

# SPACE BUSINESS *Daily*

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Monday, December 13, 1965

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**ANTI-ARM DECOY CONTRACT TO ITT.** Gilfillan of ITT has been awarded an eight-month contract to study the design feasibility of an anti-Anti-Radiation Missile (ARM) decoy. The contract is valued at \$50,000. The program was initiated earlier this year (SPACE Daily, May 4). In addition to Gilfillan, the AMC has contracted with Philco's Aeronutronic division for the research, design, and development of a surface-to-air missile decoy countermeasure system (SPACE Daily, May 5).

**MARTIN TO STUDY REUSABLE SPACE PLANE TRANSPORT.** NASA-Marshall has issued Martin-Denver a \$51,000 contract for an evaluation and comparison study of reusable space plane passenger transport methods of launching. The design study program for the reusable space transport concept was initiated early last year (SPACE Daily, April 3 & May 14).

**IN-SPACE STRUCTURES TO BE STUDIED BY ASTRO.** Two contracts, each about \$100,000, have been awarded to Astro Research Corporation by NASA-WOO for the study and design development of large in-space structures. One contract is for the development of the design for the antenna to be used by large orbiting radio astronomy spacecraft while the other is a study of advanced structural concepts for space application.

**COSMOS 99 IN ORBIT.** Friday the Soviet Union launched COSMOS 99 into a 123.65/198.84-mile, 65-degree, 89.6-minute orbit from Baykonur-Karsakpay. This is a manned inclination orbit. COSMOS 98 was launched on November 27.

**RUSSIA SAYS IT WILL NOT PUT WEAPONS IN SPACE.** Soviet Ambassador Anatoly F. Dobrynin has orally replied to the State Department's formal query as to whether or not the Soviet Union will abide by the 1963 UN resolution against space weapons (SPACE Daily, Nov. 19) by declaring that the USSR has and will continue to abide by the declaration.

**\$5 BILLION NASA BUDGET FOR FY '67 SEEN (A Continued Analysis)--II.**  
The Bureau of the Budget has pared almost \$150 million from the Administration's  
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\$5.25 billion limitation guideline for the NASA's FY '67 budget request, adhering to the trend forecast earlier by SPACE Daily (Sept. 24). The budget which will go to Congress in January still has as its focal point the \$5.25 billion. The money that will be appropriated by Congress has as its lower limit an amount that ranges downward from the budget currently approved by the Bureau of the Budget (about \$5.1 billion) and our earliest polled estimate of about \$5 billion.

There are many reasons why the Administration and many members of Congress can be expected to vote to hold the budget at or above the \$5 billion level, not the least of which is the psychological image which seeks to avoid an appearance of a space recession of the Kennedy Space Mandate of 1961. However, President Johnson will not let up in his demands for a greater "Great Society" and the fulfillment of the Vietnam War. There is a gathering of legislative forces which, while they can be expected to support the President's demands for the Vietnam War, are beginning to grumble about the possibilities of continuing the space program's "high rate" of spending when more is demanded for the nation's welfare programs.

NASA, which went before the Bureau of the Budget this year with its three unofficial and flexible budget programs of about \$5.8 billion, \$5.55 billion and \$5.25 billion, seeking to justify the highest first, is now defending its demands for the "mean" budget. There is not much chance that the Bureau of the Budget will come anywhere near the NASA request. It has already cut in half more than \$400 million request for the AA (APOLLO Applications) program (SPACE Daily, Sept. 24). It has again put the most advanced "insurance" programs into inaction (such as the M-1, SPACE Daily, Dec. 7). It is waving the others (260, SNAP-8, the nuclear rocket program, SPACE Daily, Nov. 24) before NASA as candidates for the axe.

It is expected that the Bureau of the Budget will approve a NASA request lying between \$5.18 and \$5.22 billion. The trend is for BOB to approve the upper of these two amounts. With the request before them, Congress, continuing with the trend, could be expected to appropriate from \$5.12 billion down to \$5.08 billion. If however, the pressures of the Vietnam War and the government welfare and assistance programs have their effect, then a \$5 billion figure could cease to remain a sanctuary for the National Space Program.

