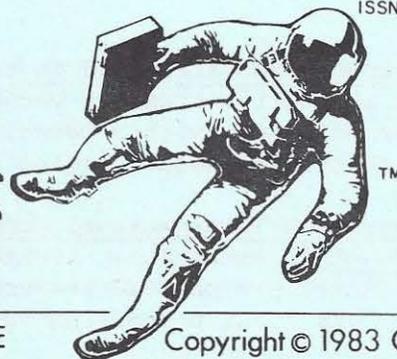


THE COMMERCIAL SPACE REPORT

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Dear Subscriber:

President Selects Dept. of Transportation for ELV Licensing Agency

Reagan has selected the DOT over the Dept. of Commerce as the agency designated to regulate commercial expendable launch vehicles (ELV's). This is somewhat surprising, since Commerce had been thought to be a shoo-in for the job. For example, Rep. Daniel Akaka's (D.-Hawaii) bill on launch vehicle commercialization (mentioned here last month) specified Commerce as the recommended regulatory agency.

Secretary of Transportation, Elizabeth Dole, was pleased with the choice. In testimony to the Subcommittee on Space Science and Applications, Dole pointed out that the issues raised by the commercialization of ELVs are similar to those raised by other forms of transport in their early stages.

Dole also cited DOT's "extensive experience in the deregulation of the aviation, rail and trucking industries and in ensuring increased competition within and among the transportation industries."

An interagency review board will be set up to handle ELV permit applications. Major roles will be played by three of DOT's operating administrations, the FAA, the Coast Guard, and the Materials Transportation Bureau. Among other agencies represented will be NASA, the FCC, and the Departments of Defense, State, and Commerce.

There will also be an advisory board of representatives from private companies. Representatives will be sought from companies involved in launch vehicles, payloads, and other related fields. This is an excellent opportunity for space entrepreneurs to make sure that what seems to be a good start towards minimal, pro-market regulation continues along this path, and it is suggested that they contact the Department of Transportation for further information.

Firms Bid to Commercialize NASA Expendable Launch Vehicles

Only three firms sent proposals to NASA to commercialize ELVs in response to a NASA Request for Proposal issued last fall. (C.S.R., Aug. 1983, p. 1-2).

The General Dynamics Convair Division bid on its own Atlas-Centaur. The company is handling the launch vehicle through its Space Programs Department. (Originally, it was reported here that a General Dynamics department called Commspace was handling Atlas commercialization, but this is no longer the case.) The existing version, Atlas G-Centaur, has a payload to geosynchronous transfer orbit of approximately 5,200 lbs. Future versions of the vehicle, with extra engines and solid boosters, promise payloads to geosynchronous transfer orbit of up to 15,100 lbs.

Transpace Carriers, Inc., bid on the Delta. McDonnell Douglas, the Delta's manufacturer, apparently considering a commercialized Delta unprofitable, did not.

Cyprus Corporation bid on components of the Delta upper stage. Cyprus plans to develop an orbital transfer vehicle (OTV) based on these components, and has signed a letter of intent with McDonnell Douglas to that effect. The OTV would be able to propel Shuttle payloads ranging from 5,000-20,000 lbs. into geosynchronous orbits.

Astrotech International Corp., acquired by Cyprus in July, will handle the OTV development. Astrotech, located in College Park, Md., was originally founded to handle satellite payload processing for launch vehicle customers at Kennedy Space Center. Its first processing facility is due to open in early 1984.

Cyprus Corporation is a closed-end investment company which has acquired various high technology companies in the past year. The OTV project marks its entry into the commercial space transportation field.

The chairman and CEO of Cyprus is William F. Rockwell, Jr., former chairman of Rockwell International (with which he is no longer involved). The company is located at Two Chatham Center, Suite 240, Pittsburgh, PA 15219. Tel.: (412) 391-1896.

