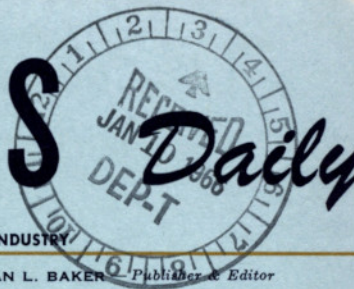


SPACE BUSINESS



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BSD TO SEEK SPACE CHAFF DISPENSING SYSTEM. The Air Force Ballistic Systems Division has issued requests for proposals to several firms for the development of a system(s) which could dispense radar cluttering and decoying chaff in the exoatmospheric (space) regions, thereby providing an anti-anti-missile missile defense/offense system as an improvement to penetration and weapons effect.

On December 27 BSD issued RFPs for the EXO-PAC (EXO-atmospheric-Penetration Aids deployment Concept program), seeking the development of more advanced methods of utilizing and deploying penetration aids for our ballistic missile systems (SPACE Daily, Dec. 7). In addition, on December 23, BSD issued RFPs to more than 40 companies for the initiation of the ENDO-PAC (ENDO-atmospheric - Penetration Aids deployment Concept) program, a program that would include the design, development and test of atmospheric decoys (SPACE Daily, Dec. 1). Supplementing this is BSD's wind tunnel and radar cross section decoy measurements program (SPACE Daily, Nov. 17).

The companies receiving the RFPs for the EXO-PAC chaff dispensing system include: Aerojet-General, Aeronutronic, American Machine & Foundry, American Science & Engineering, Atlantic Research-Applied Science, Autonetics, Avco, Bendix, Bell Aerosystems, Boeing, Chrysler, Conductron, Cornell Aeronautical Lab., Cosmic, Inc., DEMAC Mfg., Douglas, Electronic Specialty, FMC, GCA, General American Transportation, General Dynamics, General Electric, Goodyear Aerospace, Grumman, Honeywell, Hughes, IIT Research, Lear Siegler, Lesonna Moos, Ling-Temco-Vought, Lockheed M&S, Lundy Electronics, M B Associates, Martin, Melpar, McDonnell, National Engineering, Northrop Nortronics, Owens-Corning Fiberglass, RCA Defense Electronics, Raytheon, Fairchild-Republic, Sequential Electronic, TRW Systems, Univ. of Mich., United Aircraft, Western Electric, and Westinghouse.

HUGHES/SPERRY AWARDED PDP FOR RESER. Sperry Gyroscope of Sperry Rand and Hughes Ground Systems Group have been awarded Program Definition Phase (PDP) study contracts for the Re-Entry System Evaluation Radar (RESER) program. Hughes has received an Army contract for \$400,000 while Sperry holds a similar one for \$385,000.

BENDIX TO STUDY AIR FORCE AIR TRAFFIC SATELLITE. The Bendix Radio Division of Baltimore has been awarded a \$237,346 contract for a feasibility investigation of a teletype communication system which could be employed for space-air traffic control. The contract includes the study of a VHF system for communication via a synchronous satellite.

The Leader in Missile/Space Reporting

NASA LAYS EARTH-SPACE SURVEY PROGRAM PLANS. The Natural Resources Program (SPACE Daily, Jan. 4) within the Communications and Navigation Division of the Office of Space Sciences and Applications was established to investigate the implications of remote sensing techniques to surveys of Earth resources. The techniques are confined to the remote sensing from Earth orbit and it is planned to extend the development of the program to the manned **APOLLO** Applications (**AA**) program.

Four major areas of remote sensing will be investigated by the Natural Resources program: oceanography (SPACE Daily, Jan. 4) and marine technology; agricultural and forestry; hydrology and geology; and geography and cartography. Included within the latter area will be included surveys of "natural cultural resources," i.e., surveying the various effects man has had on his environment, such as man-made lakes, dams, roadways, highways and other artificial changes.

MARINER 67/69 MANAGERS SELECTED. The NASA-JPL management teams responsible for the successes of the **MARINER IV** and the **RANGER** have been designated as top leadership for the **MARINER 67** and **MARINER 69** missions (SPACE Daily, Dec. 23).

