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AA NOT APPROVED (THE NASA BUDGET HIGHLIGHTS). The new AA (APOLLO Applications) program, presented with such fanfare to the Senate Space Committee last summer, was reduced and will be deferred for hardware development another year with only further design definition this fiscal year. This action marked an official Administration deferral of post-APOLLO funding. (See yesterday's SPACE Daily.) One of the few exceptions is the AA ATOM (APOLLO Telescope Orientation Mount) device which will be developed by Ball Brothers to carry some of the experiments from the cancelled AOSO project (SPACE Daily, Jan. 24) and, the SNAP-8 nuclear electric auxiliary power system, which was cancelled last year by NASA but received a Congressional approval anyway (SPACE Daily, Jun. 14). It will be increased slightly over last year's figure thereby remaining alive if not going into full development.

GEMINI. The GEMINI program, in the process of being phased out as the program ends, was cut by \$186 million. The advanced planning budget, which has remained level for several years to prepare for post-AA activities, was also cut by \$2 million (apparent cut of \$15 million in FY '66 is actually a transfer in line items).

APOLLO. The GEMINI reduction of \$188 million was balanced by an increase in APOLLO of \$7 million resulting in an overall manned space flight reduction of only \$181 million. NASA Deputy Administrator Robert C. Seamans, Jr. indicated that the APOLLO budget had been cut earlier by the Bureau of the Budget by \$200 million but this amount had been restored when MSF officials stated that they could not accomplish the manned lunar landing in this decade with \$200 million less. The main increases in APOLLO went for spacecraft and SATURN V launch vehicles and should represent the last year of increases in this line item.

AA (APOLLO Applications). The AA program, which would normally have moved to a separate line item this year, will remain a part of APOLLO Mission Support with a figure of \$44.8 million. This figure includes \$42 million for AA, mostly to pay for payload integration and definition, mission planning, and improving or extending the capability of flight hardware. It is \$6 million less than was requested under this line item last year for AA. However, some \$25 million of the OSSA budget will pay for investigation and definition of AA experiments, with other expenditures in supporting R&D and in the OART budget bringing the total expenditure for AA up to \$100 million.

This \$100 million is somewhat less than the overall total requested for AA last year. Seamans admitted that NASA had requested some \$200 million so that AA could move into hardware development in July as planned, but this amount was cut in half by the BOB (SPACE Daily, Dec. 13).

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The Leader in Missile/Space Reporting

The actual figure of \$100 million is not completely accurate since an undisclosed portion of the funds appropriated for FY 1966 will be carried over to make up part of the \$100 million.

This reduced **AA** funding will provide for continuing definition of **AA** integration and experiments but only "a few" items will be carried into hardware development. In addition to the **ATOM** the only other item identified for development was the **AA** Experiments Pallet to go into one sector of the Service Module. Seamans explained that this budget would allow NASA to "preserve the option" to go ahead with the **AA** Follow-on Missions (SPACE Daily, Jan. 20), but admitted that "some of the options" for these missions will no longer be open and that "we will not have as extensive experiments for these flights" as had been planned. The **AA** funds will also allow NASA to prepare for some of the **AA** Alternate Missions which were planned to begin in 1968 (SPACE Daily, Jan. 20).

SATURN IB. The \$216 million for **SATURN IB** development and procurement includes about \$42 million for procurement of long lead time items needed for additional vehicles over and above the presently approved 12 vehicle program. These will be the vehicles to be utilized for the **AA** program if and when it is funded.

CENTAUR. **CENTAUR** development is dropping from \$51 million to \$29.7 million, reflecting the flight test program which is almost completed. The **CENTAUR** has already demonstrated its single-burn capability and in the two development flights left, will demonstrate its two-burn capability in a flight scheduled for February or March (SPACE Daily, Dec. 17).

Space Sciences. The Space Science program, cut by \$121.8 million, was most seriously hurt by the projects which were canceled in their earliest form. Most of the cut came from initiating no new work while allowing the natural turndown of other project costs as they passed the funding peak to accomplish the budget cut.

This process of attrition, for example, resulted in natural cuts in the **OGO** project, the **RANGER**, the **SURVEYOR**, the **LUNAR ORBITER**, the **PIONEER**, and the **CENTAUR** development program. Projects not initiated as expected or cancelled in the early stages of development include the **AOSO** project, the **VOYAGER**, and the Advanced **SURVEYOR**.

SURVEYOR. The **SURVEYOR** funds provide for three spacecraft in addition to the seven engineering test models presently contracted for (SPACE Daily, Dec. 16 & 20) to make the full 10 vehicle approved program. The three additional spacecraft would be operational models, weighing about 2500 pounds rather than the lighter 2150 pound engineering model (SPACE Daily, Jan. 17).

