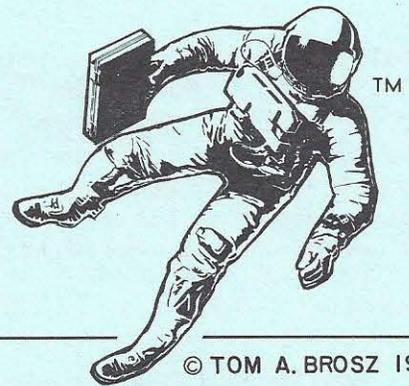


# THE COMMERCIAL SPACE REPORT



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Dear Subscriber:

November, 1982

## OTRAG Developing Sounding Rockets

Theo Pirard of the Space Information Center reports that OTRAG, under president Frank K. Wukasz, is emphasizing the sounding rocket market for their modular launch vehicles. The rockets would come in a variety of sizes, allowing payloads from 200 to 500 kilos (441 to 1,102 lbs). The lighter payloads could reach altitudes of up to 650 kilometers (404 miles). Test missions are planned for March or April of 1983. The launch site is still under negotiation. OTRAG will eventually move back into the orbital payload market.

## Space Services Plans for Orbital Launch

September of 1984 is the scheduled date for Space Services Inc.'s planned launch of a pair of solid fuel orbital rockets, with possible schedule slippage to October or November. Both vehicles would be launched within the same month, with one presumably acting as a backup in case of mishap.

As yet, the exact configuration of the vehicle is undetermined (C.S.R., Oct. 1982 p. 2), and requests for proposals to industry for hardware are going out soon.

Space Services' export permit, demanded by the U.S. State Department for SSI's suborbital launch, sets a bad precedent. According to SSI Vice President Charles Chafer, the State Department has no statutory power to demand such a permit for a rocket flight which will land outside the U.S. territorial limits. However, State is using the seeking of export permits as the easiest way to insure that the oversight requirements of the 1967 Treaty on the Peaceful Uses of Outer Space (Article 6) are satisfied. Chafer claimed that the permit, received the weekend before the launch, was necessary, or the State Dept. "would have shut us down."

A number of people have stated that this permit requirement is ill-advised. Houston attorney Arthur M. Dula stated that an export license is "a completely inappropriate way to control authorization of space launches, and shows the desperate lengths to which a bureaucracy will go."

The State Department maintains that rockets are classed as "munitions", and that a permit is required to let such a vehicle leave U.S. territory regardless of whether or not the vehicle actually changes ownership.

Government launch systems are, of course, exempt. Test cases will be tried criminally through the customs agencies, according to sources at State, with penalties of up to \$1 million, and ten years imprisonment.

## The AEROS System

American Science and Technology Corp., (AEROSpace), an earth resources

satellite company, is a potential customer for SSI's launch services (C.S.R., July, 1982, p. 3). The company is coordinating its efforts with those of a sister company, the Aeros Data Corp. (AEROSdata). The two companies, founded by the same investor group, form the "Advanced Earth Resources Observational System," or AEROS, a complete earth resources data collection and processing system. AEROS will locate data processing facilities near existing Landsat facilities in Sioux Falls, S.D., and coordinate its activities with the Landsat system.

#### Arc Technologies Update

Arc Technologies' rocket engine test, held recently at their Nevada test facility near Carson City, did not meet planned test goals according to aerospace industry sources. A test launch, originally planned for late this year, has been postponed to at least mid-1983.

#### More New Private Space Vehicle Endeavors

Still more new companies are entering the private launch vehicle business, and some old companies are also expressing an interest in privatizing existing systems.

Space Transport, Inc., proposes a mixed-mode, non-recoverable single-stage system with an estimated low earth orbit payload of around 25,000 lbs. Use of an RL-10 powered upper stage would allow placement of approximately 10,000 lbs. into a geosynchronous transfer orbit.

Transpace Carriers, Inc. has been formed to bring the McDonnell Douglas Delta launch system into commercial use. Heading this effort is David W. Grimes, former NASA project manager for Delta launch operations. McDonnell Douglas appears positive about the effort.

Orbital Systems Corp. (OSC), another entry, is looking at high-energy orbital transfer vehicles (OTV's) as a potential moneymaker. These would be used as upper stages in Space Shuttle flights. Based in Chicago, this company has \$500,000 equity funds in hand. Orbital Systems Corp. is looking at several potential suppliers for their stage, including General Dynamics (Centaur), Boeing (IUS), and Rockwell (an MX fourth-stage derivative). Dr. Krafft A. Ehricke, a respected figure in the aerospace industry, is a technical consultant for OSC.

