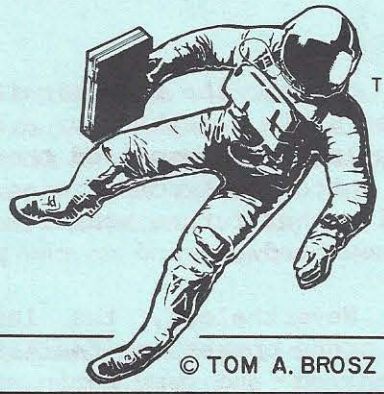
THE
COMMERCIAL SPACE REPORT

PUBLISHED MONTHLY



Dear Subscriber: October, 1982

Ariane Launch Fails. On Sept. 9, a cryogenic turbopump aboard the Ariane L5 third stage failed about 10 minutes after launch from French Guiana, plunging its payload of two satellites into the Atlantic. The satellites were the Marecs-B, a British maritime comsat intended as a spare for an existing satellite, and the Italian-made Sirio-2, intended as a meteorological data relay and atomic clock synchronizer. Neither satellite's loss appears to be critical at this time.

Future customers will be affected, particularly the Exosat X-ray satellite due to ride the next launch. Exosat's "launch window" closes near the end of January, and if Ariane is not ready, some switching of payloads will be required.

Space Services Launch a Success. The launch of the Space Services test vehicle went off a day late, but went off well. Following is a report by correspondent Eric Laursen, who was at Matagorda Island in Texas for the flight.

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"The Flight of "Conestoga I". At 10:17 AM Central time on Sept. 9, 1982, Space Services, Inc. of America conducted a successful suborbital launch of their "Conestoga I" solid propellant rocket. The rocket weighed 11,681 lbs. at liftoff and generated an average thrust of 46,500 lbs. Boost phase of the flight lasted 63 seconds. Burnout of the single stage vehicle occurred at approximately 160,000 feet altitude at a velocity of 8000 feet per second. Approximately 5 minutes into the flight "Conestoga I" reached its maximum altitude of 189 miles, 150 miles downrange. 10 minutes and 30 seconds after liftoff, the rocket splashed down into the Gulf of Mexico 290 miles from its launch site. No attempt was made to recover the vehicle or its simulated orbital payload.

A number of people have criticized Space Services, Inc. for staging a public-relations show without much substance, pointing out that "Conestoga I" was a standard "Aries" sounding rocket, identical to the eighteen previous Aries launched from White Sands, N.M. and Kiruna, Sweden over the past ten years. It has also been mentioned that with the exception of Donald K. "Deke" Slayton, (who stood ready throughout the flight to push the command destruct button should that prove necessary), there were few SSI people directly involved in the launch. The actual vehicle assembly, checkout and flight operations were conducted by the contractor team of Space Vector, Inc. (Northridge, Ca.) and DFVLR, Inc. (Munich, W. Germany). This is the same team which has carried out all of the previous flights under contracts from the Air Force, NASA, the West German government space organization, and Sandia Corp., among others.

Indeed, these arguments were given additional weight by the fact that, immediately following the SSI launch, both contractors packed up their gear and moved to Kiruna, where they were to conduct an identical sounding rocket launch two weeks later for scientific purposes (without, of course, the same fanfare).

To me, the most significant criticism centers around the fact that the "Conestoga I" is something of a hardware dead end. The second stage of the Minuteman I missile which comprised the vehicle is simply too small to put a payload into orbit, no matter what combination of upper stages might be tried with it. SSI spokesmen admit that future vehicles will not incorporate any elements of the "Conestoga I". No new hardware and no new proceedings were tested during this launch.

Nevertheless, the launch has to be considered a tremendous success for SSI. The press operation (facilities, tours, news conferences, etc.) was exceedingly well organized and very reminiscent of a NASA launch. The SSI name and logo were seen everywhere. Questions on the pedigree of the "Conestoga I" were effectively disarmed by statements to the effect that much of the vehicle's hardware had been "proved out" during previous programs, including the "Aries" flights, and few reporters seemed to care much for the distinction between suborbital and orbital flight.

In fact, after the launch, the Associated Press first reported that SSI had sent a satellite into orbit on the first private enterprise rocket flight. They were mistaken not only in their description of the rocket's destination, but in the fact that the vehicle was not carrying a satellite, but a dummy payload, and that private companies, most notably OTRAG, have launched many suborbital flights in the past.

Ultimately, the excitement which precedes all rocket launches, and the euphoria which follows, made most doubts seem out of place. I was told by several SSI staffers that the real purpose of the flight was to demonstrate credibility; to give SSI a "foot in the door" for their future negotiations. I think they have probably accomplished their goal, and if their very ambitious plans are to be realized, they will need to appear very credible indeed.

David Hannah, founder and chairman of the board of SSI, announced his intention to place a first payload in orbit by September, 1984.

The baseline configuration for the orbital vehicle is a central core consisting of two solid rocket motors stacked atop one another with a payload on the top. In the "Conestoga-200" version, a third solid rocket booster is attached to the bottom of this basic two-motor core, making the total vehicle three rocket motors high. The "-300" version, on the other hand, would take the basic two-motor core and place two additional booster motors on each side of the central core in a "parallel cluster" mode. This configuration can then be expanded by simply adding more outboard booster motors to the core assembly. The "-400", for example, would have three boosters strapped around the central core, the "-500" would have four, and the "-700" would have six.