This past year has seen another setting of the stage for this continued paling of the nation's space determination. This time it was the Senate Space Committee's hearings on post-APOLLO plans which had its curtain dropped with a resounding roar of declarations that major post-APOLLO missions such as manned Mars expeditions or base building on the Moon were not serious enough to worry this decade of planners (SPACE Daily, Aug. 25 & 31). The data from MARINER IV put another crimp into a major Mars program. It postponed the flight of VOYAGER and has allowed the Bureau of the Budget to put it into what has come to be the well-known classification of the second-year-on-approval status and because of this it will probably be asked to go through FY '67 with from \$100 to \$150 million.

The urgency of the game has not diminished. James Webb could still tell you that the vigorous program needed for passing up the Soviet Union and staying ahead in a more or less relaxed fashion still needs an annual outlay in excess of \$6 billion. Because the Administration does not believe this, NASA has had to stake its continuity

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of expanded leadership on a "make-do" and stretched-to-the-limit plan for exploitation of the **APOLLO**. The paradox is that members of Congress who have set the stage for a postponement of vigorous **APOLLO** descendants are aware and leery of the dead-end nature of most of the **APOLLO** Applications program just as are space officials from the NASA inner planning offices (SPACE Daily, May 5 & 6). With only \$200 million even the **AA** program will be short-changed as a vigorous competitor.

Unless the atmosphere begins to be revitalized or a new champion is born, those drastic estimates of a space budget that would drop to \$2 and \$3 billion annually in the hiatus between **APOLLO** and the next new major challenge will not be so far-fetched. While the Soviet Union seems to have learned their lesson well regarding the psychological moment to spring their newest spectaculars some of us are becoming more lackadaisical and less impressed with the impact of the Soviet advances in space technology. Others, unfortunately saturated with misinformation from far less than analytical and technical observers, too quickly equate our space efforts into superiority.

At this moment **GEMINI** is proving the capabilities of our space leaders, NASA, industry and government, and by now it may have demonstrated the attainment of space technology that will serve to shorten the road to whatever program of the future we wish to endorse.

Forgotten for the moment, or else not grasped, is the knowledge that the flights of **GEMINI** can be likened to the barnstorming days of aviation when a few tried to sell the opportunities of the new technology to our nation. Unfortunately, too many construe this present space barnstorming as the demonstration of full capacity so that instead of **GEMINI** providing the prod or the incentive for accelerated efforts, to some it is the signal to rejoice and relax. The Soviet **GEMINIs** on the other hand give a mountain of evidence of being an integral part of a multiplying whole, almost a logarithmic expression of national support.

Historically speaking, the true measure of our space champions will be measured not by their pioneering efforts but by their continued dedication and support until they have done all they can do and are replaced by others just as dedicated. To design, to dedicate and to legislate is useless unless those actions are followed by a strong parental hand. The late Dr. Hugh Dryden recently sounded the warning that: "The decisions which confront us today are those which will determine whether this kind of history (the delay to go beyond Project **MERCURY**) will repeat itself a few years hence and whether we will once again experience a bitter awakening to the fact that others have seized the initiative in the more advanced space missions of the future." James Webb, administering the space program for President Johnson, who provided the initial legislation leadership for our space efforts, also warned last week (SPACE Daily, Dec. 10) that: "History should have taught us that plans for the future should not be drawn by a timid hand."

**NIGERIA JOINS COMSAT.** The Federal Republic of Nigeria has become the 47th member of the international consortium for which ComSat acts as representative and systems manager.

**COMSAT CONTRACTS WITH UK GPO FOR SPACECOM STUDIES.** ComSat has awarded three study contracts to Britain's General Post Office to study, in cooperation with five companies, various aspects of space communications technology. The contracts total \$240,000 and call for six-month research efforts. The companies are General Electric, Marconi, Mullard, Plessey, and Standard Telephone Labs.

**"BIG THREE" COMSAT RACE ABOUT TO END.** After about 14 months of studies and evaluations, ComSat has made its choice from among Hughes, TRW, and RCA of the contractor to supply the advanced communications satellite for the Corporation's master commercial system (SPACE Daily, Oct. 28). The decision was expected this month (SPACE Daily, Mar. 1, p. 5) and is now due to be announced, since the Interim Committee that represents the international consortium ComSat is agent for met last week to consider the Corporation's proposed selection.

