

# SPACE BUSINESS *Daily*

FIRST DAILY MANAGEMENT NEWS SERVICE FOR THE MISSILE / SPACE INDUSTRY

SPACE PUBLICATIONS, INC.  
ME. 8-0500 ME. 8-1577

WASHINGTON, D. C.  
Cable: SPACE

NORMAN L. BAKER — Publisher & Editor  
TWX: 202 — 965-0765 (SPACE - WASHINGTON)

Published five times a week by Space Publications, Inc., at 1341 G St., N.W., Washington, D. C. 20005

Subscription rates: \$175.00 for one year, \$110.00 for six months, \$20.00 for one month.

Permission for reproduction of this publication should be obtained from the editors.

Friday, February 18, 1966

Vol. 24, No. 34

**NASA PREPARING DIRECT BROADCAST TV SATELLITE RFPs.** NASA-Washington's Office of Space Science and Applications is investigating the feasibility of a synchronous satellite that would broadcast television programs directly to home receivers. A work statement is being prepared, and the Office would like to issue an RFP before summer for mission studies, but no plans to do so have been firmed yet. Three companies--Hughes, TRW, and RCA (the old triumvirate of ComSat study contractors)--have outlined proposals informally to OSSA and indicated that such a satellite is technically feasible for deployment and operation by 1970. Earlier, NASA surmised that a Direct Broadcast Satellite-TV (**DBS-TV**) was not expected until after 1970 (SPACE Daily, Nov. 12).

Two major considerations for the **DBS-TV** payload are its power capability and the local receiving system necessary to handle the broadcasted signals. Current indications are that 20 kilowatts of effective radiated power would suffice for satisfactory service over an area of approximately one million square miles if the home receiving systems included high-quality outside antennas and preamplifiers. If the home system was only of mediocre design but still had an exterior segment, the power requirement for the satellite would jump to 50 kilowatts, and if the system was of the inside rabbit-ear type, the requirement would increase so substantially the satellite would probably not be feasible. Therefore, at present the 10-50-kilowatt range seems best.

OSSA wants to study a variety of power sources, satellite antennas, and stabilization systems to help establish the technical requirements for the satellite. Solar arrays, nuclear systems, and advanced power sources are now being considered. Space-erectable and phased-array antennas are also receiving attention, as are active, passive, and active-passive (hybrid) stabilization systems. One problem in this area is how to maintain a large solar panel (comparable to a "wing" of the **PEGASUS** satellites) pointing toward the Sun while orienting the broadcast antenna toward the desired coverage area on Earth. A synchronous platform with such large structures could prove difficult to position properly.

OSSA is not attempting to project the possible procurers and users of the **DBS-TV** satellite, but with the appearance of the direct broadcast concept has come considerable discussion of missions and applications. RCA's David Sarnoff, for example, commented last spring (SPACE Daily, May 28) that a nuclear-powered synchronous satellite could prove economically practical for commercial TV networks to operate or for a special ComSat-class organization to employ in competition with the Soviet Union.

Doubt has been expressed over the usefulness of the three American television networks joining in the ownership and operation of a **DBS-TV** package, because the time zone

MORE

*The Leader in Missile/Space Reporting*

differences render few television programs suitable for simultaneous viewing by the fifty States. Also, with the overall area of the U.S. totaling over three and a half million square miles, full national coverage would require a more sophisticated satellite than is now envisioned. Regions of America and other countries, however, might derive substantial service from a DB-TV system, particularly for educational and special-purpose programs. OSSA is already well along with its investigation of a **DBS-RADIO** (HF and FM) satellite (SPACE Daily, Nov. 8 & 12), which will be similar to the TV payload (SPACE Daily, Nov. 29). TRW, RCA, GE, Raytheon, Westinghouse, Philco, and Fairchild are currently doing six-month mission studies.

**NASA-WASHINGTON APPOINTS FULL-TIME SURVEYOR WATCH DOG.** In the wake of the success of the Soviet's **LUNA IX**, and faced with the development difficulties of the **SURVEYOR**, NASA has assigned Robert F. Garbarini, director of engineering for the Office of Space Science and Applications, to work full time on untangling the difficult management and technical problems in the program. **SURVEYOR**, whose first flight may now slip to June (SPACE Daily, Feb. 9), is scheduled to be shipped soon to General Dynamics for spacecraft-launch vehicle compatibility testing.

