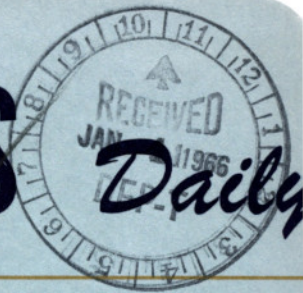


# SPACE BUSINESS



FIRST DAILY MANAGEMENT NEWS SERVICE FOR THE MISSILE / SPACE INDUSTRY

SPACE PUBLICATIONS

WASHINGTON, D. C.

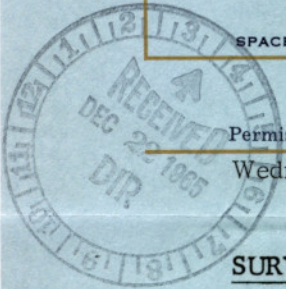
NORMAN L. BAKER — Publisher & Editor

Published five times a week by Space Publications at 1426 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. ME. 8-0500 Cable: SPACE

Wednesday, December 22, 1965

Vol. 23, No. 35



**SURVEYOR STILL DEMANDS CENTAUR SUCCESS (An Analysis).** The success of the next flight test of the **ATLAS-CENTAUR** combination in March is an absolute requirement if the **SURVEYOR** program is to get underway in May with a realistic launch capability. The successful completion of the AC-6 test provided only the capability of the **CENTAUR** to inject the **SURVEYOR** into a direct ascent trajectory to the Moon. The forthcoming test, AC-8, must prove **CENTAUR**'s parking orbit and transfer abilities, a necessity if **SURVEYOR** is to be more than a simple ballistically hurled package.

The **SURVEYOR** which NASA will attempt to land on the Moon next May will be powered by a one-burn **CENTAUR** system, i.e., only enough to send the spacecraft direct from Cape Kennedy with a minimum of trajectory correction to lunar impact. The system which would be on a par with the Soviet attempts, the two-burn mode which provides a parking orbit and more precise trajectory correction and adjustment, will not be tested until the AC-8 test in March, too late for incorporation into the first **SURVEYOR** in May. Further, until the two-burn system is proved the **SURVEYOR** is without a full-time capability for it will be almost impossible to place one on an Earth-side sunlit portion of the Moon during the winter months. The two-burn capability allows more flexible launch schedules and longer launch windows.

Another problem plaguing the **SURVEYOR** program is another instance of single pad capability. Because of this the best launch frequency the program can hope for at the present time is one flight every 60-90 days while the Soviets are capable of a launch with 30-day intervals. To complicate matters there is a shortage of launch personnel, an additional handicap for attaining the 90-day capability.

If the **SURVEYOR** program can get underway in May (the AC-8 test in March may push this first flight to June) with the launch of a spacecraft toward the Moon with the AC-10, its back-up, the AC-7, also with an engineering model **SURVEYOR**, may be sent toward the Moon by the end of September. There will then be a pause while another **CENTAUR** launching vehicle is flight tested, the AC-9, around year's end.

It is, therefore, highly unlikely that more than two **SURVEYORs** will be arced toward the Moon in 1966, both faced with the high odds which have confronted the Soviets who have what appears to be a presently superior launching system with its two pads and parking/transfer capabilities as well as a more plentiful supply of flight-ready spacecraft. Unless NASA can anticipate a vigorous step-up in all phases of the **SURVEYOR/CENTAUR** program during the next 12 months it is going to be hard to bring the full flight program to a successful conclusion sometime in 1968.

*The Leader in Missile/Space Reporting*

**JOHNSON PROPOSES NEW JOINT U.S./EUROPEAN SPACE EFFORT.**

In a toast to visiting West German Chancellor Ludwig Erhard, President Johnson proposed an American-European program to develop and launch, among others, a Sun probe and a Jupiter probe and said he will dispatch early next year a commission headed by NASA Administrator James Webb to Europe to discuss such a program. He described the proposal as "an even more ambitious plan (than the current U.S.-German effort: SPACE Daily, Aug. 20) to permit us to do together what we cannot do so well alone." He added that the two probes "stand high on the space agenda."

Asked if the proposal embraced manned as well as unmanned missions, Dr. Edward Welch of the National Space Council told SPACE Daily a joint manned effort was not now envisioned but could not be ruled out. Elaboration of the plan must await results of the commission's trip, he said, and at present only the starting phase of a joint program--i.e. only the probes--is being considered.

**The text of the President's proposal:**

"We live in a world of change. In that world, nations have much to gain from an open exchange of information--and we have much to lose by ignoring the potential contributions of other peoples.