The **MARINER 67** flight to Venus will be directed by Glenn Reiff, NASA-Washington program manager, and Dan Scheidemann, NASA-JPL project manager. The Venus flight is scheduled to take place at the next Venus opportunity during a month-long period beginning in June 1967. The **MARINER 69** flight to Mars will be directed by Newton Cunningham, NASA-Washington program manager and Harris M. Schurmeir, NASA-JPL project manager. Reiff and Schneidermann were responsible for the previous **MARINER** program while Cunningham and Schurmeir directed the **RANGER** program.

LOCKHEED JOINS REUSEABLE SPACE TRANSPORT STUDY. NASA-Marshall has picked Lockheed-California as a second contractor on the manned reusable space transportation system study (SPACE Daily, April 3 & May 14, '64). Martin-Denver was awarded a \$51,000 pact from Marshall last month (SPACE Daily, Dec. 13) for an evaluation and comparison study of launch modes for reusable launch vehicles.

The nine-month, \$237,000 Lockheed contract calls for studies of alternate routes available for development of a reusable transport system in an incremental ("building block") fashion as an extension of presently approved launch and space vehicles. Approaches evolved during the study will be evaluated from the standpoint of system utility, development, risk and cost.

Martin's study is involved with the relative merits of the horizontal and vertical takeoff modes of launching partially or fully recoverable space vehicle systems. The study will focus on establishing the difference between the launch modes and the recommended R&D programs, rather than furnishing complete system descriptions. Lockheed and Martin were among five firms who answered NASA's April 1964 RFP for studies on the reusable space shuttle orbital transport vehicle. Boeing and North American offered bids on both the first and second stages of the space vehicle (along with Martin and Lockheed), while General Dynamics/Astronautics submitted a bid only for the second stage.

NASA SCIENCE GROUP ASKS TEN-YEAR AA LUNAR PROGRAM

The Falmouth Summer Conference on Lunar Exploration and Science has recommended a lunar program of exploration consisting of at least one and possibly two lunar missions per year and at least one manned lunar orbiter mission per year for a ten-year period following the first manned lunar landing. "Since many of the lunar surface missions will require two flights each, three to five **APOLLO/SATURN V** vehicles are required annually", the conference said.

The conference was composed of one member from each of the sub-committees of NASA's Space Science Steering Committee and numerous other scientists who had attended the National Academy of Sciences Woods Hole Summer Space Science Study. The conference established as the first priority task for **AA (APOLLO Applications)** lunar surface missions the collection of the largest possible sample of lunar materials. The second priority task was the emplacement of the Lunar Surface Experiment Package (LSEP).

NEW SATURN IMPROVEMENT STUDIES CONTRACTED

NASA-Marshall has awarded the five follow-on contracts for continued investigation of how to improve the **SATURN IB** and **SATURN V** launch vehicles (SPACE Daily, Sept. 10). The two **IB** awards--\$450,000 to Chrysler (first stage contractor) and \$116,345 to Douglas (second stage contractor)--concern six configurations and are outgrowths of similar contracts given last summer (SPACE Daily, July 8). The three **V** awards--\$370,000 to Boeing (first stage), \$329,624 to North American (second stage), and \$96,730 to Douglas (third stage)--involve eight configurations and have been under negotiation since early fall. These three also involve further definition of concepts of an intermediate vehicle (analogous to a **SATURN "III"**) (SPACE Daily, Aug. 20).

HOWICK TO DIRECT NASA TECHNOLOGY UTILIZATION

George J. Howick has been appointed director of NASA's Technology Utilization Division, succeeding Dr. Richard L. Leshner, who has been performing that position in addition to his duties as deputy assistant administrator for Technology Utilization. Howick was formerly manager of industrial technology services for the Midwest Research Institute.

HAWKER SIDDELEY CONFIRMS IKARA CONTRACT

Hawker Siddeley has formally announced its contract from the British Ministry of Aviation to supply support services for the **IKARA** anti-submarine missile Australia is providing for the Royal Navy (SPACE Daily, Dec. 6). The Navy is to use a modified version of the weapon, and Hawker Siddeley will render its services once that version has entered employment.