**PROBLEMS SEEN AT ELDO MEETING NEXT MONTH.** Look for Britain to throw a monkey wrench into the meeting of **ELDO** (European Launcher Development Organization) representatives next month (SPACE Daily, Feb. 10). Reason: As SPACE Daily-London reported earlier (Dec. 7) Prime Minister Wilson's labor government has serious doubts about the whole future of **ELDO**, and is particularly disturbed about rising costs and continuing delays in work on upper stages of **EUROPA I** (SPACE Daily, Jan. 21), **ELDO's** initial launch vehicle, for which Britain's **BLUE STREAK** will be the first stage.

Fate of **EUROPA 1** is expected to affect the development of more advanced configurations (SPACE Daily, Jan. 20 & 21). The **ELDO** intergovernmental meeting is scheduled for March 29. Primary agenda item will be to reach a funding agreement for **EUROPA 1**.

**STANDARD SAM MOTOR CONTRACT TO GD/POMONA.** The Bureau of Naval Weapons has selected General Dynamics/Pomona to design, develop and test a dual-thrust rocket motor for the medium-range version of the **TARTAR/TERRIER SAM** missiles. The contract will call for approximately 50 pilot production units and approximately 14 guidance control and airframe units. GD/Pomona holds the BuWep's contract for pilot production for two versions of the standardized surface-to-air shipboard missile (SPACE Daily, Jan. 8 & 9, '64, Jan. 5, '65 & July 12).

Subcontracting on the work is expected to go to either Aerojet-General or Hercules Powder, both of which have had experience with Standard **SAM** motors. Aerojet's candidate was a solid-propellant, dual-thrust system which uses polybutadiene as its booster fuel and polyurethane as its sustainer fuel (SPACE Daily, July 28). The Hercules engine is also a dual-thrust system with a maraging steel case (SPACE Daily, Aug. 2).

**Dr. Allen R. Ferguson**, former director of economic research for Planning Research Corp., has been promoted to deputy manager of the firm's new Systems Economics Division and also manager of the Division's Economics Department.

**APOLLO APPLICATIONS DECISION THIS SPRING.** The critical decision to go ahead with the **APOLLO Applications (AA)** program will be made by NASA before May, Dr. George E. Mueller, NASA associate administrator for manned space flights, disclosed yesterday.

He said NASA would have until fall to exercise options to order additional **APOLLO** flight vehicles (through at least 1971) when it submits its report to the Bureau of the Budget, but he pointed out that the preliminary estimates must be submitted by May. "In practical terms we have to grapple with the problem now," he said. "If we do not exercise this option then the decision for the 1968 budget will have to begin a phase down in the manned space flight activities and the 'mothballing' of some of our facilities."

The option to be exercised this spring includes extending the **APOLLO** capability to 90 days, and is complicated by the fact that vehicles may be available from the currently approved **APOLLO** program. "Our planning must take account of the possibility that we may be able to use for alternate purposes some of the vehicles programmed for the manned lunar landing." There are grounds for confidence that the manned **APOLLO** landing will take place before all the vehicles are used.

Mueller said the basic **APOLLO/SATURN** program will lay the groundwork for advanced space missions. He said NASA has been studying advanced mission plans for the alternate vehicles, missions which NASA hopes will develop into a full **AA** program. Such missions will include: 1) **APOLLO** spacecraft in synchronous orbit to test the ability to make astronomical observations with large telescopes. 2) To test procedures for resupply for space stations. 3) To place a spacecraft in orbit about the Moon for two weeks to survey the lunar surface. 4) An increased stay-time on the Moon. 5) Establish control towers in space both for aircraft and ocean-going ships. 6) Placing mirrors in space, and 7) "An entire group of potential applications based on the use of observations and actions in space to make fuller use of the resources of the Earth, considered on a planet-wide basis" (SPACE Daily, Jan. 14).

The NASA associate administrator indicated that he hoped the **AA** program would get full support. Pointing to the fact that America first proved that a rocket could work and then failed to exploit the advantage, Mueller said, "I hope that we are perceptive enough to profit from history and that we do fully use and exploit these machines we have developed at such a heavy investment of resources, and that we do allow ourselves the time and freedom to our full capabilities in space."

**SEAMANS DEFENDS NASA'S AUSTERE BUDGET.** Dr. Robert C. Seamans Jr., NASA deputy administrator, yesterday made the first presentation to Congress before the House Space Science and Applications Subcommittee (SPACE Daily, Feb. 4 & 15), of NASA's \$5.012 billion budget which, in his words, "reflects the austerities made necessary by our national commitments abroad and at home." He described the FY '67 budget as one which continues our efforts towards pre-eminence in aeronautics and space but admitted that "it cannot assure that we will achieve that pre-eminence."