Update: Intelsat VI Bids

NASA and Arianespace are still bidding to launch three Intelsat VI communications satellites (C.S.R., July 1983, p. 1-3, Oct. 1983, p. 1). There have, however, been some other changes in the players.

Martin Marietta has finally decided not to bid to launch Intelsat VI on their Titan 34D. Apparently, the company felt that it was not able to submit a competitive bid at this time. However, the Titan production lines will remain active until at least 1985, and Martin Marietta is still negotiating with the Air Force for facilities while seeking commercial customers.

A new company, Commercial Cargo Spacelines, has entered the competition. The company, also called C2 Spacelines, submitted a bid in November.

Commercial Cargo Spacelines is offering Shuttle launch service packages covering the period from delivery of a spacecraft to the launch facility through initial in-orbit operation. These packages can include financing, insurance, legal assistance, and engineering services. If this is not appealing enough to potential payload customers, C2 Spacelines has another marketing plus.

The company can offer Shuttle space at reduced prices due to NASA's own pricing policy. NASA, on the assumption that few Shuttles will fly with a completely filled payload bay, charges slightly more for payloads that do not occupy the full bay.

NASA's pricing formula goes as follows: the length of the payload is divided by the total length of the Shuttle bay (720 inches). Then the weight of the payload is divided by the total payload capacity of the Shuttle (assumed to be 65,000 lbs.) The product of each calculation is multiplied by 4/3, and the larger of the two resulting fractions is the percentage of the total launch cost that the payload customer must pay. For example, take a 5,000 lb. payload which occupies 100 inches of payload bay length:

By weight:	$(5000/65,000) \times 4/3 = 0.10$
By length:	$(100/720) \times 4/3 = 0.19$

The fee for this payload would be 19% of the fee for the entire bay, although the payload occupies only 14% of the bay length, and 8% of the payload capacity.

However, there is no surcharge for a customer purchasing an entire payload bay. This loophole permits a company like C2 Spacelines to buy a full bay, underprice NASA by selling portions of said payload bay to customers at a lower markup than NASA's 33% surcharge, yet still make a profit if the company can sell most or all of

the space in the bay. Of course, the company risks a loss if it does not sell enough space.

C2 Spacelines could apply this bargain rate to Intelsat, since one Intelsat package is normally only a partial Shuttle payload. NASA, although theoretically competing with C2 Spacelines for Intelsat VI launches, would not be too upset if the new company won out, since the Intelsat would still be flying on the Shuttle (NASA may make just a little less money on the deal).

C2 Spacelines is working with other companies in its venture. Schnader, Harrison, Segal & Lewis, Washington, DC, will be handling legal negotiations. Inspace Company, also located in Washington, DC, will be providing insurance services. Orbital Systems, Ltd., of Lanham, Md., a company which performs technical integration of Shuttle payloads, will be handling these functions for C2 Spacelines. (Orbital Systems, Ltd. should not be confused with Orbital Sciences Corp., of Chicago, which was formerly called Orbital Systems Corp.)

Commercial Cargo Spacelines is located at P.O. Box 75427, Washington, DC, 20013. Tel.: (202) 463-7917.

Federal Express Satellite Communications Network

Federal Express has apparently opted for space communications over space transportation for the time being. The Federal Express Satellite Division is developing a satellite network called "Fed Net," which will enhance Federal Express' new electronic document relay service (scheduled to start in July of 1984).

The Fed Net system will use two satellites in orbit coupled to 50,000 earth stations located across the nation. These 1.9-meter dishes will transmit to the satellites, which will relay the data to one of four regional "teleports." The information would then be broadcast, again via satellite, to a receiver at another earth station. This central switching point system is similar in concept to the central distribution system used by Federal Express for packages. The system will allow the company to bypass many of its expensive delivery jets and trucks.

The total system will absorb an investment of up to \$1.3 billion by 1995. However, the electronic delivery service is expected to generate at least that amount of revenue even before the first satellites are launched in 1988, using existing data transmission networks.