Maj. Gen. Osmond J. Ritland (USAF, Ret.) has joined Douglas as special assistant to C. R. Able, Group Vice President-Douglas Missile & Space Systems.

DOD SUPPLEMENTAL SET/POSSIBLE FY '67 BUDGET DELAY HIT

President Johnson will shortly submit to Congress a supplemental request of \$13 billion to support the war in Vietnam. The basic appropriation for DOD this year was \$48.1 billion.

Meanwhile, indications that the President would delay submitting the FY '67 annual budget beyond the January 25 legal deadline drew GOP criticism. Sen. Leverett Saltonstall (R-Mass.), ranking Republican on the Senate Appropriations Committee, said that the work of Congress in appropriating money to operate government agencies will be delayed if Johnson does not submit his budget on time.

Saltonstall's warning followed an earlier charge by Rep. Frank T. Bow (R-Ohio), ranking GOP member of the House Appropriations Committee, that the Administration had no business considering a delay in budget submittal. He added that the Administration was trying to ballyhoo the public into believing that all budget increases will be due to the expanded war effort.

"We have had the Viet Nam war with us for quite a long time and surely the Administration's military experts have long since made their decisions with respect to the build-up in defense spending.

"Last January... the Administration proposed spending \$99.7 billion in fiscal 1966 but it has since drastically revised that estimate upwards to a level of \$105-\$107 billion. Only about one-half of this increase can be attributed to the escalation in defense spending occasioned by the war in Viet Nam. The other half represents increases in nondefense spending and it is in this area where the Administration must propose cut-backs in spending. The failure of White House and Administration sources to indicate a willingness to curtail the Great Society spending programs is an alarming situation which must be altered either by the President or by Congress."

GEMINI V RESULTS TO BE REPORTED TODAY

NASA will present today the scientific results from the eight-day **GEMINI V** flight launched last August 21.

Astronauts Lt. Col. L. Gordon Cooper, Jr. and Commander Charles Conrad, Jr. performed a number of scientific experiments during the long-duration mission on behalf of various scientific investigators. With Robert O. Piland of NASA-Houston as Chairman, the following scientific investigators will report data obtained: Dr. E. P. Ney, zodiacal light photography; Dr. P. Lowman, synoptic terrain photography; K. M. Nagler, synoptic weather photography; Dr. F. Saiedy, cloud top spectrometer; Dr. S. Duntley, visual acuity and astronaut visibility; Dr. L. Dietlein, cardiovascular conditioning, in-flight exerciser, in-flight phonocardiogram; Dr. P. Mack, bone demineralization; Capt. A. Graybiel, human otolith function; Capt. B. Brentnall, celestial radiometry and space object radiometry. The scientific investigators for the **GEMINI III** and **IV** flights have previously presented their results at a symposium on October 18 and 19.

William O. Davies has been appointed manager of the Plasma and Electron Physics Section at IIT Research Institute. Davies will be responsible for research in the development of plasma diagnostics, including spectroscopic and laser techniques.

NEW OV PROGRAM BEGUN/CHANGES MADE IN OTHERS (SPECIAL REPORT)

The three **OV** (Orbital Vehicle) satellite programs of the Air Force Office of Aerospace Research (SPACE Daily, Aug. 6 and Nov. 22) have now been joined by a fourth, and the launch schedules for those three have been modified.

OV4 presently embraces two Raytheon satellites, each of which is designed to subdivide in orbit to become, in effect, two satellites to test satellite-to-satellite communications. One of the subsatellites is a transmitter, and the other is a receiver, and once in orbit, they will separate and slowly drift apart to permit broadcasting between them at ever increasing distances.

The first **OV4** payload is designated in the manner those of the other **OV** programs are designated--i.e. **OV4-1**. The subsatellites are designated with a letter to identify their respective functions: **OV4-1T** (Transmitter) and **OV4-1R** (Receiver). (In other words, **OV4-1** equals **-1T** and **-1R**.) **OV4-1**, backed up by **-2**, will ride the seventh **TITAN III-C**, which is tentatively scheduled for launch next October to test the **MOL** (Manned Orbiting Laboratory) heat shield. The satellite will be ejected as a secondary payload from the **MOL** mockup tankage into a low-altitude orbit.