"We have already begun a mutual adventure in space.

"Only last summer, our two governments worked out an agreement whereby we would launch a German-built satellite to probe the inner radiation belts.

"Now, we would like to discuss with you--and with others--an even more ambitious plan to permit us to do together what we cannot do so well alone. Examples would be two projects which stand high on the space agenda. Both are very demanding and both are quite complex. One would be a probe to the Sun, and another a probe to Jupiter. To cooperate on such a major endeavor would contribute vastly to our mutual knowledge and to our mutual skills.

"So, I propose, early in the year, to send a commission--headed by our able Administrator of NASA, James Webb--to consult with you and other governments of Europe wishing to participate in a joint exploration of space."

**The text of Erhard's reply:**

"You included, Mr. President, in the enumeration of subjects we discussed, cooperation in the field of space research. Of course, we, the Germans, would not like to get too close to the Sun because we wouldn't like to burn our wings, but I think such ambitious plans would serve us well because it has been my experience that when you try to achieve only little things, you are very often bound to fail, but if you have a great objective, which will fascinate the imagination of the people, then you will very often succeed, because it arouses the enthusiasm, the support and the imagination of the people."

**NASA JUPITER/SOLAR PROBES UNDER LOW LEVEL STUDY.**

Both NASA and JPL are involved in low-level advanced studies of possible future interplanetary probes to Jupiter and to the Sun. However, none of the studies have evolved into plans which could even be scheduled as advanced missions. It seems that the earliest that either a Sun or Jupiter probe program could be initiated, either as a United States program or, as President Johnson has proposed, a joint U.S.-European program, is sometime after 1970.

NASA recently signed a six month, \$100,000 contract with TRW-STL to study a high energy missions deep space planetary probe. Another six month, \$100,000 contract was also signed with General Dynamics-Fort Worth to study a Jupiter flyby mission.

Jet Propulsion Laboratory has also established a 12-man team to study the feasibility of a Jupiter mission. Discussing the reasons for the establishment of this team, NASA Administrator James E. Webb has explained, "Jupiter is a most interesting planet due to its radio emissions and its large mass which makes it the most influential (gravitationally) of all the planets in the solar system. Not the least of our considerations of Jupiter is the fact that it is the next closest planet beyond Mars: hence, placing it within reach of existing propulsion technology."

Dr. Gordon J. F. MacDonald, speaking for the Space Science Board of the National Academy of Sciences, told the Senate Space Committee earlier this year that "the major planets, particularly Jupiter and Saturn, are of great importance to our understanding of the solar system. Thus scientific considerations suggest a major program of planetary investigation in the 1970-1985 time period."

McDonald explained, however, the change of emphasis (to such a program) will require a different balance of facilities with a very much stronger emphasis on the development of scientific mission capabilities. "At present the existing manpower and facilities assigned to development of scientific lunar and planetary programs are clearly inadequate for the broadly based program discussed."

NASA has also very sketchily studied the development of interplanetary spacecraft capable of operating close to the Sun and capable of returning data from the outer reaches of the solar system. **PIONEER VI** is one of the "early" models of such a program but it will not approach any closer to the Sun than the orbit of Venus.

NASA has at least one study under contract to investigate the possibility of smaller spacecraft which could approach much closer to the Sun than **PIONEER**. It also has an extensive **OSO** (Orbiting Solar Observatory) program to study the Sun from the vicinity of the Earth but the **AOSO** (Advanced **OSO**) program just getting under way to increase our return of data from such a program has just been cancelled by NASA (SPACE Daily, Dec. 16, 20).

A group at NASA-Ames is doing some preliminary work on solar probes and MIT is engaged in the study of a concept called **SUNBLAZER**, a relatively unsophisticated "interplanetary sounding rocket". What might be the earliest forerunner of a solar probe is under study by NASA-Goddard with their Solar Monitoring Satellite (**SMS**) (SPACE Daily Apr. 29, Aug. 6).

**NAVY PICKS MOL PLANNER.** The Naval Air Development Center of Johnsville has picked the System Science Company of Falls Church, Va., for the planning of the Navy's participation in the Manned Orbiting Laboratory (**MOL**) program. A \$60,769 contract has been awarded to the company.

**Harvard W. Powell** has been appointed assistant for program operations to the president of North American Aviation. Powell will be responsible for informing the president of the condition, status and trends in selected NAA operating programs.