MARINER. The **MARINER** project is up \$8.1 million, reflecting the launch of the **MARINER IV** backup to **VENUS** in 1966 and the two new **MARINERs** to be launched toward Mars in 1969 to replace the deferred **VOYAGER** (SPACE Daily, Dec. 23). The cost of the 1966 Venus launch is estimated at around \$30 million and the 1969 Mars launch at around \$100 million.

In FY 1966, \$6 million will be expanded for Mars and \$9 million for the Venus launch with \$3 million to pay for modification to the **MARINER IV** back-up.

MORE

In FY 1967 \$12 million is requested to pay for the Venus shot and \$13 million for Mars. This level of funding will provide for only some additional instrumentation on the **MARINER IV** type spacecraft for the Mars shot. Although the **ATLAS CENTAUR** launch vehicle will have a greater capability than that, the funding level will not permit going to a more advanced spacecraft which could go into Martian orbit.

TIROS. The **TOSS** (TIROS Operational Satellite System) funding has been transferred to Weather Bureau so no more **TIROS** flights are included in the NASA budget, however ground development work will continue to be funded with the \$2.6 million in this year's budget.

NIMBUS. The \$3.4 million increase in the **NIMBUS** program will provide for the purchase of **NIMBUS D**, the third in the experimental meteorological satellite program.

OAD. The **OAD** project, just reaching its funding peak, shows an increase of \$4.6 million for FY '67.

Direct Broadcast Satellite. No funds are included in the Communications and Applications Technology Satellite program for developmental hardware in FY 1967 on the Direct Broadcast Satellite (**DBS**) (SPACE Daily, Nov. 8 & 15).

ATS. The OSA budget includes funds for five Applications Technology Satellites (**ATS**), one which will be gravity gradient stabilized at around 6000 miles, four in synchronous orbit, two of these being spin stabilized and two gravity gradient stabilized. The **ATS** funds were reduced this year by \$6.2 million but some funds are included in the \$5.5 million for meteorological flight experiments. The **ATS** is the last communications satellite to receive funding under NASA.

All other line items are reduced this year, even the Data Analysis program for Physics and Astronomy, which was the only new program to be initiated in the past two fiscal years.

Advanced Research. The Office of Advanced Research budget suffered a \$10.2 million drop this year which spread across the board generally. The major cuts were in **PEGASUS**, now completed, the **SERT** program and the **M-1** engine program which was previously cancelled by NASA (SPACE Daily, Nov. 15, 18 & Dec. 7). Both the Electronics Systems program and the Human Factors Systems received increases.

SNAP-8. The **SNAP-8** project received a \$1.5 million increase over last year although greatly reduced from the \$19.1 million level in FY 1965. The **SNAP-8** was cancelled by NASA, then reinstated by the Congress, and now the decision has been made that it "will be continued."

260-Inch. The large solid rocket project cancelled by NASA last year but reinstated by Congress also will continue at a low level of funding (\$3.5 million) which will pay for continued research but will not fund the firing of a full-length motor. NASA now intends to "keep the option open" of performing the full length firing in FY 1968.

FIRE. Project **FIRE** is completely phased out in FY 1967: NASA indicates that because of this research we can now develop heat shields to survive up to 37,000 feet per second and are pushing up to 57,000 feet per second in research.

MORE

Space Shuttles. The \$1 million provided under lifting body flight and landing tests will fund the **HL-10** and **M-2** lifting body flight tests which are scheduled to commence during this quarter (SPACE Daily, Dec. 17). Some of the funds scheduled for aeronautics research will also be used in this program.

SCOUT Re-entry. Further heat shield materials re-entry flight tests will be conducted (SPACE Daily, Dec. 15 & 20) with the \$1.8 million increase. NASA also may start tests of lifting body configurations flown on the **SCOUT** re-entry flights.

T&DA. The Tracking and Data funds have increased this year by \$48.3 million to reflect the completion of the **APOLLO** tracking facilities and the three injection and insertion ships as well as the two re-entry ships plus the **APOLLO** instrumentation aircraft.

Construction of Facilities. The funding increased this year by \$42 million which is mostly reflected in \$37.8 million of new construction for the **APOLLO** Launch Complex 39 at Cape Kennedy, \$13.8 million for a new Lunar Sample Receiving Laboratory at NASA-Houston and building construction at NASA-Cambridge and NASA-Lewis.

Complex 39. The construction activity at Complex 39, the **SATURN V** launch pad, will increase over the next 12 months building up to a total of around 20,000 contract personnel.

Lunar Sample Lab. A \$9.1 million item will provide for construction for the Lunar Sample Receiving Laboratory. Working with the National Academy of Sciences and the Public Health Service, procedures have been worked out for complete quarantine of the astronauts, the spacecraft, and the lunar samples at this facility until it is certain they are not contaminated in some manner.