Hughes, holder of ComSat's **EARLY BIRD** and **BLUE BIRD** satellite contracts, has the advantage afforded by those contracts, but ComSat may choose to limit its involvement with Hughes to present commitments and spread its procurement to include a second source. The satellite to be built will be able to orbit at medium or synchronous altitudes (SPACE Daily, Apr. 28 and Aug. 18).

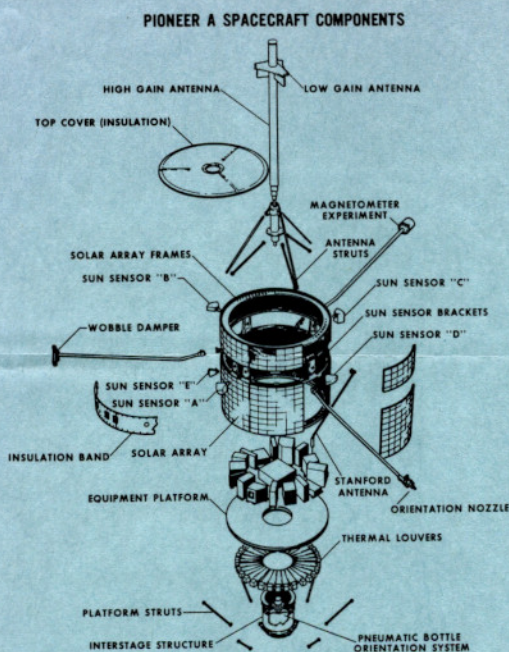
**NEXT THREE TITANS TO CARRY IDCSP/GGTS.** The fourth, fifth, and sixth Air Force **TITAN III-C** launch vehicles will each carry eight **IDCSP** (Initial Defense Communications Satellite Project) satellites plus a **GGTS** (Gravity Gradient Test Satellite). **GGTS**, developed by General Electric, uses a two-axis gravity gradient system and will allow the Air Force to experiment with such a stabilization technique for possible employment on later payloads.

The eight **IDCSP** craft will be ejected from the **III-C**'s Transtage in the same fashion as their two forerunners, **LES III** and **IV**, are to be ejected next week from **III-C-3**'s Transtage (Friday's SPACE Daily). The orbits will be near-synchronous (18,200 nautical miles) to permit some drift in the satellites' positions (at synchronous heights, the drift is minimal). The **GGTS**s will orbit at the same altitude.

The fourth **III-C** shot will probably come in February, with the following two at six-week intervals. **III-C-3**, set to go December 21, will carry besides the two **LES** craft-**OV2-3**, an Air Force package for solar studies (SPACE Daily, Aug. 6 and Nov. 22), and **OSCAR IV**, the fourth Orbital Satellite Carrying Amateur Radio, which is financed and fabricated by the radio "ham" group Project **OSCAR** Inc. of Foothill College at Los Altos Hills, California.

**WEATHER BUOY ROCKET TESTED.** Space Defense Corporation has tested out its new concept for a weather buoy rocket (**WEBROCK**) under Office of Naval Research contract at the University of Michigan's Keweenaw Point sounding rocket range. The new rockets are designed to be fired automatically from buoys floating in the ocean. They would rise to 100,000 feet radioing weather data to remote stations.

## PIONEER VI SET FOR WEDNESDAY LAUNCH



**PIONEER A**, which if successfully launched will become **PIONEER VI**, the first of the new series of spacecraft to investigate interplanetary phenomena in from the Earth's orbit towards the Sun and out from the Earth's orbit away from the Sun, is scheduled for launch from Cape Kennedy aboard a Thrust-Augmented Improved **THOR DELTA** on December 15.

Although **PIONEER A** is the first of a new type of spacecraft, the new series has the same objective as the earlier five **PIONEERS** cancelled in 1960 (SPACE Daily, Dec. 6). **PIONEER A** is designed to go into an orbit around the Sun between the orbits of Earth and Venus with its closest approach to the Sun at about 77 million miles. Its orbital period around the Sun will be 310 days. The 140-pound spacecraft carries 35 pounds of scientific experiments, is 35 inches long and 37 inches in diameter. It will be powered by solar cells, spin-stabilized, and will have the

highest data-return of any interplanetary spacecraft.