**JOHNSON AGREES TO GREATER NATO NUCLEAR WEAPON CONTROL.**

President Johnson and West German Chancellor Erhard have agreed to what is interpreted to be a greater NATO control of nuclear weapons in Europe. Although the joint communique from the two leaders spoke of NATO having "a greater voice," Erhard's spokesman has responded to queries for elaboration that it was self-evident that an agreement stating that NATO should have an appropriate part in nuclear defense was a referral to nuclear weapons. The spokesman said that "To defend one's self in the nuclear field, one has to have weapons."

**SEAMANS SWORN IN AS NASA DEPUTY.**

Dr. Robert C. Seamans, Jr., formerly NASA Associate Administrator, was sworn in yesterday as Deputy NASA Administrator. Seamans will continue to retain his present position as Associate Administrator (and NASA General Manager) for an indefinite period.

**COSMOS 101 ORBITED.**

The Soviet Union has launched its 101st **COSMOS** from Baykonur-Tyuratam into a 161/341-mile, 49-degree, 92.4-minute orbit. **COSMOS 100**, launched last Friday, was not the first circular orbit **COSMOS** attempt launched by the Soviet Union; neither was it the first manned inclination (65-degree) circular orbit attempt. There has been one other similar spacecraft launching by the Soviets, **COSMOS 58**, on Feb. 26, 1965, which apparently attempted to reach circular orbit but was not anywhere as close as **COSMOS 100**. **COSMOS 58** attained an orbit of 361/409 as compared to 393.5/413.3 miles for **COSMOS 100**. It is significant that the Soviets, with **COSMOS 100**, announced the attainment of "a circular orbit." In addition to **COSMOS 58** and **100**, there have been two multiple launches of unmanned satellites into 56-degree circular orbits. **COSMOS 71-75** into a perfect 342-mile orbit and **COSMOS 80-84** into a perfect 932-mile orbit.

**LOCKHEED ORGANIZES NASA R&D/AA GROUP**

A new organization designed to compete for new NASA research programs, with emphasis on **APOLLO** Applications, has been established by Lockheed Missiles & Space under the direction of Vice President Gladyn H. Putt.

All company NASA projects and proposals not involving the **AGENA** space vehicle will be moved from the Space Systems division to the Research & Development division. Putt, formerly assistant general manager of SSD, has been named assistant general manager of the R&D division to head up the non-**AGENA** NASA programs. Lockheed M&S was recently named with McDonnell, Martin and Northrop to design an experiment pallet for **APOLLO** (SPACE Daily, November 23).

The new organizational alignment, said company President L. Eugene Root, "will tie our NASA new business efforts closely with our research and development capabilities, and will allow our Space Systems division to concentrate on Air Force related business, including our NASA **AGENA** work."

Harold T. Luskin has been named assistant general manager, payload integration, **APOLLO** Applications (AA) program, in the R&D division under Putt.

Jack L. Shoenhair, as assistant general manager for NASA **AGENA** programs in the SSD, will continue to direct the division's NASA **AGENA** work.

## AEROSPACE SALES/BACKLOG UP AS SPACE/DEFENSE LEVELS

The principal opportunities for the aerospace industry in the coming years will be in "the non-space and non-defense" fields, Aerospace Industries Association President Karl G. Harr, Jr., told a Washington luncheon of the Aviation/Space Writers Association yesterday (SPACE Daily, Dec. 20).

Harr said the "aerospace mix" is moving toward less dependence on government and more toward the commercial fields. "I think this will continue," he said.

### Space/Defense Plateaus Seen

"Space business over the next couple of years will be on a plateau," Harr predicted. He said that defense sales would also reach a plateau, leveling off in 1966 at about what they are this year--which, he pointed out, is down from last year. On the other hand, commercial sales "may rise faster than we think," he said.

The AIA president praised the industry's moves into urban/social areas (See SPACE Daily, November 17), adding that the aerospace industry must be receptive to diversification ideas. He said he would be surprised if the industry turns down any new programs; on the contrary, he predicted that it would "jump at the chance" to go into new fields. Harr said the urban/social areas can be an added increment to the aerospace industry. "I think it will pay off," he said.

As for the Vietnam war, Harr said he did not think it would cause increased procurement of aerospace industry products. He said, there may be some change in the aerospace mix, however.

### Sales Reach Record/Backlog Up \$3 Billion

Sales for the United States aerospace industry amounted to \$20.9 billion in 1965, the AIA executive said, the highest in history. He predicted that industry sales would probably surpass \$22 billion in 1966.

