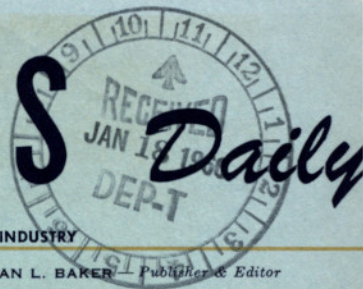


SPACE BUSINESS



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FRANCE-ISRAEL MISSILE KNOWN AS SPANISH MISSILE MD-620. France is providing much more than technical consultation for the Israeli surface-to-surface missile now being developed for the latter country's deployment. In fact, SPACE Daily-France has learned that most of the research and development for the weapon is being done in France. Within official circles the missile is identified as "**MISSILE ESPAGNOL**," or the Spanish Missile. At Generale Aeronatique Marcel Dassault, where most of the development for the **MISSILE ESPAGNOL** is being carried out, it is designated as the **MD-620**. Range for the single-stage weapon is reported at 300 miles and, in the present version, the missile is non nuclear.

FRENCH GOVERNMENT CHANGES. Alain Peyrefitte, former Information Minister, succeeds Yvon Bourges as the new Minister of Scientific Research in the new French government. Bourges in turn takes over Peyrefitte's old post as Information Minister. Andre Bettencourt is the new State Secretary for Transports, succeeding Marc Jacquet. Pierre Messmer remains the Defense Minister and Jacques Marette the Telecommunications Minister.

HOUSE SPACE COMMITTEE CONVENES FEB. 15. The tentative start date for the House Space Committee posture hearings is February 15 and they will run through the 17th. Separation into subcommittees for budget review is presently set for February 22. Earlier scheduled was the annual conference with the members of the Panel on Science and Technology for January 25-26 with addresses by Vice President Hubert Humphrey and Sir Charles Snow (SPACE Daily, Dec. 23).

NASA-EDWARDS SPACE SHUTTLE STUDY EXTENDED. The six-month design feasibility studies of a manned space shuttle concept being performed by McDonnell and Northrop Norair for NASA-Edwards may be extended until January 25. The study was concerned with the development of a conceptual design of a research prototype and was scheduled to be completed in December (SPACE Daily, Dec. 6). If the contractors concur the study will be extended. The study is expected to prove the feasibility of an orbital flight test of an unmanned lifting body space shuttle.

NERVA TESTS BEGIN. The first **NERVA** nuclear rocket engine system has begun preliminary checkout and testing at the Nuclear Rocket Development Station at Jackass Flats. Over the next several weeks a series of these tests will be **MORE**

The Leader in Missile/Space Reporting

conducted culminating in a bootstrap start-up of the engine system and full-power runs. The beginning of these tests marks the first time that **NERVA** and other engine components have been brought together as a complete propulsion system. **NERVA** is under development by Aerojet-General for the Space Nuclear Propulsion Office.

SCHRIEVER NON-PROFIT REPORT DUE THIS MONTH.

General Bernard Schriever's eight-man committee to investigate government-retained nonprofit corporations (SPACE Daily, Sept. 13) has turned in its findings to him, and he is now evaluating that information with Air Force Secretary Harold Brown, Air Force Chief of Staff General John McConnell, and Defense Research & Engineering officials. These talks are expected to end this month and the report made public. The General formed the committee in the wake of the Congressional disclosures about Aerospace Corp. (SPACE Daily, May 5 and Aug. 24).

AA EXPERIMENTS BECOMES INTRA-GOVERNMENTAL PROGRAM.

NASA, which last week turned over responsibility for the oceanography experiments portion of its **APOLLO** Applications (**AA**) program to the Naval Oceanographic Office (SPACE Daily, Jan. 4 & 7), has assigned parts of the geology/planetology and hydrology portions of **AA** to the Department of the Interior's Geological Survey. In addition, NASA will soon turn over responsibility to the Geological Survey for efforts on the geography/cartology section of **AA**. Responsibility for the fifth portion of the **AA** remote sensor experiments (SPACE Daily, Jan. 7), agriculture/forestry, is expected to be assigned to the Department of Agriculture shortly.