The six experiments aboard the **PIONEER** are designed to return data on: the turbulent solar wind stream; the magnetic fields of the Sun; the boundary region between the solar atmosphere and interstellar space; the physics of the Sun itself; the basic interactions of high-energy charged particles and magnetic fields.

The **PIONEER** was produced by TRW Systems Group under the management of NASA-Ames.

## ESRO LAUNCHES CENTAURE

The European Space Research Organization (ESRO) has launched the first French **CENTAURE** sounding rocket from Italy's Salto di Quirra range, Sardinia. ESRO said the rocket performed as planned, but its experiment package did not work and has not been recovered. The launch was the first part of a dual launch (night and day at ten-hour intervals). The sounding rocket test was designed to study the percentage of neutral particles in the high atmosphere, between 62 and 105 miles.

ESRO plans to launch several hundred Sud-Aviation **CENTAURE**s and British Aircraft **SKYLARK**s within the next year from Salto di Quirra, the Kiruna range, Sweden, and other locations.

## UTC BUILDS BORON ROCKET CASE

United Technology Center has fabricated an oval, six-inch-diameter rocket motor case from a material made of boron filament and epoxy resins. The case required about 40 miles of the filament to produce. United Research Labs began manufacturing boron filament earlier this fall (SPACE Daily, Oct. 29).

### DOD COMPETITIVE PROCUREMENT CLIMBS TO 43 PER CENT

Competitive procurements accounted for 43.4 per cent of total dollars awarded by the Defense Department in FY '65, while competitive procurements by formal advertising reached an all-time high of 17.6 per cent.

DOD credited "a substantial part" of the increase in competitive procurements to use of two-step formal advertising, which accounted for 15.1 per cent (\$726 million) of all formal advertising awards in FY '65. Three years ago the two-step method was utilized only 2.4 per cent of the time in formal advertising.

(The two-step formal advertising procedure (adopted in FY '61) requires reasonable assurance of enough qualified firms interested in bidding to insure adequate price competition. In the first step, technical proposals are submitted by the bidders to determine technical competence, and in the second step, prices are submitted by qualified firms.)

Experience with the two-step method, DOD said, shows that it "frequently can be used in cases where procurements otherwise would have to be negotiated." However, the procedure does not overcome all obstacles to increasing the formal advertising percentage of procurements, DOD noted. (i.e.: set-asides for small business and labor surplus areas--which exceed \$1 billion each fiscal year. Also contracts on advanced weapons systems, and instances where a high security classification is imposed to avoid disclosure of developments.)

". . . The Department of Defense will continue its efforts to increase the extent of formal advertising awards, particularly by increased use of the two-step method of advertising."

### KAVANAGH APPOINTED AEC REACTOR MANAGER

Dr. George M. Kavanagh, Atomic Energy Commission deputy assistant general manager for R&D, has been appointed assistant general manager for reactors.

In his new position, which is effective January 3, Kavanagh will be responsible for the activities of three AEC divisions--Reactor Development and Technology, Naval Reactors, and Space Nuclear Systems. The latter division is headed by Harold Finger and is one half of the AEC/NASA Space Nuclear Propulsion Office (SNPO) also managed by Finger. The NASA part of SNPO is the Nuclear Systems & Space Power Division (director: Finger).

Kavanagh, who has been with AEC since 1952, succeeds Dr. John A. Swartout, who will become general manager-research with Union Carbide in New York City.

### RUSSELL TO PROBE BOMBER CUT

Chairman Richard Russell (D-Ga.) of the Senate Armed Services Committee has promised that when Congress convenes it will take "a long and searching look" at Defense Secretary McNamara's plans to reduce SAC's bomber force (SPACE Daily, December 9).

**Richard T. Petruzzelli** has been appointed as operations manager for the newly formed military systems facility of Fairchild Camera's Space and Defense Systems division in Clifton, N.J. Petruzzelli was previously director of engineering for the Fairchild Instrumentation division.

### KING NEW LOCKHEED M&S VICE PRESIDENT

Ralph D. King, previously assistant general manager for Military Programs of Lockheed Missiles & Space's Space Systems Division, has been appointed a vice president of the company and assistant general manager of Space Systems succeeding vice president Gladyn H. Putt, who has moved to the Research and Development Division as vice president and assistant general manager.