Administrative Operations. This budget item increased by \$415,000 to reflect slightly increased personnel, the government pay raise, and higher research contracts.

NSF FY '67 BUDGET AT \$2.7 MILLION. Space and space-related funding of the National Science Foundation will total about \$2.7 million for fiscal 1967. NSF said about 90 percent of its space monies will be used for: 1) Astronomical studies via **AEROBEE** sounding rockets at the Space Division of the Kitt Peak National Observatory; 2) Balloon research at the National Center for Astrosphere Research, Palestine, Tex. (also supported by NASA and ONR); 3) Solar studies via a balloon-borne coronascope at Palestine; and, 4) Nebulae studies via a balloon-borne stratascope, conducted by Princeton University. Additional space monies are spent on various grants.

LOCKHEED RECEIVES SBA AEROSPACE AWARD. Lockheed has received a special aerospace award from the Small Business Administration for "outstanding leadership in developing design and procurement programs directed at the maximum utilization of small business firms in meeting the needs of the nation's defense and space programs." Lockheed was one of the first major contractors to enlist in the SBA's voluntary "extra effort" subcontracting program. Under the program firms enlist the services of the Small Business Administration in locating qualified small businesses interested in subcontracting work.

AEC SPACE FUNDING DOWN FOR FY '67. The two major Atomic Energy Commission space programs (in conjunction with NASA)--**ROVER** and **SNAP**--have been cut from FY '66.

Project **ROVER**, funded at \$84.1 million by AEC in FY '66, has been budgeted at \$79.1 million for FY '67. The **NERVA** technology project has been cut \$3 million, while work on tungsten reactors (\$3.2 million in FY '66) has been shelved. Graphite reactor development (**PHOEBUS**) has been budgeted for a \$1.2 million increase to \$29.2 million. In the area of isotopic thruster technology (**POODLE**), which is separate from **ROVER**, funding has been increased from \$300,000 to \$600,000.

SNAP funding has been reduced from \$48.67 million in FY '66 to \$39.85 million in FY '67. **SNAP 10A** (\$3.4 million in FY '66) will not be funded. **SNAP 8** has been cut \$3.25 million to \$5 million. Work in the area of radioisotope power systems has been funded at \$14.25 million, a \$2.7 million increase over FY '66.

The missile propulsion reactor program, Project **PLUTO**, which was shelved last fiscal year after funding of \$3.25 million in FY '65, is still out of the AEC budget. Project **KIWI** (under **ROVER**), also cancelled in FY '66 after funding in FY '65 (\$2.79 million), is similarly absent from FY '67 AEC budgeting. (See detailed breakdown on page 165.)

DOD FY '67 BUDGET FOR RESEARCH/DEVELOPMENT/TEST/EVALUATION.

The Defense Department's FY '67 request to Congress for research, development, test, and evaluation funds totals \$6,913,909,000 (Total Obligational Authority) (New Obligational Authority requested is \$6,905,000,000: yesterday's SPACE Daily, P. 149). The following amounts, taken from that figure and given with their FY '65 and '66 counterparts, are for space and space-related activities:

Activity	TOA: 1965	1966	1967
Missiles/Related Equipment	\$1,976,976,000	\$1,997,685,000	\$2,333,603,000
Astronautics/Related Equipment	907,811,000	1,035,809,000	843,483,000
Military Sciences	621,189,000	607,529,000	625,053,000
Program Management /Support	453,646,000	464,092,000	452,675,000
Other Equipment	784,715,000	893,284,000	856,529,000

Missiles. Work here (see yesterday's SPACE Daily, p. 141) will focus on the "major and high priority effort" to develop an advanced **NIKE X** system. Operational **MINUTEMAN** and **POLARIS** systems will be improved. **MINUTEMAN III** will be developed. **POSEIDON**, **SPARROW**, and **SAM D** will be furthered.

Astronautics. **MOL**, **TITAN III-C**, and the **IDCSP** and **ADCSP** (Initial and Advanced respectively Defense Communications Satellite Projects) will dominate work here. Also scheduled are "improvements in satellite tracking capabilities" and support research and development in bioastronautics, secondary power sources, guidance, re-entry, and propulsion.

Military Sciences. Among the areas to be investigated here are physical properties of materials, rocket fuel performance, electronics microminiaturization, meteorology, radio astronomy, and oceanography. The Naval Research Lab, Cambridge Research Lab, and Rand Corporation receive major support here.

MORE

Other Equipment. Areas covered here include combat surveillance, tactical and strategic communications, mapping and geodesy, and missile detection. The Army Electronic R&D Lab, Mitre Corporation, and Lincoln Labs are supported here.