**APOLLO:** In contrast to last year's budget, which NASA Administrator James E. Webb said gave us "a reasonable opportunity" to achieve the manned lunar landing within this decade (SPACE Daily, Feb. 18, '65), Seamans said the '67 budget provides funds for **APOLLO** which, "we hope, but cannot assure, will maintain the manned lunar landing objective." The original NASA request to the Bureau of the Budget was for \$5.58 billion but "budgetary constraints" resulted in the final approved \$5.012 billion budget. **MORE**

**APOLLO Applications:** In order to achieve this almost half-a-billion-dollar cut, it was necessary to defer several "desirable new projects." The major saving came from a \$218.1 million cut in the **APOLLO** Applications request. In reply to questions by Subcommittee Chairman Joseph E. Karth (D-Minn.), Seamans said that NASA originally requested \$260 million for **AA** but in the end had to be satisfied with a total of \$41.9 million. This small amount of funding will require NASA to use the FY 1967 period to define and sharpen mission objectives rather than move directly into the initiation of the "**APOLLO** application project." The decision to initiate the **AA** program will be made in FY 1968. (See previous story.)

**Space Science:** In addition to **AA** cuts, and a \$160 million cut in the **APOLLO** program, the other major cut, \$170 million, was made in the Office of Space Science and Applications' budget. Seamans referred to the recently released "Woods Hole" report (SPACE Daily, Jan. 17, 18, 19; Feb. 2, 3, 4, 7, 15, 16 & 17), and admitted that "the program before you today does not meet all of the high expectations and rapid rates of progress recommended by the Board."

**VOYAGER:** The **VOYAGER** program, deferred by NASA from the 1971 opportunity to the 1973 Mars opportunity because of "budget constraints" would be funded this year for about \$10 million to define work on the capsule and the spacecraft. But Karth stated that he was "greatly disturbed" by the status of the **VOYAGER** project. He pointed to the lack of careful project definition and advanced planning to identify problem areas in previous projects (**MARINER**, **RANGER**, and **SURVEYOR**) and said "we ought to be funding to do basic research in bottleneck areas (of **VOYAGER**)." He indicated that he would have considered it wise to stretch out the program in order to proceed in a more orderly manner in view of the complexity "of the \$2 billion program" but that he was concerned that NASA was apparently merely deferring initiation of the program until a later time. Karth also was skeptical that the **MARINER '69** mission to Mars will help greatly in solving the technological problems of the **VOYAGER** program.

**AOSO:** The greatest concern by the subcommittee as a whole was shown over the cancellation of the **AOSO** (Advanced Orbiting Solar Observatory) program. Seamans conceded that "from a management standpoint we don't like to start and then stop these programs" and that it would be more expensive to pick up the program at a later date. But he pointed to the potential of the solar telescopic experiments using the **ATOM** (**APOLLO** Telescope Orientation Mount) system aboard the **AA** flights. Rep. Weston E. Vivian (D-Mich.), a Ph.D. in engineering, contended that the inclusion of man aboard a telescopic mission would be a detriment, not an advantage, resulting in far greater complexity and cost for the **AA** spacecraft systems.

**FIRST STATIC TEST OF FIRST S-IC SUCCESSFUL.** The first flight model (**S-IC-1**) of the **SATURN V** first stage has been fired in its test stand at NASA-Marshall and will be ignited again later before removal. The test lasted 40 seconds and was fully satisfactory. The second firing will run 85 seconds.

**GEMINI VIII TO USE AGENA.** NASA has confirmed the March 15 launch date for the **GEMINI VIII** mission (SPACE Daily, Feb. 2) and decided to use the **GEMINI-AGENA** Target Vehicle (**GATV**) for rendezvous in spite of the recent explosion of a prototype **AGENA** during testing by the Air Force (SPACE Daily, Feb. 15).

**THE WOODS HOLE REPORT--IV** (A Brief Analysis). The study of the United States space program conducted last summer by working groups of the National Academy of Sciences' Space Science Board meeting at Woods Hole, Mass., directed itself to the question that has become of overriding significance to the space business and to the future of the country itself: Toward what end should the U.S. space program be directed after the **APOLLO** lunar landing mission this decade.

**Space Stations First--Manned Mars Next.** The hundreds of pages of the report boil down to this: "...The exploration of Mars, with initial emphasis on the detection and characterization of possible Martian life, should constitute the major scientific goal of the United States space program in the period following the manned lunar landing." The Woods Hole report recommended that in the 1965-1975 time period a shift be made in NASA funds with more money going to planetary rather than lunar programs. (See SPACE Daily, Jan. 17.) The manned planetary landing goal would be set for the 1980-85 period. Associated planetary flybys, orbiters and landers would be an integral part of the program.