### NORTHROP FORMS PALLET GROUP

Northrop Space Laboratories has formed a new project organization under the direction of George Muinch to conduct a four-month design study of the **APOLLO** Experiments Pallet. Dr. M. J. Gould will be project scientist for the new unit.

Northrop, Lockheed Missiles & Space, McDonnell and Martin-Denver were selected last month by NASA to conduct separate and concurrent studies on the experiments pallet (SPACE Daily, November 23). Under \$375,000 fixed-price contracts, the four firms will design and develop detailed specifications and produce mock-ups of a pallet for the **APOLLO** Service Module. After review and evaluation of the design studies, NASA will select one of the firms to develop the experiments pallet's flight hardware under a cost-plus-incentive-fee contract.

The pallet will house scientific, technological and engineering experiments to be carried on missions of up to two weeks beginning in 1968. Space in the pallet will be arranged in shelved compartments for various types of experiments. 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. (See SPACE Daily, September 9.)

Subcontractors proposed by NSL are Radiation Inc., for data management and communications systems, and Ball Brothers for the pointing control system (SPACE Daily, December 9).

### ITEK TO EXPAND HEADQUARTERS FACILITY

Itek Corp., with headquarters in Lexington, Mass., will construct a \$4 million optics research and development building which will adjoin its present headquarters facility. Construction of the 88,000-square-foot building will begin early next year with completion scheduled for early 1967.

Itek, which has divisions in Palo Alto, Calif., Rochester, N.Y., and Burlington, and Waltham, Mass., has four major areas of operation: optical systems and reconnaissance, commercial reproduction equipment and supplies, photo-optical storage and computing, and graphic data processing.

### AVCO/RAD SPACE PROJECTS DIRECTORS NAMED

Edward Offenhartz, previously director-Avco/RAD's Manned Space Vehicles programs, has been named deputy director of Operational Space Systems, and John A. Dodge has been appointed director of the **APOLLO** Project Office. Dodge, who retired from the Air Force in 1961 with the rank of colonel, served at one time as military assistant to the assistant director of Defense Research and Engineering.

### 210 FB-111s ORDERED

Defense Secretary McNamara has secured President Johnson's approval to go ahead with the purchase of 210 new FB-111 fighter bombers from General Dynamics. The FB-111, a modified version of the F-111, is designed to replace the B-52 and B-58 bombers ordered out of existence by McNamara earlier last week (SPACE Daily, December 9).

Costing \$1.7 billion, the FB-111's will come into use by 1968 and will all be fully operational by 1971. Development and production of the new aircraft will be included in the FY '67 budget. Ordering of the new weapons system means that in 1971 the United States will have about 465 bombers (255 B-52's). Present total is now 680 (80 B-58's and 600 B-52's).

The Defense Secretary said: "Today we have a bomber force four times as large as the Soviet Union and I believe we will have a comparable advantage through the seventies."

### DIETZ TO HEAD VON KARMAN INSTITUTE

Robert O. Dietz, technical advisor to the deputy chief of staff (Plans and Technology) at Arnold Engineering Development Center, has accepted a three-year appointment as director of the von Karman Institute for Fluid Dynamics at Rhode-Saint-Genese, Belgium. Dietz will return to AEDC at the end of his appointment.

### THE LOG OF GEMINI VII

December 10, 1965--9:00 AM EST: Mission Control gives the go-ahead for 103 orbits, carrying **GEMINI VII** into another day toward its 14-day goal.

10:00 AM--Weather Bureau gives OK to flight of **GEMINI VI**, scheduled for 9:54 AM Sunday (Dec. 12).

12:51 PM--Spacecraft begins its 90th orbit. The laser communications experiment (SPACE Daily, December 8) has been postponed again because of weather and equipment difficulties.

During 92nd Orbit--Astronaut Borman and Flight Director Christopher Kraft argue over use of the flight suit. Ground control orders Borman to doff his space suit, and Lovell to get suited. Borman asks a delay until after Sunday's rendezvous. Kraft repeats the directions. Answers Borman: "If you want us to do it, we'll do it. I just wanted you to understand our position."