Direct TOA by Service for Programmed R/D/T/E Activities (FY '65, '66 & '67).

AIR FORCE	TOA: 1965	1966	1967
Missiles	\$800,674,000	\$798,831,000	\$830,500,000
Astronautics	861,806,000	988,150,000	814,100,000
Sciences	161,440,000	158,800,000	164,400,000
Management	301,808,000	301,123,000	278,100,000
Other	247,540,000	277,244,000	289,100,000
ARMY			
Missiles	660,159,000	681,382,000	718,700,000
Astronautics	15,431,000	22,972,000	13,200,000
Sciences	167,965,000	154,800,000	161,500,000
Management	72,372,000	74,283,000	77,800,000
Other	228,047,000	242,453,000	266,600,000
NAVY			
Missiles	385,948,000	388,772,000	665,403,000
Astronautics	27,574,000	21,187,000	12,683,000
Sciences	183,286,000	186,017,000	191,769,000
Management	68,500,000	77,615,000	86,229,000
Other	67,314,000	78,281,000	86,929,000
DEFENSE AGENCIES			
Missiles	130,195,000	119,700,000	119,000,000
Astronautics	3,000,000	3,500,000	3,500,000
Sciences	108,498,000	103,064,000	107,384,000
Management	10,966,000	11,071,000	10,546,000
Other	241,814,000	242,722,000	213,900,000

MCNAMARA PLANS CONTINUED COST REDUCTIONS. Defense Secretary McNamara told Congress yesterday that the Defense Department plans to continue its cost reduction program under original planning despite the "extraordinary requirements for Vietnam." Said McNamara: "I still believe the goal established last July, \$6.1 billion in savings to be realized in 1969 and every year thereafter, can still be achieved."

ITT SEEKING MP SATELLITE COMPONENTS. ITT Federal Laboratories is requesting proposals for components for communications telemetry and command subsystem for a global communications satellite. ITT is one of 22 bidders for ComSat's multi-purpose satellite contract (SPACE Daily, June 3).

CONGRESS QUESTIONS SEPARATE APOLLO COMSAT SYSTEM

Rep. Chet Holifield's (D-Calif.) Military Operations Subcommittee of the Committee on Government Operations wants to know why it is necessary for NASA to spend approximately \$80 million over a 10-year period (or around \$29 million every three years) for the Communications Satellite Corporation's **BLUE BIRD** (303 A) satellite system to fill in the gaps in the global communications network that will support the **APOLLO** flights when it has communications satellites of its own. The agency has not slowed the pace of research and development of its own communications satellite systems, maintaining that it cannot, now that the groundwork has been laid, depend upon ComSat alone for the continuing development of technology for future communications and navigation satellite systems (SPACE Daily, Nov. 12).

NASA Deputy Administrator Robert C. Seamans, Jr. told the subcommittee that the system possibly can be used also for civilian communications needs of other federal agencies and for the **APOLLO** Applications program. Rep. Frank Horton (R-N.Y.) countered this argument by pointing out that the Department which has the largest requirement for a communications satellite system, the Department of Defense, has already turned down ComSat's system as being unsuited to its unique needs and is presently in the process of establishing its own systems--the **IDCSP** (Initial Defense Communications Satellite Project) and the **ADCSP** (Advanced Defense Communications Satellite Project) (see story below.)

The system, which was initially requested by the DOD's National Communications System (SPACE Daily, Aug. 2), has been approved by ComSat's Interim Committee (SPACE Daily, Nov. 3) and the FCC (SPACE Daily, Nov. 12). The first two satellites will be launched late this summer. (SPACE Daily, Jan. 10).

The subcommittee will meet again today and tomorrow on DOD and NASA ground operations in support of missile and space flight programs.

ADCSP TO BE REFERRED TO "EXPERTS" BEFORE CDP

The six proposals for the DOD's Advanced Defense Communications Satellite Project (SPACE Daily, June 16 & Nov. 22) will be referred "to a group of selected expert consultants to obtain their comments and recommendations," according to Lieutenant General Alfred Starbird, director of the Defense Communications Agency, which is handling the **ADCSP**. The referral will be made after the present "evaluation" (SPACE Daily, Nov. 22) is over. Once the consultants have reported to him, Starbird will "submit my recommendations to the Secretary of Defense through the Joint Chiefs of Staff." The CDP (Contract Definition Phase) for the **ADCSP** is scheduled to begin in the latter half of this year.

ADCSP Delay and ISPO Contract Confirmed

The General also has pointed out that the next **TITAN III-C** with its **IDCSP** (Initial Defense Communications Satellite Project) payloads has been "delayed a few months" as reported (SPACE Daily, Jan. 14 & 19) and that the Navy "is proceeding with the procurement and installation of three shipboard terminals" for support of ComSat's **APOLLO** satellite system as reported (SPACE Daily, Dec. 1 & Jan. 20).

