systems Division for long lead time items for **AIM-4D** launcher adapter kits, missile interface test sets and missile adapter testers.

NASA NEGOTIATIONS

TRW Systems Group--with Marshall for a study to analyze **SATURN IB** tracking accuracy requirements.

General Dynamics/Convair--with Marshall for a study of exhaust plume radiation prediction.

Wheeler Laboratories, Great Neck, N.Y.--with Langley for design, development and fabrication of an omnidirectional antenna system.

Cornell Aeronautical Laboratory--with Langley for a study of photographic quality evaluation.

Dynamic Science Corp.--with Langley for the development of a digital computer program for the nonlinear analysis of arbitrarily loaded thin shells of revolution.

DOD CONTRACTS

Navy

Lockheed Aircraft Corp., Lockheed Propulsion Co.--$267,736 for solid rocket motors with igniters.

Booz Allen Applied Research--$99,811 for fleet operational readiness studies.

Howard Research Corp., Arlington, Va.--$60,000 for research and development for the **POSEIDON** missile.

NASA CONTRACTS

Ames

North American Aviation, Los Angeles Division--$39,735 for computer program for propulsion system dynamic simulation.

Houston

Northrop Corp., Ventura Division--$302,797 for design and development of a large controllable parachute.

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NASA CONTRACTS - Contd.

Houston - Contd.

Pioneer Parachute Co., Manchester, Conn.--$186,997 for design and development of a large controllable parachute.

North American Aviation, Rocketdyne Division--$290,000 for **APOLLO** Command Module RCS rocket engines, oxidizer valves and fuel valves.

The Regents of the University of California--$93,613 for flight experiment to study trapped radiation.

Honeywell, Aeronautical Division--$152,800 for **APOLLO** cockpit simulation devices.

AVCO Corp., Research and Advanced Development Division--$98,000 for micrometeoroid composition analyzer development.

Geonautics Inc., Washington, D. C.--$9,889 for binocular viewing device.

Battelle Memorial Institute--$35,000 for an investigation of the reaction of titanium with hydrogen.

Langley

Hughes Aircraft Co.--$47,410 for techniques of increasing long-range applicability of mission-oriented manual guidance and control research.

Philco Corp.--master agreement for research and development on lightweight entry capsules.

Wise Contracting Co., Richmond, Va.--$86,620 for Service Module lunar landing impact simulator ground facilities.

Goodyear Aerospace Corp.--$224,000 for construction and checkout of prototype transportable ground-based satellite photometer system.

Astro Research Corp., Santa Barbara, Calif.--$94,397 for development of design data for decelerators for use with unmanned planetary entry vehicles or manned space vehicles.

Temple University--$12,115 for a study of methods of enhancing the visibility of rocket smoke trails.

Goddard

Speedring Corp., Warren, Mich.--$68,000 for x-ray telescope experiment package.

Westinghouse Electric Corp.--$377,500 for **ATS** Mojave ground station integration and test.

Fairchild Hiller Corp.--$134,375 for radio astronomy experiment tooling, fabrication and assembly.