The cooperative agreement between NASA and the Geological Survey calls for the Survey to determine the feasibility of studying geology and hydrology from space. The program will involve classifying various geologic formations by their visible, ultraviolet, infrared and other measureable properties. The initial phase of the project, which has been underway for some time, involves the intensive study of areas of the United States that are representative of various geologic features. An intermediate step will be the survey of those selected areas from specially equipped aircraft operated by NASA-Houston. Geological Survey scientists will study the airborne data along with ground-based data to permit application of spaceborne instruments to geological exploration. The Survey team, under the direction of William A. Fischer, will direct their efforts toward determining the feasibility of modifying existing instruments and developing new space flight electromagnetic sensing instruments for surveying the Earth and other planets. Overall direction of the Survey's lunar geology program is in the hands of Dr. Eugene M. Shoemaker, chief of the Astrogeology Center, Flagstaff, Arizona, and a principal experimenter on **SURVEYOR**.

One of the first results of the NASA/Geological Survey agreement is the forthcoming award of a \$96,000 pact from the Geological Survey to the University of Michigan for feasibility studies of a TV-like scanning and imaging device for studying the geology of the Moon from a lunar satellite. The spectral radiometric imaging system will be flown on the first **APOLLO** Pallet flight set for 1968.

over

SPACE STATION/PLANETARY ROLE PROPOSED FOR SATURN IB

An expanded family of **SATURN IB** vehicles would fulfill many space missions projected in the post-**APOLLO** program, Chrysler, prime contractor for the S-IB booster, has proposed. The company is studying a series of new configurations for the IB under contract to NASA-Marshall (SPACE Daily, May 26 & Jan. 10).

H. Douglas Lowrey, president of Chrysler's Space Division says "we now know that we can provide for an additional series of orderly changes both in the **SATURN IB** booster and the complete vehicle that will fill the needs of a well-balanced space program for intermediate launch performances."

For example, heavy payload missions involving orbiting space stations would be possible by adding solid strap-ons to the first stage of the basic **SATURN IB**, Lowrey said. Also within the capability of the basic IB vehicle are asteroid and comet missions and the Mercury fly-by, he said (See SPACE Daily, June 14).

"Another very significant increase in launch vehicle capability is obtained with the addition of a third stage to either the basic **SATURN IB** or the **SATURN IB**/Zero Stage vehicle. Complex and heavy payloads in the 20,000 to 25,000 pound class would easily be within the grasp of such a vehicle." Addition of a "kick-stage" would considerably expand the deep space potential of the IB, he said.

AF ZERO DEFECTS SEMINARS/WORKSHOPS BEGIN TODAY

Beginning today, the Air Force will hold a series of seminars and workshops for its command personnel as part of its Zero Defects program. The meetings will emphasize "administrative, management, personnel, comptroller, engineering, materiel, procurement, and R&D areas."

The first of two seminars is being held today at the Lockheed plant in Marietta, Ga., with president Richard Pulver as keynoter. Participating are commanders, vice commanders, and chiefs and deputy chiefs of staff of major air commands. The other seminar is scheduled for January 25.

The workshops will follow in February, March, and April at Lockheed-Georgia for members of the AF Zero Defects Councils. There will be eight workshops in all, and each will run for three days. Emphasis will be on "special techniques for increasing (the) effectiveness of the Zero Defects program."

PLANNING RESEARCH TO CONTINUE RE-ENTRY ANALYSIS

Lockheed Missiles & Space has awarded Planning Research a \$280,000 follow-on contract for additional analysis of re-entry systems. This missile study was begun in 1961. Planning Research's project manager is Robert Corn.

KARTH TO ADDRESS NATIONAL SPACE CLUB

Rep. Joseph E. Karth (D-Minn.), chairman of the House Subcommittee on Space Sciences and Applications, will be guest speaker of the National Space Club at its luncheon January 18 in the Ballroom of the National Press Club.