Philip Breitmeyer has been named to the newly created position of director of Itek's RS Business Planning group. Breitmeyer was previously executive vice president and general manager of Continental Graphics of Los Angeles.

PRIME GROUND TESTING UNDERWAY AT CONVAIR. Ground testing of the Martin **SV-5D** space shuttle, the vehicle for the AF **PRIME** (Precision Recovery Including Maneuvering Entry) program is underway at the Pt. Loma test site of General Dynamics-Convaire. Four **SV-5D** vehicles are to be launched from Vandenberg beginning late next year. The Convaire **ATLAS SLV-3S** will be the booster.

PRIME is Phase II of the AFSC's **START** (Spacecraft Technology and Advanced Re-entry Tests) program, and is planned to provide design data for possible manned space vehicles of the future. Manned tests under **START** will follow **PRIME**, and will be known as **PILOT** (SPACE Daily, Sept. 20). **ASSET** was Phase I of **START**.

The **PRIME** program tests to be conducted through next September at Pt. Loma include: structural tests of the adapter section; match-mate tests of program hardware; re-entry vehicle release system tests; and tests of the jettison system for the fairings.

The unmanned **PRIME** vehicle will weigh about 900 pounds and be about 8 feet long and about 4 feet wide across its vertical stabilizer tips. Martin was named prime contractor on the program two and a half years ago (SPACE Daily, July 23, '64). Sub-contractors on the program were named last fall (SPACE Daily, Oct. 28 and Nov. 1).

CHINA COULD DEVELOP ICBMS BY MID-70S

Secretary of Defense McNamara has informed the House Armed Services Subcommittee that China "could possibly develop and deploy a small force of ICBMs by the mid to the latter part of 1970." McNamara had earlier stated that the Chinese could develop an MRBM force within about one year (SPACE Daily, Dec. 16).

The Chinese, McNamara said might find it attractive to develop even a token force of ICBMs as a highly visible threat to the U.S. Such a force "revives" the possibility that some limited anti-missile and fallout shelter system might be a worthwhile investment, he commented. McNamara listed an investment of \$8 to \$10 billion over five years as sufficient to build a practical defense against "small unsophisticated attacks." He assured the Subcommittee, however, that U.S. strategic missiles could wreck "assured destruction" on Russia and China simultaneously, without the help of manned bombers, even after a surprise attack on this country."

McNamara was appearing before the subcommittee to defend his decision to retire 425 B-52s and B-58s to be replaced by 210 FB-111s. Congressman F. Edward Hebert (D-La.), Chairman of the Subcommittee, charged that "unless these new 210 aircraft possess capabilities appreciably greater than the 425 aircraft eliminated from the inventory there must inevitably result a drastic reduction in our country's strategic bomber capability." McNamara replied that "our primary weapon for deterring a nuclear attack or a large conventional attack against this country continues and will be the missile." Nevertheless, he indicated that the U.S. will maintain an effective bomber capacity "indefinitely" in order to force Russia to commit a large amount of its defense resources to this area.

Leo J. Kramer has been promoted to manager of the Magnetics Operation of Raytheon's Microwave & Power Tube Division. Kramer was previously program manager for the Surface Radar and Navigation Operations.

"GRAVITY ASSIST" MAY EXPAND SPACE CAPABILITIES/MISSIONS

A study being conducted for NASA's Lunar and Planetary Programs Office indicates that the capabilities of deep space probes may be considerably improved by sending them through the gravitational field of another planet.

Known as "gravity assisted trajectories," the technique can make certain space missions feasible which otherwise would not be practical until advanced propulsion systems are perfected, the NASA contractor, IIT Research Institute has reported to the Agency.

Mercury Mission

While Jupiter, with its large mass, is the most effective planet from the standpoint of gravity assist performance, other planets may be used. For example, a gravity assist from Venus on a 115-day Mercury mission launched by an **ATLAS/CENTAUR** would permit a payload increase from 400 to 1200 pounds. However a gravity assist from Venus or Mars to a Jupiter target will provide little or no improvement over direct flight.

Post-Jupiter Objectives

Post-Jupiter objectives, using the gravity assist, "are almost limitless." They extend from trajectories which will return a spacecraft to Earth to trajectories which carry the spacecraft completely out of the solar system. For example: (1) Flight to Uranus with Jupiter assist could be made by lightweight spacecraft powered by a **SATURN IB-CENTAUR** in 4.75 years, about half the time needed by a probe without the assist; (2) An Earth-Jupiter-Saturn gravity assist mission is "particularly inviting." In addition to the gravity assist benefits, certain physical similarities between Jupiter and Saturn permit a single instrument package to gather scientific data on both planets in a double fly-by.

