

THE COMMERCIAL SPACE REPORT

ISSN 0735-9314



A MONTHLY NEWSLETTER ON FREE ENTERPRISE IN SPACE

Copyright © 1983 C.S.R.

Volume 7, No. 6

June, 1983

Dear Subscriber:

Pages 3 and 4 of this issue contain an updated listing of commercial space transportation companies. Some companies listed are not truly "private" by strict definition, but are to some extent subsidized by initial government financing, or government materials and services purchased at non-market prices. Still, these companies are listed because of their importance to private space transportation, and because they consider themselves commercial operations by their own standards.

* * *

Updates on Space Transportation Companies

FEDEX SpaceTran:

The Federal Express Co. has formed a wholly-owned subsidiary, FEDEX SpaceTran, which has acquired the marketing rights to the Titan 34D from the Space Transportation (SpaceTran) Co. (C.S.R., Dec. 1982, p. 1-2) along with the rights to the name "SpaceTran." Details of the arrangement have not yet been disclosed, although Federal Express, originally a minority (20%) stockholder in Space Transportation Co. (C.S.R., Feb. 1983, p. 3), apparently no longer has any ownership in that company.

The major marketing target for the Titan is geosynchronous payloads, particularly Intelsat. A commercial Titan would also be ideal as a potential backup to the space shuttle. A Titan is capable of launching a 14-ft. diameter, 31,650 lb. payload into low earth orbit. In an upgraded version, the Titan could launch up to 17,500 lbs. into a geosynchronous transfer orbit.

FEDEX SpaceTran, not restricting itself to the Titan launch system, may also expand into other space-related projects. These could include marketing services on other vehicles, upper stage development, and payload servicing, among others.

Space Projects Co. (Space Transportation Co.):

The original Space Transportation Co. (SpaceTran) is now called Space Projects, due to the transfer of the rights to the SpaceTran name. Under the leadership of Klaus Heiss, the company is still actively pursuing other, non-Titan projects. Chief among these is the proposal to purchase and operate a fifth space shuttle orbiter. The Prudential Company apparently continues to be a minority stockholder in the company (C.S.R., June 1982, p. 3).

General Dynamics/CommSpace:

General Dynamics has formed a division called CommSpace, with the intent being to market their Atlas/Centaur launch vehicle. CommSpace, like others, is also after the communications satellite market, although it is not apparently going after

Intelsat. Marketing studies indicate plenty of other launch opportunities, with as many communications satellite launches planned for the next three years as there have been in the past twenty-one.

The Atlas/Centaur can place 4,200 lbs. into a geosynchronous transfer orbit. By upgrading the engines, and adding solid boosters, other versions could be developed which would increase this capacity to over 15,000 lbs. Originally, Space Services, Inc. was considering marketing the Atlas system (C.S.R., May 1982, p. 2)

Starstruck Inc. (Arc Technologies):

Arc Technologies of Redwood City has changed its name to "Starstruck, Inc." to avoid a trademark conflict with Atlantic Research Corporation, a company on the East Coast which does work on small military rockets.

On May 25, Starstruck Inc. held an open house for press, vendors, and other invited guests. On display were avionics, tooling, test systems and flight hardware. A partially completed flightweight version of the "Dolphin" vehicle was also on display. (The configuration was essentially identical to that shown in the April, 1983 Report, with the exception of the gas generator system, which is actually a liquid oxygen/liquid propane system mounted in the combustion chamber/LOX tank interstage rather than the forward-mounted solid fuel gas generator shown in our illustration.)

Other displays featured video tapes of static engine test firings (including firings of full-sized, 42-inch diameter engines), and a large water tank for sub-scale testing of deployment techniques for the water-launched Dolphin.