FEDEX/SpaceTran, a Federal Express subsidiary, is not presently active in space transportation, but is investigating long term opportunities in space services.

Bendix Working With Space America on Landsat Bid

Bendix Field Engineering Corp. may work with Space America in preparing a bid to commercially operate NOAA's Landsat system. Bendix, which has also been approached to work on satellite ground stations for Space America's Aeros satellites, would bring its experience in that area to the Space America team.

Landsat: Erratic Signals From Government and Industry

Many private companies are leery of Landsat due to the government's somewhat chaotic approach to commercialization. Several draft Requests for Proposals have already been written...a final one, excluding the weather satellite system, is due out in early January.

Profitability is still a question for the businesses unfamiliar with the field. It has not been immediately obvious to many whether the data acquired would be

valuable enough to sustain the large costs incurred by the Landsat space systems, and the government will not sell the data acquisition systems without the satellites. Also, companies which have been acquiring the data for free up until now are understandably reluctant to divulge the true value of such data to them. After all, who wants to drive up the data price when Landsat goes private?

Informed sources state that remote sensing systems are potential gold mines. The value added industry, which processes the raw satellite data to glean useful information from it, has just begun learning how to discover the many different types of valuable information which can be tapped from the same set of data bits. Also, the costly space segment of the system promises to become less expensive as time goes by, and companies should not assume that the Landsat system need be typical of the remote sensing business in general.

It's possible that the whole Landsat sale situation will become moot. As less expensive, more versatile satellite systems become available, able to deliver the same, or better data to the value-added industry, the Landsat may become a white elephant on the market. (For further information, see the May, 1983 C.S.R.)

Geostar Tests Navigation System

Relays on mountain tops simulated orbiting satellites for a test of the Geostar, Inc., data relay and positioning system. The demonstration, held at South Lake Tahoe, Ca., consisted of guiding a pedestrian to a hidden marker, a truck to a specific address, and an airplane to a runway.

The final system will use three satellites to allow a user to find his latitude and longitude, and/or transmit information to other locations (C.S.R., April 1983, p. 2). The satellites are scheduled to be launched in 1987, pending approval by the FCC. Geostar, located in Princeton, N.J., is headed by Dr. Gerard K. O'Neill.

Starstruck Engine Test On Hold

A static engine test scheduled for Nov. 16 has so far not gone off according to best information available as of December 8. The test has apparently run into unspecified technical problems and a large dose of unusually severe weather at the test site near Dayton, Nevada.

Orbital Sciences In \$50 Million Limited Partnership

Orbital Research Partners, L.P. has issued a private offering memorandum through Shearson/American Express. The partnership is raising money for Orbital Sciences Corp., Vienna, Va., which is seeking to develop orbital transfer vehicles for the Shuttle. The offering (1,000 \$50,000 units) opened Dec. 1, and is due to close on the 19th. As of press time, nearly half of the units had been sold.

Major Space Decisions Imminent

Civilian Space Goals:

Reagan is making decisions on long range American space policy. These decisions will be finalized in the next few weeks, although the results will probably not be announced until the State of the Union address in January.

A space station is one possible goal, but more ambitious possibilities have been raised.

A return to the moon, with the intent of establishing a base, was advocated by White House science advisor George Keyworth. NASA is pushing hard for the space

station though, and claims that lunar missions would be far too expensive. Sources say Keyworth also supports a space station, but only as a stepping stone to further lunar goals. The Defense Department is not enthused about either prospect, and the Office of Management and Budget is concerned about the deficit situation.

Sen. William Proxmire, (D.-Wisc.), accused NASA of less than noble motives, stating that the agency wants the space station because it "needs a big hardware project to keep all of its centers open and its many bureaucrats busy." (Why this would be less true of a lunar mission is not quite clear.)

Unfortunately, this accusation may not be that far off base. With the Shuttle development winding down and operations being slowly transferred to the private sector, NASA could begin feeling the pinch. It is hoped that the Administration's final decisions will be made with America's long range space goals uppermost in mind, and not short-term bureaucratic and political priorities. With luck, in January, Reagan may announce a space policy as far-reaching in its way as the strategic policy of ballistic missile defense.