All of the approaching dates for gravity assisted outer planet missions occur between 1977 and 1985, a time when they may be most needed, IIT emphasized.

SECOND STAGE FOR FRANCE-ISRAELI MD-620

The new surface to surface missile, identified as the **MD-620**, that France is building for Israel (*SPACE Daily* Jan. 11) will have a second stage, but it will not be a **TOPAZE** as some reports have indicated. As earlier reported, Avions Marcel Dassault (formerly known as Generale Aeronautique Marcel Dassault) is prime contractor, with Nord and probably Sereb as subcontractors. The missile is identified as **MISSILE ESPAGNOL**, or the Spanish Missile.

YOUNG/COLLINS SELECTED FOR GEMINI X

NASA has selected Commander John W. Young, the co-pilot of **GEMINI III**, as the command pilot for the **GEMINI X** mission scheduled for this summer. Major Michael Collins will serve as co-pilot for the mission.

Back-up astronauts will be Commander James A. Lovell, Jr., co-pilot on **GEMINI VII**, as command pilot and Major Edwin E. Aldrin, Jr. as co-pilot.

The flight plan will include a rendezvous and docking experiment and probably maneuvers with the **AGENA** target vehicle, and is dependent on the success of **GEMINI VIII** and **IX**.

BATTELLE TO STUDY MISSILE TANKS FOR NAA

Battelle Memorial Institute's Columbus Labs has begun an 18-month research program for North American-Los Angeles to further the fabrication technology of missile fuel tanks. Battelle developed the roll-diffusion-bonding technique of tank construction. NAA is building 10-foot-diameter, two-compartment titanium tanks for the Air Force's Rocket Propulsion Lab at Edwards AFB.

The research program involves: 1) determination of time and temperature processing requirements, 2) analysis of pack-design effects, 3) investigation of possible contamination problems, and 4) investigation of interdiffusion between iron matrix inserts and titanium structures. The Columbus chief of nonferrous metallurgy research is Russell Ogden.

NASA GETS SEA LAUNCHER FOR ITALIAN SCOUT SHOT

The Astronautics Division of Ling-Temco-Vought has turned over to NASA the 85-foot-tall launch tower the Italians will use to launch a **SCOUT** vehicle from an ocean deployed platform at the Equator this year under Project San Marco. NASA will now deliver the structure to the Italian Commission for Space Research. Similar towers are in use at Vandenberg AFB and NASA-Wallops.

The sea platform is 300 feet long and 90 feet wide and will hold, besides the tower, an assembly/service shelter wherein the **SCOUT** can be mated and checked on its transporter before being moved to the tower, which can rotate from horizontal to vertical. The shelter is 120 feet long and the transporter 81 feet. Extendable legs will support the platform, which will be located in the Indian Ocean off Africa, and a smaller platform will be positioned about 1500 feet away to accommodate the blockhouse, power supplies, and tracking systems. Underwater cables will connect the two platforms.

UTC TO STUDY FUEL FLAMES FOR INFRARED OUTPUT

Eglin AFB has awarded United Technology Center a \$94,400, nine-month contract for a survey of rocket propellant flame characteristics to determine their infrared output. Also to be studied are the applications of hybrid rocket technology to controllable infrared flares for air targets (towed type). Over 50 test firings will be made at UTC's Sunnyvale, Calif., site.

MARTIN TO PRODUCE WALLEYE FOR NAVY

Martin-Orlando will build qualification and operational models of the **WALLEYE** air-to-surface missile for the Navy under a \$12 million contract. The 1100-pound, nonmotored weapon was developed by the Naval Ordnance Test Station in California and the Naval Avionics Facility in Indiana. Martin was one of three PDP contractors. Its **WALLEYE** program director is Leander Schaidt.

Dr. George G. Chapin has been appointed director of the systems analysis laboratory for Litton Industries' Data Systems Division.

THE DEFICIT QUESTION

Rep. Richard Roudebush (R-Ind.), a member of the House Space Committee, has joined Sen. John Williams (R-Del.) in accusing the Administration of misrepresenting the estimated national deficit for fiscal 1967 (SPACE Daily, Jan. 19). Roudebush backs up Williams' charge that the deficit will be nearer \$10 billion instead of the \$1.8 billion the Administration claims.

Said Roudebush: "This discrepancy results from the President's treatment as regular income such items as accelerated tax payments, the profit from lowering the content of silver coins, sale of copper from the stockpile, and similar items. Johnson does not include in his calculation the request that the reduction in telephone and auto taxes be restored. Tax acceleration and the profit on the new silver coins alone will amount to \$7.4 billion in fiscal 1967. These are nonrecurring revenue items and added to the President's estimated deficit, will produce a more accurate picture of the deficit which will run in the neighborhood of \$10 billion."