As yet, no specific motor has been selected, although the Algol motor (used as the first stage of the Scout rocket) is a prime candidate, along with other motors of equivalent size.

The system is intended for a baseline mission of 500 lbs. payload into a 500-mile polar orbit. SSI hopes to operate its solid launchers at the rate of one flight per month by 1986-87 from a base in Hawaii. They hope to sign leases for this base in the next few months. For a number of reasons, Matagorda Island will not be used again as a launch site.

While SSI's primary effort is going into the development of a low-earth-orbit vehicle, they are also engaged in an attempt to take over operation of the Atlas-Centaur launch vehicle from General Dynamics, NASA and the Air Force. The intention is to service the needs of the lucrative communications satellite industry. SSI believes they could market the vehicle more aggressively than can the Federal government, and they hope for an initial operational capability as early as 1985.

This effort could easily become SSI's principal attempt to enter the space transportation business. However, it places them in direct competition with Space Transportation Company's position of acquiring the Atlas-Centaur as a back-off to their planned purchase of a fifth Space Shuttle, and now General Dynamics has itself expressed an interest in private operation of their own vehicle. [Editors note: General Dynamics would update and improve the existing Atlas Centaur system to compete with heavy launch systems such as the Shuttle.]

Currently, SSI is capitalized to a level of approximately $5 million, most of that already expended on their "Conestoga" launch. Their hopes for a first orbital flight rest on raising an additional $15 million. Many of the 200-plus guests described themselves as potential investors, and, as David Hannah said following the flight, the publicity and enthusiasm generated by "Conestoga I" should mean that they will have relatively little trouble raising their money.

Eric Hanson

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New Private Launch Companies Enter the Scene. Three new companies have begun technical and financial work on private launch vehicle systems, an encouraging sign that private space is attracting investment.

The first, Arc Technologies Inc., is located in Redwood City, Ca. The company, having leased manufacturing space, is planning to build a vehicle intended initially for the sounding rocket market, with potential for orbital capability. The company plans on selling services rather than vehicles.

Company President Philip Salin, a former employee of another rocket company, G.C.H. Inc., reported that engine tests took place in January, and that a test flight of their vehicle, which is designed to be launched from the water out at sea, will take place "sometime next year". Present information indicates that the rocket will involve some type of solid propellant, although some sources claim that it is a "hybrid" system, using both solid and liquid fuels in the same engine. Financial backing has been obtained to date from a number of wealthy Silicon Valley investors, including Steve Wozniak and other top Apple computer figures.

A second company, Phoenix Engineering, also located in Redwood City, is planning construction of a pressure-fed, multi-stage launch vehicle. Company president Dr. David Ross (another former G.C.H. employee) supervised testing of a 1/4 scale engine on August 22.

The third new company is Satellite Propulsion, Inc. with offices in Beverly Hills, Ca. The company president is Jack H. Vollbrecht, retired president and chief executive officer of Aerojet-General Corp. Again, the intent is to construct a private launch system. Although no details of the vehicle are yet available, the company's goal is reported to be 4500-5000 lbs. into geosynchronous transfer by the middle of the 1980's.

Page 4 of this issue consists of a listing of American private launch companies. Information leading to new additions to this list would be appreciated, as would any corrections to the existing list.

Percheron Errata. The Percheron 2 paper contains an error in Appendix A. The payload figures for geosynchronous and geosynchronous transfer were transposed for the Percheron. Corrected pages are being sent to those who ordered the paper. (The table in Appendix A has also been reorganized, reversing the columns for "geo transfer" and "geo" for more conventional reading.)

NAME	ADDRESS	CONTACT
ARC TECHNOLOGIES	837 2nd Ave. Redwood City, CA 94063 (415) 367-6800	Patrick Corman Regis-McKenna 1800 Embarcadero Rd. Palo Alto, CA 94303 (415) 494-2300
PHOENIX ENGINEERING	566 Santa Clara Ave. Redwood City, CA 94061	Dave Ross (415) 493-6950
PROJECT PRIVATE ENTERPRISE	See: Truax Engineering	
SATELLITE PROPULSION, INC.	9100 Wilshire Blvd. Beverly Hills, CA 90212	Hank Schaeffer Sec./Treas. (213) 273-1870
SPACE SERVICES, INC. (SSI)	P.O. Box 4 Houston, TX 77001	Walter Pennino (703) 281-2495
SPACE TRANSPORTATION CO. (SpaceTran)	22 Chambers Street Princeton, NJ 08540 (609) 924-6755	Don Brown
TRANSPACE	P.O. Box 57373 Washington, DC 20037	Len Cormier (703) 370-8918
TRUAX ENGINEERING	12401 Green Meadow Lane Saratoga, CA 95070 (408) 255-6926	Robert Truax

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Until next time,

Tom Brosz

THE COMMERCIAL SPACE REPORT™

The **Report** is published monthly, and has a subscription price of $12 per year. 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.

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