EARLY BIRD OPERATING AT ONE-THIRD CAPACITY

ComSat's **EARLY BIRD** communications satellite--launched April 6 into a synchronous orbit over the Atlantic (SPACE Daily, Apr. 7, 8, 9 & 12) and put into commercial operation in late June (SPACE Daily, June 28)--is now serving four customers who are renting a total of 75 of its 240 two-way voice channels.

Because European ground stations were able to handle only half of those 240 circuits, the FCC originally authorized and allocated that many (120) for commercial service (SPACE Daily, June 24): 74 to AT&T, 10 to RCA, 10 to ITT, 10 to Western Union, 10 on reserve, and 6 to COT (Canadian Overseas Telecommunications Corp.) Now, however, all 240 are available for lease, but the four present customers--AT&T, RCA, ITT, and COT--have yet to employ their original allotments, partly because of problems in tying in with the European communications networks.

The breakdown of the 75 channels currently in use is: AT&T--64 (1 to Austria, 2 to Belgium, 1 to Denmark, 10 to France, 12 to Germany, 2 to Ireland, 8 to Italy, 2 to Netherlands, 1 to Norway, 1 to Spain, 2 to Sweden, 4 to Switzerland, and 18 to United Kingdom); RCA--1 (Germany); ITT--1 (Germany); and COT--9 (2 to France, 1 to Italy, and 6 to United Kingdom).

AT&T, RCA, and ITT presumably intend to expand their use of the satellite, since each originally asked for more channels than the FCC gave them. AT&T wanted 100 (SPACE Daily, June 4), RCA 30 (SPACE Daily, June 7), and ITT 41 (SPACE Daily, June 17, p. 245).

AT&T's annual bill for the 64 channels it presently employs is \$3,225,600 (\$4200 per channel per month). These channels can be used only 16 hours a day (5AM to 9PM EST) (SPACE Daily, June 2).

JUSTICE APPROVES SALE OF OKONITE TO LTV

Ling-Temco-Vought has been advised by the Justice Department that the New York Federal District Court decision approving sale of the Okonite Co. to LTV by the Kennecott Copper Corp. will not be appealed. The transaction, which was initiated this fall (SPACE Daily, Oct. 19), was to have been completed for approximately \$30 million.

The Court had ordered Kennecott to divest itself of the subsidiary. However, after LTV agreed to buy the firm, the Antitrust Division of Justice contested the transaction. After a three-week hearing, Federal District Court Chief Judge Sylvester J. Ryan approved the sale to LTV. Okonite, a manufacturer of high-voltage electrical wire and cable, will become a wholly-owned subsidiary of the company.

Hubert Sauter, formerly chief of the Technical Services Branch of NASA's Scientific and Technical Information Division, has been appointed deputy director for operations in the National Bureau of Standards Clearinghouse for Federal Scientific and Technical Information.

John J. Doherty, general manager of the Semiconductor and Receiving Tube Division, has been promoted to vice president of Ampere Electronic Corp., and **Edward Meagher**, previously general marketing manager, has been named vice president of the division.

REPUBLICANS ASK CONGRESS TO LOWER BUDGET BELOW \$100 BILLION

Reps. Frank Bow (R-Ohio) and Glenn Cunningham (R-Neb.) have called for Congress to prune the Administration's budget below the \$100 billion level.

Bow, ranking Republican on the House Appropriations Committee, has said that there is no excuse for the President to delay submitting his budget to Congress beyond the legal deadline of January 25, and that "We have got to find some way to cut down on some of the domestic spending of the great society. I think it is the responsibility of the Congress to set the spending levels, for the Constitution so provides... I think Congress is going to have to tighten the belt of the spending of the administration if we are going to keep any inflation from coming about through government spending."

Cunningham says that "We are going to have to prune down the spending programs that were so hastily enacted last year, because of the international situation. I do look for the Congress to reassert itself and not be a rubber stamp as it was last year and perhaps even go so far as to revamp some of its procedures so that it will be coequal with the Executive Branch."