COMPUTER SCIENCES OFFERS TO ACQUIRE GEONAUTICS

Computer Sciences Corp. (El Segundo, Calif.) has offered to acquire all the outstanding stock of Geonautics Inc. of Washington, D. C., for up to 11,314 shares of Computer Sciences common stock. The offer expires February 10 and is contingent upon acceptance by holders of 90 per cent of Geonautics shares outstanding.

Geonautics, which provides professional and technical services in the fields of geodesy, oceanography, navigational systems and astronomy, will be operated as a part of System Sciences Corp., a wholly-owned subsidiary of CSC.

MAXSON EARNINGS UP 28 PER CENT FOR FIRST QUARTER

Maxson Electronics had sales of \$5,368,718 for the first quarter of the current fiscal year, compared with \$3,004,648 for the corresponding period last year. Earnings rose 28 per cent from \$95,826 to \$123,545.

SEVEN BID ON CELESTIAL SENSOR TEST FACILITY

Seven firms--American Science & Engineering, AC Electronics, Booz-Allen Applied Research, Franklin Institute Research Laboratories, Honeywell, Kollsman Instrument, and United Aircraft Corporate Systems Center--have submitted bids to NASA-Cambridge for the identification of equipment necessary to provide a ground-based testing capability for the evaluation and qualification of present and projected sensors employed in the key elements of celestial navigation and guidance system. Thirteen firms were on the Center's original source list of CoF 66-9 (SPACE Daily, Dec. 22).

Robert A. Nelson has been appointed manager of corporate systems for Litton Industries. Nelson was previously general manager of Litton's Triad Transformer division.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
CONSTRUCTION OF FACILITIES
BUDGET PLAN

(In thousands of dollars)

<u>INSTALLATIONS</u>	<u>FY 1965</u>	<u>FY 1966</u>	<u>FY 1967</u>
<u>MANNED SPACE FLIGHT</u>			
John F. Kennedy Space Center, NASA	88,618	7,782	37,876
Manned Spacecraft Center	23,907	4,180	13,800
Marshall Space Flight Center	12,454	2,309	581
Michoud Assembly Facility	6,450	285	700
Mississippi Test Facility	58,891	1,910	1,700
<u>SPACE SCIENCE AND APPLICATIONS</u>			
Goddard Space Flight Center	2,314	2,400	710
Jet Propulsion Laboratory	3,582	---	350
Wallops Station	1,699	1,048	205
<u>ADVANCED RESEARCH AND TECHNOLOGY</u>			
Ames Research Center	5,668	2,749	---
Electronics Research Center	10,000	5,000	10,000
Langley Research Center	3,640	8,250	6,100
Lewis Research Center	770	867	16,000
Various Locations	33,114	20,183	6,478
Facility Planning and Design	10,000	2,624	7,000
TOTAL	<u>261,107</u>	<u>59,587</u>	<u>101,500</u>

FISCAL YEAR 1967 CONSTRUCTION OF FACILITIES PROGRAM

(In thousands of dollars)

<u>PROJECTS BY INSTALLATION</u>	
<u>JOHN F. KENNEDY SPACE CENTER, NASA</u>	<u>37,876</u>
Launch Complex 39	29,500
Modifications to Launch Complex 17	740
Modifications to Launch Complex 12	639
Extension to Central Supply Complex	600
Addition to KSC Headquarters Building	3,500
Utility Installations - MILA	2,897

MORE

FISCAL YEAR 1967 CONSTRUCTION OF FACILITIES PROGRAM-Contd

PROJECTS BY INSTALLATION-Contd

<u>GODDARD SPACE FLIGHT CENTER</u>	<u>710</u>
40-Foot Antenna Test Bed	710
<u>JET PROPULSION LABORATORY</u>	<u>350</u>
Utilities Installation	350
<u>ELECTRONICS RESEARCH CENTER</u>	<u>10,000</u>
Space Guidance/Optical Communications Special Purpose Laboratory	4,954
Qualifications and Standards/Electronics Components Special Purpose Laboratory	3,046
Center Support Facilities	2,000
<u>LANGLEY RESEARCH CENTER</u>	<u>6,100</u>
Reactive Chemical Distribution Area	1,089
V/STOL Transition Research Wind Tunnel	5,011
<u>LEWIS RESEARCH CENTER</u>	<u>16,000</u>
Expansion of Propulsion System Laboratory for Supersonic Research (Cleveland)	14,000
Installation of Equipment at the Hydrogen Heat Transfer Facility for Hypersonic Propulsion Research (Plum Brook).	2,000
<u>MANNED SPACECRAFT CENTER</u>	<u>13,800</u>
Lunar Sample Receiving Laboratory	9,100
Flight Crew Training Facility	1,100
Engineering Building	2,600
Center Support Facilities	1,000
<u>MARSHALL SPACE FLIGHT CENTER</u>	<u>581</u>
Hazardous Operations Laboratory Addition	581
<u>MICHOUD ASSEMBLY FACILITY</u>	<u>700</u>
Modification of the Chemical Waste Disposal System	700