Ballistic Missile Defense:

Development of a ballistic missile defense (BMD) is almost a sure thing. The major questions now concern which systems to develop. Still, objections are being raised from various quarters about the "technological impossibility" of constructing and operating an effective missile defense system.

It is not well known that a workable BMD system was proposed in 1959. The research effort, called Project Defender, was a crash program intended to develop a number of different methods to protect the U.S. against incoming missiles.

The methods included spinning cable nets, non-nuclear ABM missiles, and others. The project also encouraged examination of long term solutions such as high powered lasers, particle beam weapons, microwave weapons, and others in spite of their so-called "technological impossibility" at the time (remember, this was 1959).

Such systems were not deployed, more due to politics than technology. Perceived U.S. strategic superiority in the '60s, coupled with the space program's decision to go with expendable manned launchers instead of the reusable systems (the development line of which included the X-15 and the X-20 DynaSoar) required for practical deployment of the missile defense system, resulted in the shutdown of Project Defender around 1963.

The Project Defender report is available for \$5.00 from High Frontier (1010 Vermont Ave., NW, Suite 1000, Washington DC, 20005).

The Citizens Advisory Council on National Space Policy also supports BMD. The Council, which includes major figures in science, literature, and other fields, issued a report on their summer, 1983 meeting. The report recommended "immediate funding to develop and deploy a wide range of defensive systems and technologies."

This report is available for \$10.00 from the L-5 Society (1060 E. Elm St., Tucson, AZ 85719).

Soviet Space Update

The U.S.S.R. reportedly has one of its new giant boosters on the launch pad. This Saturn-type booster (C.S.R., April 1983, pp. 4-5) is covered with camouflage nets to conceal it from American spy satellites, so what payload it carries is unknown.

Best guess is that a test launch would contain, of course, a dummy payload. Some hold, however, that the payload may be a new, giant manned space station, or some portion thereof. Others fear that this launch may be part of an intensive space weapons effort (it has been pointed out that the two may not be mutually exclusive).

Some major Soviet space event is likely within the next six months. It is reasonable to assume that the new booster is an important factor in whatever may take place.

Score: Man in Space - 3, Black Box - 0

Early in the Shuttle's Spacelab mission, a high-speed data recorder failed, threatening the flight's science mission. The million dollar recorder is used to store data for later transmission while the Shuttle is out of range of the single Tracking and Data Relay Satellite (TDRS), and can store information at the rate of 32 million characters per second.

Mission specialist Robert Parker adjusted a tape roller with a screwdriver, returning the recorder to operational status.

Later, a high-resolution mapping camera jammed. Parker repaired it, too. He did this by turning out the Shuttle lights, zipping himself inside his sleeping bag, and freeing the stuck film in the dark.

Payload specialist Ulf Merbold, not to be outdone, repaired a furnace used for materials processing experiments. Numerous other minor breakdowns were handled by the Spacelab crew in a similar manner, saving several important experiments.

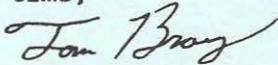
The role of man in space is essential. If the Apollo 11 landing and Skylab weren't already enough to prove it, maybe Spacelab is.

In Future Issues

In the coming year, along with news on commercial space endeavors, we will be including a number of features. Among these will be information on near-Earth asteroids with their potential for delivering both destruction and fantastic wealth, and an update on the advanced propulsion methods needed to exploit the solar system.

Other issues in the coming months will contain extras like a list of recommended space publications, and a newly revised list of commercial space transportation companies. (Incidentally, subscribers are welcome to contact us for up-to-date addresses and other information on private space companies and organizations.)

Until next time,



The Commercial Space Report (C.S.R.) is published monthly, and endeavors to report and analyze developments in the field of private initiatives in the exploration and exploitation of space.

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