OV1-4/-5 Postponed Until February 23

The **OV1** program, which thus far is the only one of the four to realize a successful shot (SPACE Daily, Oct. 6), has on tap three twin-payload launches--**OV1-4/-5**, **-7/-8**, and **-9/-10**--and one single-payload launch, **OV1-6S**. The first of those three is the next and is now set for February 23 from Vandenberg with an **ATLAS** vehicle. It was originally scheduled for the 13th of this month (SPACE Daily, Nov. 22), but problems with the payload's propulsion module brought a hold until the 20th (SPACE Daily, Dec. 23). The new delay has been caused by troubles with two of **OV-4**'s Air Force biological experiments.

OV1-6 was not intended to have a mission of its own but to serve instead as a backup for its brothers. Now, however, a special use has been found for it, and it will be launched on the seventh **TITAN III-C** along with **OV4-1** next October. Since it will not have a propulsion module, it is being designated **OV1-6S** (Satellite structure). It too will be a secondary payload.

The launch of **OV1-7/-8** was originally planned for next April (SPACE Daily, Aug. 6), then put off to June (SPACE Daily, Nov. 22), and is now set for July. The launch of **-9/-10** was envisioned for October, but the preparation of **OV1-6S** and **OV4-1** is being given priority, so **-9/-10** will be orbited in November.

OV2 In Abeyance

The **OV2** program is temporarily over, having been thwarted by hard luck. **OV2-1** was aboard the second **TITAN III-C**, which exploded; **OV2-2** never left the design stage; **OV2-3** was aboard the third **III-C**, which malfunctioned; and **OV2-4** also never became a fabricated unit. The Air Force is hopeful of reviving the program with **-5**, which is presently being discussed with **OV2** contractor Northrop (SPACE Daily, Dec. 21).

First OV3 Shot Due In Early April

The first of the six **OV3** launches was initially scheduled to be that of **OV3-1** this month (SPACE Daily, Aug. 6), then was changed to that of **-4** in March, with **-1** to go in April (SPACE Daily, Nov. 22). Now, **-4** has been pushed back to June (when **-5** is also scheduled), and **-1** has been set for early April--possibly on the 3rd.

NASA AWARDS \$1.2 MILLION IN GRANTS

NASA has awarded \$1,188,008 in grants and contracts to 15 universities, colleges and private institutions for: multidisciplinary research in theoretical biology, \$100,000 to State University of New York; theoretical research in astrophysics, \$70,000 to Columbia University; microbiological and chemical studies of planetary soils, \$75,000 to the University of Rochester; a new study of infrared absorption and low-angle x-ray scattering of tektites, \$13,400 to Howard University; theoretical investigations in structural mechanics, \$48,072 to Harvard College; a new study of methods for improving the minimum bit rate in long-range phase-coherent communications, \$7,182 to Yale; a new study of meteorological measurement techniques up to 100 kilometers, \$92,727 to the University of Utah; the development of improved means of scientific ballooning and conduct of scientific balloon flights, \$250,000 to University Corporation for Atmospheric Research; interdisciplinary studies of the effects of the space environment on biological systems, \$40,000 to Oklahoma City University.

Also a new study of observations of lunar phenomena \$13,681, and a study of thin film vacuum deposited junctions, \$40,104, both to the University of Virginia; a study of traverse instabilities of magnetically self-focusing streams in plasmas, \$17,474 to North Carolina State University; a new study of remote multi-spectral sensing in agriculture, \$224,998 to Purdue University; a study of stochastic models for multi-dimensional, multi-valued relations, \$29,040, and a study of the magnetic and molecular proportion of selected compounds using neutron diffraction techniques, \$46,363, both to Kent State University; a study of selected radiation and propagation problems related to antennas and probes in magneto-ionic media, \$45,000 to the University of Illinois; and a study of the electrophysiological correlates of vigilance and learning, including consideration of periodic phenomena related to the adaption of humans to monotonous environments, \$74,967 to Stanford University.

DIECO TO HOLD LOS ANGELES MEETING

The Department of Defense Item Entry Control Office (DIECO) has been scheduled to describe its program at a meeting in Los Angeles, January 13. The meeting, which is being sponsored by the National Security Industrial Association (NSIA), will cover DIECO's mission of providing an orderly method for preventing unnecessary new items from entering the DOD supply system.