Secondly, "before man can be safely included in missions of planetary duration, an orbiting research facility for the study of long-term space flight must be established" (yesterday's SPACE Daily). This would encompass a series of orbiting laboratories capable of supporting 6-8 men with room for scientific experimentation. Testing would be directed toward flights of up to 1000 days.

**Manned Orbiting Observatories A "Definite" Requirement.** The other primary conclusions of the study: 1) There is a definite requirement for developing, building and orbiting a large telescope, which would be tended by man (SPACE Daily, Feb. 2). 2) The exploration of space requires the utilization of both ground-based observations and studies with balloons, sounding rockets and satellites (SPACE Daily, Feb. 15). 3) The distinction between manned and unmanned programs is an artificial one and should not be a primary factor for mission consideration. Scientific objectives should be the determining factors (SPACE Daily, Feb. 7).

The Woods Hole report is a clearly stated view of the scientists of the country. However, there are many factors left untouched. What about the considerable time gap between the 1970 manned lunar landing and the 1980-85 manned Mars landing? Other programs will be ready for full implementation. The United States space program, after 1970 as well as now, must be supported to approach its unlimited potential. The benefits of lunar exploration (SPACE Daily, Feb. 15) as well as the untapped billions of dollars in potential gains from the infant NASA/government agency remote-sensor program (SPACE Daily, Jan. 14) will also be shouting for support. The question remains, as stated by the NASA Administrator: Will our plans for our future in space be drawn by a timid hand?

**Charles D. Manhart** has been elected a vice president of Electronic Communications Inc. and general manager of the company's Standard Precision Division. Manhart formerly was vice president and general manager of the Defense Systems Division of Bunker-Ramo.

**Grady H. Banister Jr.**, formerly the manager of the Systems Applications division of Mesa Scientific Corp., has been appointed as manager of Planning Research Corp.'s Real-Time Systems Department.

#### FOURTH GODDARD SYMPOSIUM TO LOOK AT 2001

The Fourth Goddard Memorial Symposium of the American Astronautical Society, set for March 15 and 16 in Washington, D.C., will look to the "Space Age in Fiscal Year 2001." Thirteen technical sessions and a panel discussion are planned, plus two luncheon talks. The Symposium will be opened with remarks by Dr. Eugene Konecci, chairman of the National Space Council.

The sessions are: (Space Technology) "Propulsion," "Structures, Materials, Re-entry," "Communication, Guidance, and Radioastronomy," and "Life Sciences Advanced Concepts"; (Potential Space Systems) "Cislunar Transportation," "Solar Transportation," "Ground Installation, Spaceports," and "Postscript, the Stars"; (Applications) "Government Research and Development," "Science," "Economics," "Space Commerce," and "Evaluation of Systems Approach."

The luncheon speakers are Rep. Joseph Karth of the House Space Science and Applications Subcommittee, who will treat "Planning the Technological (R)evolution," and Dr. Edward Welsh of the National Space Council, who will describe "Space Society, Year 2001."

The panel discussion, chaired by Rep. George Miller, chairman of the House Science and Astronautics Committee, will hear California governor Pat Brown on "Community Planning," Teledyne Systems vice president George Kozometsky on "Impact of Automation," NASA special administrative assistant Dr. Raymond Bisplinghoff on "Education," Athens (Greece) city planner Constantin Doxiades on "Future Cities," and NASA assistant administrator for technology utilization Breene Keer on "Applications in Aerospace Technology."

#### SIMMONDS PROPOSES 3-FOR-1 STOCK SPLIT

The board of directors of Simmonds Precision Products has proposed a three-for-one stock split to become effective upon filing, on or about April 13, of an amendment to Simmonds' certificate of incorporation. Simmonds stockholders will vote on the proposed split and on a proposal to increase the number of authorized shares of common stock from 1 million to 3 million at the annual meeting on April 12. The directors also declared a dividend of 30 cents per share on the common stock outstanding to be paid April 18 to stockholders of record on March 18.

#### ESSA AWARDS INFRARED PHOTOMETER

The Environmental Science Services Administration (Weather Bureau) has awarded a contract to Perkin-Elmer for design and construction of an airborne infrared photometer for the remote measurement of cloud-top altitudes with an accuracy of a few hundred meters.

**Frederick W. Hesse II** and **Dr. Edward B. Doll** have been named senior vice presidents of TRW Systems. Doll was formerly vice president-special projects and Hesse was vice president-operations.

**David F. Riordan** has been appointed manager of public relations at Aerojet-General's Von Karman Center. Riordan formerly headed public relations for the Whittaker Corp.