The company released further details of the launch system. The Dolphin, like other hybrids, operates by passing a flow of liquid or gaseous oxidizer through a shaped core of solid fuel. The vaporizing solid fuel is then burned to provide thrust. Unlike normal solid-fuel rockets, the Dolphin's fuel (a type of black, synthetic rubber--probably a type known as CTDB) contains no oxidizer, so when the flow of oxygen is shut off, the engine stops burning. Advantages of a hybrid include being able to throttle the engine and shut it down (solid rockets cannot throttle, and can be shut down in the middle of a burn only with great difficulty), and increased safety in transport, handling and launching since a hybrid cannot detonate in a failure like some liquid and solid fuel systems. Disadvantages include problems with combustion instabilities, lower reliability than solid rockets, and greater manufacturing and transport difficulties than liquid rockets.

The Dolphin has a launch weight of 20,000 lbs., and a thrust of 30-45,000 lbs. Maximum flight acceleration is about 6.9 G's--lower than most sounding rockets--which is better for the payload than high accelerations. Maximum altitude would be about 125 miles.

The first test flight is presently scheduled for August or early September. The rocket will be towed to a point in the Pacific about 200 miles west of Los Angeles (34° 30' N, 126° 30' W), a safe distance from populated areas, shipping lanes, and air routes. Tracking will be done in cooperation with the Pacific Missile Range at Point Magu. The first flight may be to a relatively low altitude (40,000 ft.). As many as six more test flights are planned for the remainder of the year.

Starstruck's long-range marketing target is geosynchronous satellite payloads. Even in a multi-stage mode, the existing Dolphin system would have to be upgraded considerably, or combined with a high-energy upper stage to achieve a geosynchronous orbit. Starstruck has not yet indicated specific plans in this area.

(TEXT CONTINUES ON PAGE 5)

COMMERCIAL SPACE TRANSPORTATION COMPANIES (JUNE 1983)

NAME	ADDRESS	CONTACT
ARIANESPACE	1, Rue Soljenitsyne 91000 Evry, France Tel.: (33) (6) 077-92-72	
Activities: Marketing of the European Space Agency's Ariane launch vehicle.		
ARC TECHNOLOGIES, INC.	See: Starstruck, Inc.	
COMMSPACE	See: General Dynamics, Convair Division	
FEDEX SPACETRAN	(Federal Express Co.) P.O. Box 727 Memphis, TN 38194	Armand Schnieder, P.R. (901) 797-6083 Brandon Davis, P.R. (901) 369-3075
Activities: Commercializing of Martin Marietta Titan 34D launch vehicle.		
GENERAL DYNAMICS, CONVAIR DIVISION (CommSpace Project)	Box 85357 San Diego, CA 92138 (619) 277-8900	Rudy Romero Marketing Manager
Activities: Commercializing of General Dynamics Atlas-Centaur launch vehicle.		
ORBITAL SYSTEMS CORP. (OSC)	664 North Michigan Ave. Chicago, IL 60611 (312) 951-1830	David W. Thompson President
Activities: Development and marketing of high-energy space shuttle upper stage.		
OTRAG	Sounding Rocket Dept. SchleiBheimerstraBe 59 D 8046 Garching/Munchen/ Germany Tel.: 0 89-3 20 10 79	
Activities: Development and marketing of low-cost, liquid-fueled sounding rockets.		
PACIFIC AMERICAN LAUNCH SYSTEMS	8 Admiralty Place Redwood City, CA 94065 (415) 593-9297	Gary C. Hudson President
Activities: Development and marketing of reusable, VTOVL launch vehicles under the name Project Phoenix (not related to Phoenix Engineering).		
PHOENIX ENGINEERING	566 Santa Clara Ave. Redwood City, CA 94061	Clifton Horne, President (408) 720-8280
Activities: Development of low-cost, liquid-fueled launch vehicles.		
PROJECT PRIVATE ENTERPRISE	See: Truax Engineering	

NAME	ADDRESS	CONTACT
SPACE PROJECTS CO. (Formerly Space Transportation Co., or SpaceTran)	22 Chambers Street Princeton, NJ 08540 (609) 924-6755	Thomas F. Huntington Marketing

Activities: Financing and operation of a fifth space shuttle orbiter, along with other space-related endeavors.