The session will be opened by R. D. Donnell, chairman of NSIA's Spares Provisioning Technical Panel. Donnell will be followed by Paul H. Riley, deputy assistant secretary of defense for installations and logistics, who will speak on the problems which brought about activation of the office. Other speakers scheduled to address the one-day session are Brig. Gen. William L. Hamrick, USAF, executive director, technical and logistics services, Defense Supply Agency; Capt. V. C. Bertelsen, USN, Director of DIECO; and Francis L. Kueht, Defense Supply Agency.

William R. Wilson, director of Lockheed's Washington, D. C., operations, has been elected vice president in charge of public relations. Wilson succeeds John E. Canaday who is retiring after 27 years with Lockheed.

DOD NEGOTIATIONS

Science & Engineering, Inc.--with Air Force Special Weapons Center for a continuation of fabrication of instrumentation buoy systems.

Applied Theory, Inc.--with Air Force Special Weapons Center for a contract for development and application of numerical methods for the prediction of free field ground motion.

Boeing Co.--with Navy Purchasing Office for guided missile test sets.

Hycon Mfg.--with Navy Purchasing Office for guided missile test sets.

Martin-Marietta Corp.--with Army Missile Command for research and development for **PERSHING** ground support equipment.

Marquardt Corp.--with Arnold Engineering Development Center for advanced propulsion test facility research.

Western Electric Co.--with Army Missile Command for installation of improved modification kits and ATBM kits.

Thiokol Chemical Corp., Reaction Motors Div.--with Air Force Flight Test Center for additional effort in vacuum hypervelocity investigation.

Martin-Marietta Corp.--with Army Missile Command to develop and design components of the **PERSHING 1B** missile system.

NASA NEGOTIATIONS

Battelle Memorial Institute--with Washington for a continuation of planning research in the area of launch vehicles and propulsion programs.

DOD CONTRACTS**Army**

LTV, Michigan Division--\$1,957,656 modification to a contract for industrial services and documentation for the **LANCE** missile.

Sperry Rand Research Center, Sperry Rand Corp.--\$107,000 for investigations of high power beam-plasma interactions.

Spectra-Physics, Inc.--\$74,781 for 12 months of research and development of "ion laser device."

PBR Engineers & Associates--\$59,842 for design of lunar excursion module activation.

MORE

DOD CONTRACTS-Contd.

Army

The Johns Hopkins University Applied Physics Laboratory--\$4,903,155 for increased level of effort from **BUMBLEBEE** tasks.

U. S. Steel Corp.--\$1,945,000 for facilities in support of Mk 82 low drag bomb bodies.

Westinghouse Electric Co.--\$206,342 for **POSEIDON** Phase 1-C standby engineering.

Massachusetts Institute of Technology--\$450,000 for Phase 1-C effort for **POSEIDON** guidance system P.D.P.

Sanders Associates, Inc.--\$59,000 for antenna for **SHRIKE** missile.

Lockheed Missiles and Space Co.--\$59,484 for development of procedures for the analysis of a missile during an R&D test program.

Thiokol Chemical Corp., Huntsville Div.--\$99,773 for a study in fast burning rate rocket propellant research.

Navy

Guenther Mfg. Co.--\$85,544 for **SHRIKE** motor.

Lockheed Propulsion Co.--\$199,950 for pulse solid motors.

Murray & Tregurtha Inv.--\$147,614 for station keeping units.

Hercules Powder Co.--\$618,000 for R&D to evaluate new high energy ingredients in solid propellant formulations.

Air Force

Stanford Research Institute--\$75,470 for research on response of burning propellant surface to erosive transients.

Martin-Marietta Corp., Rias Div.--\$49,902 for research on theoretical and quantum, chemistry of boron beryllium and aluminum compounds.

Thiokol Chemical Corp.--\$2,000,000 initial increment to a fixed price contract for production of solid rocket motors.

Thiokol Chemical Corp., Elkton Div.--\$184,083 for Iroquois rocket motors.

Brunswick Corp., Defense Products Div.--\$70,831 for supersonic rain erosion resistant coating materials investigation.