**Future Space Business****ABM FACILITIES HARDENING TECHNIQUES STUDY**

The Ballistic Systems Division is funding a study of hardening techniques for advanced ballistic missile facilities. This study will provide design criteria technology for missile launch facility systems and launch control centers to withstand specified nuclear effects.

Contact: Headquarters, Ballistic Systems Division, Norton Air Force Base, Calif. 92409, Attn: BSRKC-2. Reference: RFP 04-694-66-162. Due date: Feb. 26.

**MUGU COUNTDOWN STATUS SYSTEM**

The Navy Purchasing Office is planning to contract for fabrication and delivery of the equipment required to provide a visual count status distribution system at the Point Mugu installation of the Pacific Missile Range. The equipment will satisfy Range Operations Department requirements for the distribution of countdown and countdown status information and will provide the coordination facilities required for the coordination of the Range Operations Control System, the Instrumentation Data Distribution System, the GOW-1 launching system, and the GOW-3 launching system and other Range facilities.

Contact: Officer in Charge, U.S. Navy Purchasing Office, 929 S. Broadway, P.O. Box 5090, Metropolitan Station, Los Angeles, Calif. 90055. Reference: PIN 55893A Code OS12. Due date: Mar. 4.

**MUGU RANGE OPERATIONS SUBSYSTEMS REQUIREMENT**

The Navy Purchasing Office has a requirement for the necessary services and materials to engineer and construct the subsystem interface equipment and the status and condition reporting subsystem for the Range Operations Control System (ROCS) for the Pacific Missile Range.

The interface equipment will serve to interconnect the ROCS data processing subsystem with ROCS peripheral equipment consisting of data entry, projected group display electromechanical display, status and conditioning reporting distribution, line printers and teletype equipment. Equipment interfacing with the subsystem interface equipment will be capable of interfacing with the NTDS-type computer.

Contact: Officer in Charge, U.S. Navy Purchasing Office, 929 S. Broadway, P. O. Box 5090, Metropolitan Station, Los Angeles, Calif. 90055. Reference: PIN 55844A/55929A Code OS7. Due date: Feb. 28.

**AMC FLIGHT TEST PROGRAM ITEMS SUPPORT**

The Army Missile Command is planning to award a contract to furnish plant, facilities, labor and materials necessary to provide design, fabrication, installation, checkout and maintenance of flight test program items as required. The RFQ is available only to qualified firms who now have or are willing to set up acceptable facilities within a 30-mile radius of Huntsville, Ala.

Contact: Purchasing and Contracting Office, U.S. Army Missile Support Command, U.S. Army Missile Command, Bldg. T-3152, Redstone Arsenal, Ala. Reference: RFQ DAAH0366Q0228. Due date: Mar. 11.

## DOD NEGOTIATIONS

Boeing Co.--with Army Missile Command for research for ARPA dispersed hard point defense study.

Defense Electronics--with Army Materiel Command, Redstone, for telemetry receiver and equipment for the AT Kwajalein test site.

Lockheed Aircraft Corp.--with Army Missile Command for research and development program for automatic dynamic analysis.

American Research Corp.--with Army Missile Command for assistance in preparing a methodological study for the **SAM-D** program.

Raytheon Company--with Army Missile Command for new equipment training for self-propelled **HAWK** system.

Raytheon Company--with Army Missile Command for engineering model of reliability monitoring equipment test set for the **Improved HAWK** system.

Martin-Marietta Corp.--Warner Robins Air Materiel Area for performing repair maintenance and modification on the **GSM-138** missile and related aerospace ground equipment.

Hughes Aircraft Co.--with Warner Robins Air Materiel Area for hook launcher applicable to AIM-4A/4C **BULL PUP** missile.

## NASA NEGOTIATIONS

TRW Space Systems--with Goddard for one Orbiting Geophysical Observatory (**OGO**) and associated launch support.

General Electric--with Goddard for continued study of the **NIMBUS** control subsystem.

Space General Corp.--with Goddard for acquisition of **AEROBEE 150/150A** attitude control systems and roll stabilized platforms.

Radiation Service Co.--with Goddard for operations maintenance effort for the **NIMBUS C** spacecraft.

Kaman Aircraft Co.--with Headquarters for analysis and test of synchronous vibration absorber concepts.

Philco WDL--with Ames for a preliminary analysis of Ames Research Center lunar magnetometer system.

North American Aviation, Rocketdyne Div.--with Marshall for system and dynamics investigation of an aerospike nozzle in an advanced cryogenic engine.

North American Aviation, Rocketdyne Div.--with Marshall for continuation of analytical and experimental studies of advanced liquid oxygen/liquid hydrogen propulsion systems.