While profits reached 3.1 per cent in 1965--"the highest in recent years"--they are still somewhat down from profits of 5.5 per cent for other manufacturing industries, Harr pointed out. Employment reached 1,190,000, a gain of 64,000 over December 1964. The backlog of orders (end of September) is \$18.6 billion, an increase of \$3 billion from a year earlier. Exports were up to \$1.4 billion, a near record, "and we estimate they will go up substantially next year."

An AIA analysis of Defense Department aerospace sales showed a marked decline in missile procurement--and missile research. Missile procurement in 1964 amounted to \$3.1 billion, while the AIA estimate for 1965 was \$2 billion, a decline of 35.5 per cent. In the RDT&E field, missiles accounted for \$2.1 billion in 1964, while the 1965 estimate was at \$1.7 billion, down 19 per cent. Comparative aircraft figures showed increases of 5.2 and 10 per cent, respectively.

**Dr. Frederick A. Muckler**, manager, Manual Control Systems Department, for Bunker-Ramo's Defense Systems Division, has been reappointed to the NASA Research Advisory Committee on Control, Guidance and Navigation for the coming fiscal year. Muckler has served on the committee since 1963.

**James D. Willson**, currently financial vice president of Tidewater Co., has been named corporate vice president-finance and chief financial officer of Northrop.

## 1965 ACTIVE YEAR FOR EIA

The Electronic Industries Association is going into its 42nd year of service by consolidating all its activities at one address--its new national headquarters building in Washington, D. C.

In cataloging its accomplishments for 1965, the association lists the culmination of its long campaign to repeal the 10 per cent excise tax on electronic consumer products. As president Harper Q. North says, "While we did benefit from the receptive attitude of the President (and we can hardly ignore its importance), the inclusion of the full 10 per cent repeal and the early effective date unquestionably resulted from our long fight against this discriminatory tax backed up by energetic staff work." In the same vein, the EIA was instrumental in persuading the Internal Revenue Service to postpone from April 1 to July 1 a proposed ruling (which never became effective) extending the excise tax to certain speakers, amplifiers, and hi-fi components.

Other EIA legislative efforts included a proposed change of the rules which enable a government contractor to obtain patent rights on his inventions under proper circumstances, testimony on the practices of the General Accounting Office, and testimony on labor legislation, particularly the President's recommendations for amendment of the Fair Labor Standards Act and the Taft-Hartley Act.

### Membership Services and Industry Representation

For the first time in its history, EIA entered into an arrangement with another organization--the National Electrical Manufacturers Association (NEMA). This cooperation enables the two associations to combine resources whenever advisable either in support of or opposition to legislation of interest to members of both groups.

Under North's leadership, programs have been started to enable the EIA to become stronger and at the same time operate more effectively and more economically. Last fall, after a period which had been characterized by a drop in membership, especially among the small companies, North appointed a Small Business Task Force, headed by Milton Friedberg of Antenna Specialists Co. to study the problem. North goes on to say that "Meanwhile, I have explored the possibilities of broadening EIA's representation of the industry through affiliation to arrangements with other trade associations. Our Organization Planning Committee, under Chairman L. Berkley Davis (General Electric Co.), has had two meetings with the Officers Committee of NEMA to discuss means of greater cooperation. The legislation services we now provide for NEMA is an out-growth of these conferences."

An example of division cooperation is the manner in which the Government Products Division and EIA's several component divisions have worked together successfully to obtain a reversal of a DOD decision to terminate bonded warehouse stocks of electronic components.

Changes in the EIA structure which took place during 1965 included the merger of the Magnetic Recording Industry Association with EIA; the formation of a Microelectronics Subdivision; the reorganization of the Marketing Services Department; and the reduction of the membership conferences from four to three, permitting better spacing of meetings.

**Joseph Gindsberg** has been appointed principal engineer for Raytheon's Missile Systems Division. Gindsberg was previously manager, microwave techniques laboratory, for Laboratory of Electronics in Boston.

### LTV AWARDED MICHLOUD COMPUTER CONTRACT

NASA will negotiate with LTV Range Systems Division for an estimated \$1.5 million cost-plus-award-fee, one-year contract to provide computer support services for the Michoud Assembly Facility.

### TITAN III-C-3 TRANSTAGE FAILS TO COMPLETE MISSION

**TITAN III-C-3**, with its payload of four satellites, lifted into a less than successful orbit yesterday when its third stage Transtage failed to fire a third time, causing the loss of one satellite and inserting the other three into a highly elongated path.