MORE

FISCAL YEAR 1967 CONSTRUCTION OF FACILITIES PROGRAM-Contd

PROJECTS BY INSTALLATION-Contd

<u>MISSISSIPPI TEST FACILITY</u>	<u>1,700</u>
Facilities to Support S-IC and S-II Test Program	1,700
<u>WALLOPS STATION</u>	<u>205</u>
Rocket Storage Magazine	205
<u>VARIOUS LOCATIONS</u>	<u>6,478</u>
Facilities for S-IVB Stage Program, Sacramento, California	1,100
Launch Vehicle Service Tower, Western Test Range, California	2,443
AEROBEE 350 Launch Facility, White Sands, New Mexico	1,200
Spin Test Facility, Western Test Range, California	745
Water Distribution and Sewage Disposal Systems, Goldstone, California	990
<u>FACILITY PLANNING AND DESIGN</u>	<u>7,000</u>
TOTAL	<u><u>101,500</u></u>

ADMINISTRATIVE OPERATIONS BY INSTALLATION

(In thousands of dollars)

	<u>FY 1965</u>	<u>FY 1966</u>	<u>FY 1967</u>
<u>MANNED SPACE FLIGHT</u>			
John F. Kennedy Space Center, NASA	53,260	79,723	98,108
Manned Spacecraft Center	91,036	87,550	98,212
Marshall Space Flight Center	137,787	128,260	131,934
<u>SPACE SCIENCE AND APPLICATIONS</u>			
Goddard Space Flight Center	92,570	64,040	71,687
Wallops Station	10,931	9,446	10,166
<u>ADVANCED RESEARCH AND TECHNOLOGY</u>			
Ames Research Center	31,807	32,923	33,475
Electronics Research Center	3,201	6,233	15,143
Flight Research Center	10,523	9,335	9,641
Langley Research Center	58,998	63,006	62,587
Lewis Research Center	68,546	67,207	66,284
Space Nuclear Propulsion Office	1,669	1,824	1,847

MORE

ADMINISTRATIVE OPERATIONS BY INSTALLATION-Contd

SUPPORTING OPERATIONS

Western Operations Office	22,693	5,987	6,149
NASA Headquarters	<u>51,516</u>	<u>56,286</u>	<u>58,667</u>
TOTAL	<u>634,537</u>	<u>611,820</u>	<u>663,900</u>

AEC SPACE OPERATING EXPENSES

(In Thousands)

	FY 1965 <u>Actual</u>	FY 1966 <u>Estimates</u>	FY 1967 <u>Estimates to Congress</u>
<u>Space Reactor Development Program</u>			
Space Propulsion Systems			
Reactor Propulsion (ROVER)			
KIWI Project	\$ 2,791	\$ -	\$ -
NERVA Technology Project	44,734	42,500	39,500
Advanced Rocket Reactor Technology			
Graphite Reactors (PHOEBUS)	22,647	28,000	29,200
Tungsten Reactors	3,446	3,200	-
Supporting Technology	694	1,000	400
Nuclear Rocket Development Station			
Operations	<u>9,364</u>	<u>9,400</u>	<u>9,400</u>
Total ROVER	<u>\$83,676</u>	<u>\$84,100</u>	<u>\$78,500</u>
Isotopic Thruster Technology			
(POODLE)	<u>260</u>	<u>300</u>	<u>600</u>
Total Space Propulsion Systems	<u>\$83,936</u>	<u>\$84,400</u>	<u>\$79,100</u>
Missile Propulsion Reactors (Project (PLUTO)			
	3,249	-	-
Satellite and Small Power Sources (Project SNAP)			
Space Electric Power Systems			
Radioisotope Power Systems	3,300	11,515	14,250
SNAP 8	14,556	8,250	5,000
SNAP 10A	25,127	3,400	-
Other	<u>34,746</u>	<u>25,510</u>	<u>20,600</u>
Total	<u>\$77,729</u>	<u>\$48,675</u>	<u>\$39,850</u>

Frederick C. Hamburg, previously with Sperry-Rand's Ford Instrument Co., has joined the Space and Systems Division of Packard Bell Electronics. Hamburg's principal duties will include marketing and technical support of the company's meteorological systems.