FORD WANTS CURTAILMENT OF NON-MILITARY FEDERAL SPENDING

House Republican leader Gerald Ford (Mich.) has called for the creation of a new bipartisan Hoover-type commission to investigate "how to reorganize the expanding and overlapping Executive Branch."

The ultimate goals of the investigation, Ford said, "are the correction of pyramiding federal agencies and slowing down the mad rush to expand expensive federal spending programs... Congress has an obligation to assess the present and future costs of domestic legislation enacted last year to keep non-military federal spending within the Nation's ability to pay."

TENNEY ENGINEERING ASSIGNS OHIO SALES TERRITORY

Tenney Engineering has assigned the northern Ohio sales territory to Tower Engineering Co. of Dayton. Tower already represents the company's environmental products in southern Ohio and western Pennsylvania.

HITCO PER SHARE EARNINGS UP IN '65

Hitco had sales of \$22,866,611 in FY 1965, down 11 per cent from last year's \$25,573,822. Net earnings for the year amounted to \$1,295,139 or 62 cents per share on the 2,092,851 shares outstanding at the end of the fiscal year, compared with operating income of \$1,309,966 or 60 cents per share outstanding for fiscal 1964.

Robert M. Daiss, president, attributes the lower sales volume to stretch-outs on contracts for **POLARIS**, **MINUTEMAN** and **TITAN III**. "Our projection for 1966 based on the information now available is for a further reduction in missile business through April 1966 and then an upturn to levels higher than in 1964... The corporate plan for 1966 indicates that the decrease in missile business will be offset by aircraft, space project, and industrial business increases."

RADIATION SALES DOWN/EARNINGS UP

Although Radiation's sales were down from FY '64's \$43,915,681 to \$38,361,119, earnings rose two per cent from last year's \$1,179,355 to \$1,212,621 in fiscal '65.

Chairman of the board Homer R. Denius and president J. A. Boyd attributed the improved earnings to improved technology along with greater diversification and a stronger organization. The company has successfully maintained its position in the field of telemetry data processing while expanding into related fields of digital communications, computer controlled displays, satellite communications terminals, and aerospace data management systems. New capabilities have also been developed in standard products, control systems and microelectronics.

The officers say that plans for fiscal '66 indicate that a new record in sales and earnings will be established and that the year may mark a major turning point in the history of the company. They point out that success in these plans will result in significant new capabilities and provide a larger and more diversified earning base.

RADIATION CONSOLIDATES INDUSTRIAL OPERATIONS

Radiation Inc. (Melbourne, Fla.) has consolidated its industrial operations into one unit--the Control/Communication Division. The organization change merges the Control Systems Division and the Products Division and creates a single operating unit "to provide a broader base for the expansion of Radiation's commercial electronics business."

Dr. Joseph A. Boyd, president, says that the consolidation is consistent with the firm's long-range plan to place increasing emphasis on industrial and commercial markets. Ralph A. Johnson, vice president and general manager of the Control Systems Division, has been named to head the new division, and George A. Herbert, formerly head of the Products Division, has been appointed vice president-Corporate Development.

ORI EARNINGS UP 27 PER CENT

Operations Research Inc. of Silver Spring, Md., reports that estimated earnings for the fiscal year ended November 30 totaled \$132,000, an increase of 27 per cent over the previous year and the highest in the company's 11-year history. Backlog for the fiscal year was \$4.8 million or 36 per cent above that recorded last year.

ORI, a private operations research firm, has facilities and groups in residence at Santa Monica, Calif., Cambridge, Mass., and Carlisle and State College, Pa.

ASI REORGANIZES PROGRAMMING ACTIVITIES

Advanced Scientific Instruments (Minneapolis, Minn.), a division of Electro-Mechanical Research, has expanded and reoriented the organization of all programming activities by placing all the departments under the supervision of Don Wood, formerly manager of applications.