### COMMERCE RELEASES SPACE REPORTS

The Commerce Department's Clearinghouse for Federal Scientific and Technical Information at Springfield, Virginia, now has available two new sets of reports on space communications R&D: "Space Communications: Theory and Applications: (Vol. I, Modulation and Channels--N-65-27821, \$2.50; Vol. II, Coding and Detection Theory--N-65-29846, \$2.25; Vol. III, Information Processing and Advanced Techniques--N-65-31136, \$2.50; and Vol. IV, Satellite and Deep Space Applications--N-65-32187, \$1.75) and "Transmission Loss Predictions for Tropospheric Communication Circuits" (Vol. I--AD-619-721, \$1; Vol. II--AD-619-722, \$1).



## DOD NEGOTIATIONS

Lockheed Missiles and Space Co.--with Bureau of Naval Weapons for support of United Kingdom missile surface support equipment.

Raytheon Co.--with Bureau of Naval Weapons for **SPARROW III** missile system engineering and liaison work.

Motorola Inc.--with U. S. Navy Purchasing Office for the continued development of a slant-range measuring fuze for surface-approach weapons.

Philco Corp.--with Army Electronics to continue work in the field of satellite communications.

Keithley Instruments Inc., Cleveland, Ohio--with Office of Naval Research for further research leading to the design, development, and providing of prototype models of electrometer circuitry in integration in launching of satellite experiments.

Lockheed Missiles and Space Co., Missile Systems Division--with Office of Naval Research for a Phase I study leading to the updating of information relating to a global integrated ocean surveillance system.

## NASA NEGOTIATIONS

Planning Research Corp.--with Washington to provide for increased effort in the study of the Geodetic Satellite.

Lockheed Missiles and Space Co.--with Washington for a rocket study of x-rays from the non-flaring Sun.

General Electric Co.--with Goddard for modification to the gravity gradient stabilization system on the Applications Technology Satellite (**ATS**) for the addition of a hysteresis damper.

Bechtel Corp., Cocoa Beach, Fla.--with Kennedy for additional man hours covering craft labor categories for continuation of third year's performance of launch support services.

Philco Corp., Western Development Laboratories--with Washington for research on fan beam navigation satellite antenna and detection problems.

## DOD CONTRACTS

## Army

W. R. Grimshaw Construction Co., Houston, Tex.--\$1.8 million (NASA funds) for construction of the technical services facility at NASA-Houston.

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## DOD CONTRACTS - Contd.

## Army - Contd.

Douglas Aircraft Co.--\$2.5 million initial increment to a \$3.1 million contract for work on a classified research project for the Advanced Research Projects Agency.

Raytheon Co.--\$1.6 million for the development of self-propelled **HAWK** modification to **HAWK** missile systems.

Douglas Aircraft Co.--\$62,622 for additional research and development study on participation in tapestry.

Avco Corp., Avco-Everett Research Laboratory--\$2 million for research in re-entry physics.

Brown Engineering Co.--\$99,175 for laboratory support for **DC-MAW** system in areas of engineering, design, development, and feasibility.

## Navy

Massachusetts Institute of Technology--\$3 million for tactical engineering support for **POLARIS** guidance system.

Goodyear Aerospace Corp.--\$55,761 for study of simulation of targetry interpretation from space.

## Air Force

Thiokol Chemical Corp.--\$1 million increment to an existing contract for research and development of Stage I motors for **MINUTEMAN** Wing VI.

Ford Motor Co.--\$1.1 million increment to a previously awarded contract for test and evaluation of missile fuzing and arming systems.

General Electric Co., Missile and Space Division--\$99,500 for MHD augmented shock tunnel study.

The Boeing Co., Aero-Space Division--\$245,000 for study of transient radiation effects on microelectronics.

Martin-Marietta Corp., Denver, Colo.--\$58,600 for **TITAN II** design study for trajectory accuracy prediction system.

The Ralph M. Parsons Co.--\$278,475 for **TITAN II** RPIE maintenance and updating of technical data support for Project **YARD FENCE**.

Avco Corp., Wilmington, Mass.--\$49,984 for re-entry vehicle program updating specifications of program definition phase Mark 17.

American Science and Engineering, Cambridge, Mass.--\$86,065 for research directed toward the analysis of satellite and rocket data.