After reaching out 121 miles, the Air Force/Martin vehicle fired its Transtage engines a second time, sending the satellites out to 20,900 miles. From the apogee the Transtage was to fire again to circularize the payload path. The four satellites--**LES IV**, **OSCAR IV**, **LES III**, and **OV2-3**--were to be ejected as they came over Ecuador.

Late yesterday the Air Force had confirmed that the **TITAN III-C** had orbited three of its four payloads in the highly elliptical orbit, with one unaccounted for, after the Transtage failed to fire.

### KING TO HEAD NASA LABOR RELATIONS

R. E. King, formerly General Dynamics/Convair labor relations manager, will become Director of Labor Relations for NASA starting January 5. His job will include advising NASA management and headquarters and field installations "on the prevention of labor disputes."

### FAIRCHILD HILLER PREDICTS '66 SALES OF \$200 MILLION

Edward G. Uhl, president of Fairchild Hiller, predicts that the company, which had sales of \$69.9 million for the first nine months of this year, will hit the \$200 million mark next year. Roughly half of the record volume is expected to come from the Republic Aviation division, which was acquired by Fairchild earlier this year.

Uhl predicts a record year in spite of NASA's cancellation of Republic's Advanced Orbiting Solar Observatory (**AOSO**) (SPACE Daily, Dec. 16), which had been budgeted for \$39 million for FY '66. The Fairchild president maintains that the cancellation will have little overall effect on either sales and earnings or employment.

### FIRST INVESTMENT FUNDS ACTION AGAINST ARC SETTLED

Atlantic Research has reached a settlement with the Axe-Houghton Funds in its 1963 suit against ARC for rescission of stock transactions amounting to 94,000 shares of ARC common between 1959 and 1961 or \$2 million in damages. Under the settlement, ARC is paying Axe-Houghton \$140,000, and without admitting any liability or fact, or conceding any question of law, the parties have agreed to release each other from any claims in consideration of the payment. Axe-Houghton is the first of three investment funds, which filed suits against Atlantic Research following the SEC's 1963 stop order on registration of the company's stock, to reach agreement with the company.

### NASA-CAMBRIDGE CELESTIAL SENSOR TEST FACILITY

NASA-Cambridge has invited 13 companies to submit proposals 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 systems. The proposed contract will also result in the identification of technical requirements which are uniquely associated with the equipment such as physical space, mounting, installation, environmental control, support and maintenance, inasmuch as they influence laboratory building design.

The following firms were on the original source list for CoF 66-9: Autonetics, Barnes Engineering, Booz-Allen Applied Research, The Franklin Institute, GE, Honeywell, Hycon Manufacturing, Itek, Kollsman, J. A. Maurer Inc., TRW Systems Group, United Aircraft Corporate Systems Center, and Avco. Due date for proposals is January 17.

### 12 INVITED TO BID ON DIGITAL CIRCUIT ARRAYS

NASA-Cambridge is preparing to contract for the design and construction of digital subsystems, employing N- and P-channel (enhancement type) MOS-FETs in complementary symmetry circuits in integrated circuit arrays to perform a variety of complex functions for spacecraft data processing systems.

The following firms have been invited to bid on R&D 66-124: Autonetics, Fairchild Semiconductor, GE, General Instrument Corp., General Micro-electronics, Motorola Semiconductor Products, RCA, Sprague Electric, Sylvania Electric Products, Texas Instruments, Westinghouse and Raytheon. Due date is January 11.

### MINUTEMAN MODERNIZATION CONTRACT AWARDED

Boeing, weapon system integrator for the Air Force, has awarded a \$1.1 million contract to the FMC Corporation to fabricate and assemble the alignment and suspension systems to be used in the advanced **MINUTEMAN II** ICBM now replacing the **MINUTEMAN I** in the first five wings of the SAC missile inventory.

### PIONEER VI CONTINUES

**PIONEER VI**, launched Dec. 16, as of 1:32 PM EST yesterday had reached a point 91,228,040 miles from the Sun and 607,123 miles from Earth. The interplanetary spacecraft had reached a speed of 4260 miles an hour (SPACE Daily, Dec. 13 & 21).

E. G. Shuster has been appointed division vice president, Government Marketing, of RCA's Electronic Data Processing division. Shuster, previously manager of the EDP Federal Government Marketing Operations, succeeds Wesley J. Gallagher, now division vice president, general sales, for EDP.

Gary Lockwood, formerly an associate in the Birmingham, Mich., public relations counseling firm of Maunders Co., has joined Federal-Mogul's corporate public relations staff as public information manager.