Department managers named to report to Wood were: E. J. Records, Systems Programming; J. J. Acciaccia, Applications Services; R. E. Culp, Applications Programming; W. C. Schoon, Applications Engineering; and A. B. Rubino, Advanced Systems.

NASA GRANTS

Case Institute of Technology -- \$150,000 for experimental and theoretical research in plasma dynamics.

Harvard University -- \$120,000 for interdisciplinary studies of effects of high energy protons on biologic systems.

Michigan State University -- \$84,996 for study of molecular basis and organization of nerve and brain functions.

Michigan State University -- \$53,900 for a new study of navigation satellites.

Ohio State University -- \$180,382 for a study of radar and microwave radiometric techniques for geoscience experiments which may be carried out in manned orbiting spacecraft.

Pennsylvania State University -- \$40,000 for research on static and dynamic tension and cavitation inception in liquids.

Pennsylvania State University -- \$50,383 for research and development of on-board control systems and elements for aerospace vehicles.

Rice University -- \$400,000 to initiate new multidisciplinary space-related research.

Stanford University -- \$11,833 for studies on the buckling of spheres under external pressure.

Virginia Polytechnic Institute -- \$100,000 for multidisciplinary space-related research in engineering and the physical and life sciences.

Washington State University -- \$22,969 for a new study of intermediary metabolic processes in hydrogenomonas bacteria.

Wisconsin University -- \$140,000 for a study of ultraviolet stellar spectra and associated instrumentation.

Yale University -- \$120,000 for interdisciplinary studies of the effects of high energy protons on biologic systems.

Future Space Business**SEMICONDUCTOR COMPONENTS PRECONDITIONING/TESTING**

NASA-Goddard is planning the development of a method of preconditioning and/or testing semiconductor components to render them capable of performing reliably in a high-energy space radiation environment.

Contact: NASA, Goddard Space Flight Center, Greenbelt, Md.

Attn: Mr. M. Stephens, Code 246, Contract Negotiator. Due date: Jan. 14. **MORE**

Future Space Business**BTL GUIDANCE SYSTEM ENGINEERING STUDY**

NASA-Lewis is preparing to fund an engineering study of BTL guidance system.

Contact: Lewis Research Center, 21000 Brookpark Rd., Cleveland, Ohio 44135. Attn: Chief Agena Procurement Branch, Everett F. Stewart, 6612/6675. Reference: RFP 29-4933. Due date: Jan. 20.

QUESTION ANSWER/APOLLO EXHIBIT DESIGN

NASA-Houston is planning the design, fabrication, construction and related services for question and answer exhibit, and **APOLLO** mission exhibit.

Contact: Procurement and Contracts Division, NASA Manned Spacecraft Center, 2101 Webster-Seabrook Road, Houston, Texas 77058. Attn: Industry Assistance Office. Reference: RFP BG821-S13-6-114P. Due date: Jan. 25.

ASROC MISSILE LAUNCHERS SUPPORT

Unidynamics/St. Louis Div. is seeking the subcontract support for the manufacture, testing, and delivery of **ASROC** missile launchers.

Contact: Unidynamics/St. Louis Div., Universal Match Corp., 472 Paul Ave., St. Louis, Mo., 63135. Attn: Mr. T. B. Walker, Buyer, Major Sub-Contracts, Tel: A/C 312-522-1620, Ext. 624, TWX: 314-524-2950. Due date: Jan. 20.

DOD NEGOTIATIONS

United Technology Center--with the Bureau of Naval Weapons for research and development of two-phase flow in rocket nozzles.

Lockheed Aircraft Corp., Lockheed Missiles and Space Co.--with Air Force Space Systems Division for a contract for **AGENA** space vehicles.

General Electric Co.--with Army Materiel Command for additional research and development study entitled "radar degradation".

NASA NEGOTIATIONS

North American Aviation Space and Info Systems Div.--Marshall for the design criteria for guidance flight mechanics and trajectory optimization.

Lockheed Aircraft Corp.--with Marshall for a three-dimensional analysis of large vehicles including shell degrees of freedom.