Shuttle upper stages may become obsolete for the communications satellite market if more manufacturers follow the lead of Hughes Aircraft Co. At the AIAA Space Systems conference in Washington, Dr. Albert D. Wheelon (senior V.P. of Hughes and president of its Space Communications Division) said that Hughes is developing a communications satellite "bus," the HS 393, which contains its own built-in solid motor to propel it into geosynchronous orbit from low earth orbit. The satellite is also larger, taking advantage of the larger payload bay of the Shuttle.

Communications satellites may also become obsolete, according to Wheelon. He stated that the decreasing costs of fiber optics systems may price comsats out of the market, possibly as soon as the next couple of years.

#### Other New Space-Related Markets

Direct-to-home television transmission is going to begin in 1986 in parts of the United States. Satellite Television Corp. (STC), a subsidiary of Communications Satellite Corp. (Comsat), agreed to pay RCA Corp. \$100 million to build satellites for this service. The first phase, covering the Eastern Time Zone, will require two satellites. STC has been working on this since the Federal Communications Commission cleared the way for such a service last June.

STC is presently planning to offer three channels of commercial-free service for about \$25.00 per month, including lease of a 30-inch antenna on the homeowner's roof. Customers willing to purchase an antenna (about \$300.00) will pay about \$15.00 per month.

STC was the first of nine applicants to file with the FCC, and they were approved on that basis without special preference. The Eastern Time Zone was selected for the first phase of operation because about 50% of all U.S. television households are located there. The contract with RCA provides options for expansion into other areas in the future.

Shuttle payload integration is another market which is attracting the attention of new firms.

Astrotech International, located in Titusville, Florida, is one such firm. Astrotech will begin construction of facilities Jan. 1, and begin operations in 1984. The company will service and process satellites and upper stages for Shuttle customers. Orbital Systems, Inc. is another company entering the integration field.

#### OMB Begins to Balk at Shuttle Subsidies

Office of Management and Budget Director David Stockman wrote a letter to NASA Administrator James Beggs stating that OMB is not in favor of funding commercial operations of the Space Shuttle to the extent that it would create an artificially low price for launch services, and hence an artificially generated commercial demand for more Shuttle capacity.

This indicates that the Federal government is leaning away from the heavy financial assists that would be required to bring in large numbers of commercial users. It is already evident that the U.S. government/Dept. of Defense is getting top priority on Shuttle, and this would seem to push commercial users even farther down the list.

A Federally-financed fifth orbiter is out unless NASA can justify it for Defense uses (NASA is trying to do just that.) NASA officials also fear that commercial users will flock to Ariane for launch needs.

What does this mean to private launch ventures? It means that the Federal trough of Shuttle subsidies is beginning to dry up. As the true enormous cost of a Shuttle launch becomes apparent, the field for private systems will open up. For example, Space Transportation Co. (SpaceTran) may be encouraged in its effort to privately finance Orbiter 5 if NASA cannot receive government money for it.

#### What's In A Name?

A problem with some of these new companies is the overabundance of nearly identical names. Some examples:

Orbital Systems Corp. and Orbital Systems, Inc.; Space Transport, Inc. and Space Transportation Co.; Transpace and Transpace Carriers, Inc. Even Astrotech used to be called "Space Services International" before they realized the problem with Space Services, Inc. and changed their name. A little research on the part of new companies could solve this problem, which is more serious than it may appear. A unique identity is important to new business ventures trying to achieve recognition of products and services.

#### The "Phoenix" Launch Vehicle

Gary C. Hudson, a contributing editor to the C.S.R., has long been active in

the field of private launch systems. His company, G.C.H. Inc., designed and built the "Percheron" rocket, and he is credited for being one of the originators of the commercial launch business in this country. Since the early 70's, Hudson has been working on design concepts, under the generic project name "Phoenix," for fully reusable, single-stage-to-orbit, ballistic launch vehicles that would finally begin to bring spaceflight down into the cost range of regular airline travel. (For further information, see "Low Cost Transportation is the Key to Space", C.S.R., Aug., 1978.)

Phoenix LP and Phoenix C/E are proposed updates of Hudson's original concepts which would utilize technological advances of the past decade to create an even less expensive and more efficient "Phoenix" spacecraft. The vehicles would be vertical take-off and landing types, with two different sizes of vehicle.

Payloads would be approximately 1000 lbs. and 10,000 lbs. to low earth orbit for the smaller and larger vehicles, respectively. The spacecraft would use the same basic avionics, launch facilities, and custom, high-pressure advanced engines. The engines would use both low and high density propellant combinations to increase efficiency. (The original "Phoenix" concepts used only LOX/LH2 for propellants.)

"Phoenix" would eventually be a manned system, using orbital refueling as the key to operations beyond low earth orbit. A complete system may have development and production costs in the hundreds of millions, but could be operational by the early nineties.

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Until next time,

*Tom Brosz*

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