SPACE SERVICES, INC. (SSI)	P.O. Box 4 Houston, TX 77001	Charles Chafer (202) 659-0988
-------------------------------	---------------------------------	----------------------------------

Activities: Development and marketing of low-cost, solid-fueled launch vehicle.

SPACE TRANSPORT INC.	142 Muerdago Rd. Topanga Canyon, CA 90290 (213) 455-3105	Robert Salkeld
----------------------	----------------------------------------------------------------	----------------

Activities: Development of launch systems utilizing advanced mixed-mode engines.

SPACE TRANSPORTATION CO.	See: Space Projects Co.	
--------------------------	-------------------------	--

SPACETRAN	See: Space Projects Co.;	FEDEX SpaceTran
-----------	--------------------------	-----------------

STARSTRUCK, INC. (Formerly Arc Technologies, Inc.)	837 Second Ave. Redwood City, CA 94063 (415) 367-6800	Roy McDonald
-------------------------------------------------------	-------------------------------------------------------------	--------------

Activities: Development of a launch system using hybrid technology.

STIENNON PARTNERS	126 W. Ahwanee, #67 Sunnyvale, CA 94086	Patrick J. G. Stiennon
-------------------	--------------------------------------------	------------------------

Activities: Development of low-cost liquid-fueled launch vehicles.

TRANSPACE	P.O. Box 57373 Washington, DC 20037	Len Cormier (703) 370-8918
-----------	----------------------------------------	-------------------------------

Activities: Development of air-launched, recoverable, winged launch vehicle.

TRANSPACE CARRIERS, INC.	519 Point Field Drive Millersville, MD 21108 (301) 987-6536	David W. Grimes President
--------------------------	-------------------------------------------------------------------	------------------------------

Activities: Commercialization of McDonnell Douglas Delta launch vehicle.

TRUAX ENGINEERING	12401 Green Meadow Lane Saratoga, CA 95070 (408) 255-6926	Robert Truax
-------------------	-----------------------------------------------------------------	--------------

Activities: Development of heavy-lift, low-cost, liquid-fueled launch vehicles.

* * *

Notice: It is important to keep this information as accurate as is possible. Readers are encouraged to keep us informed of any corrections, additions, or future changes.

Truax Engineering:

An astronaut has been selected for Project Private Enterprise, Truax Engineering's small recoverable rocket endeavor (C.S.R., July 1980, pp. 1-2). The astronaut is Fell Peters, an import business operator and artist. He is also reportedly investing up to \$100,000 in the project, an investment that he states he would have made whether or not he had been selected to be possibly the first privately launched man in space.

Progress continues on development of the Private Enterprise launch vehicle. Captive firing tests of the flight engines are scheduled for this summer, along with drop tests from a helicopter to check the recovery systems. Flight weight tankage is also under construction.

The company hopes eventually to develop heavy-lift launch vehicles to compete with existing launch systems. These vehicles would be water-launched, two-stage, pressure-fed rockets, built using low-cost materials and construction techniques. The first vehicle under design, "Excalibur," has a height of 261 ft., a gross lift-off weight (GLOW) of 3.6 million lbs., and a payload to low earth orbit of nearly 150,000 lbs. The next vehicle to be developed, even more immense, is Truax's "Seadragon," with a height of over 500 ft., a GLOW of 40 million lbs., and a payload of 2 million lbs. In spite of their size, the simplicity of these vehicles could permit a cost to orbit of less than \$20.00 per pound. All components of both launch systems would be completely recoverable and reusable, with the first stage being recovered downrange, and the second stage being recovered from orbit.

* * *

Companies Ceasing Space Activities

Satellite Propulsion Inc. is no longer in operation. The recently-formed company (C.S.R., Oct. 1982, p. 3) cited a lack of investor response as a reason for abandoning the idea. The major problem seems to have been that aerospace companies, approached for funding, did not believe that spaceflight could be accomplished for so little, and non-aerospace investors thought it was too expensive. This particular financial "twilight zone" is familiar to many companies seeking support for commercial space endeavors.

G.T.I. Corp. has decided not to proceed with low-G processing experiments. The company (C.S.R., Mar. 1983, pp. 3-4) could not find sufficient customers with product ideas for its materials processing furnace. According to some sources, G.T.I.'s problem may have been its marketing approach. G.T.I. offered a processing service to customers, which were expected to come up with a product idea.

Booz Allen & Hamilton Inc., a management consultant firm, has recently been researching potential space products with somewhat better success. The work was originally started under a subcontract with McDonnell Douglas Astronautics Co., and continues under a contract with NASA. The Booz Allen approach, in contrast to G.T.I.'s, was to suggest product ideas to possible space processing customers rather than leaving it entirely up to the customer to select a product. Once some of these ideas (or "seed concepts") were on the table, customers were often more readily able to come up with concepts of their own.

* * *

White House Directive Encourages Private Space Transportation

The Administration released its directive on launch vehicle commercialization on May 16. As expected, the policy statement endorses the commercialization (by

U.S. companies) of existing expendable launch vehicle (ELV) systems. This directive provides a number of benefits to the U.S. government. Primary among these is that ELV systems that the government is planning on phasing out could be maintained by private enterprise. This could provide a possible vital backup to the space shuttle at essentially no cost to the government. Some highlights from the directive:

The government will make space hardware, services, and facilities available on a reimbursable basis. Hardware will include general equipment, tooling, flight hardware, and other items needed to continue production of launch systems. The government will also encourage the use of existing ELV launch facilities for commercial use. The government will select which items and services will be made available, and on what terms. The government will also retain a first priority on use of ELV facilities when they are needed for military or government flights.

Fair market prices will be charged for equipment, services, tooling and use of facilities. Although this is a complex problem, the government does not intend to subsidize private ELV companies. On the other hand, the government will not attempt to recover R & D costs incurred in the development of these systems.

Licensing and regulation will be minimized as much as is possible, subject to existing laws and obligations. Companies will be required to follow guidelines relating to safety rules, military base regulations, treaties, liability insurance for facilities, and maintenance procedures.

Any private company proposal will be subject to review on a case-by-case basis. Eventually, the process will be handled by a regulatory agency yet to be selected, although the Department of State is filling this role in the meantime. Details and procedures have yet to be finalized, and it may be some time before the rules are firm enough to allow long-range planning by private launch companies.

Space shuttle pricing was also referred to in the directive. The present, highly subsidized price scale will be extended through at least 1988. This is an odd contradiction, since this allows the shuttle to compete unfairly with the same expendable launch vehicles that the policy is supposed to be encouraging. Under ordinary circumstances, a geosynchronous mission on the shuttle should cost about twice as much as the same mission on an ELV. Sources claim that the shuttle pricing policy is intended to allow the shuttle to compete more effectively with the Ariane.

Private space companies seeking to commercialize ELVs publicly claim that this is not a problem, and that they are not "in competition" with the shuttle. In private, however, considerable lobbying against shuttle price supports has been taking place. This is also a defeat for the Office of Management and Budget, which had been hoping to end subsidization by 1986.

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.

Subscription rates are: U.S., Mexico, Canada and Foreign Surface Mail: 1 year-\$15.00, 2 years-\$28.00, 3 years-\$39.00. Foreign Air Mail: 1 year-\$20.00, 2 years-\$38.00, 3 years-\$54.00. Back issues are available at \$1.50 each from September, 1977. Xerographic copies may be substituted as stocks are depleted.

Address all correspondence to: *Commercial Space Report*, P.O. Box 60547, Sunnyvale, CA 94088. Editor: Tom A. Brosz. Tel: (415) 965-8666. Comments, ideas, or requests for information are welcomed, as are any items which may be of interest to our readers. Unless otherwise noted, contents are ©1983 by *The Commercial Space Report* and may not be reproduced in any form without written permission. The opinions contained in the *Report* are those of the writer or writers, and do not necessarily reflect those of any organization or company.