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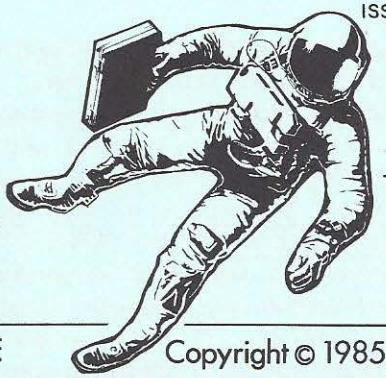
THE COMMERCIAL SPACE REPORT



A MONTHLY NEWSLETTER ON FREE ENTERPRISE IN SPACE

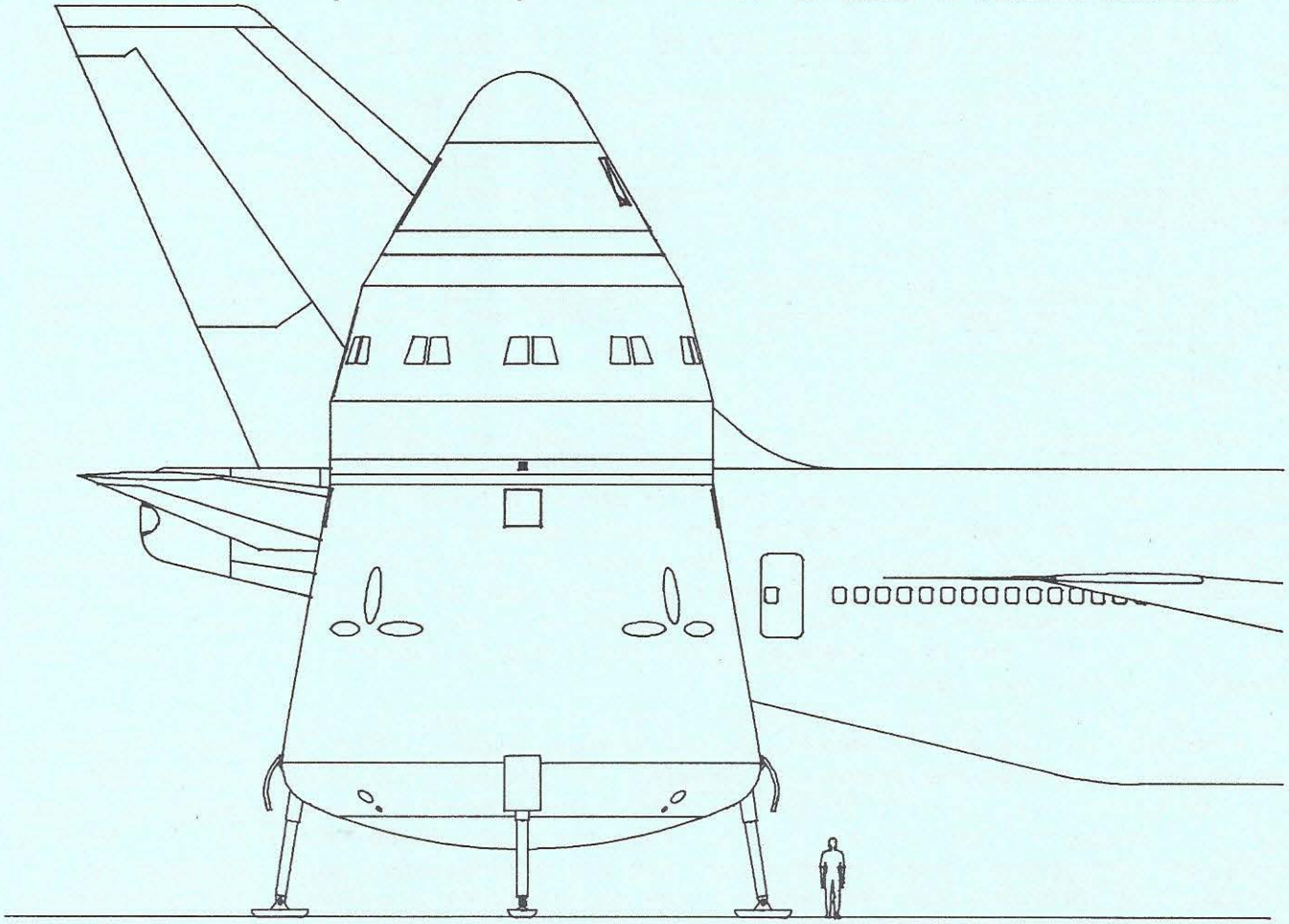
Volume 9, No. 8 September, 1985

Pacific American, Society Expeditions Sign Space Tourism Pact

Pacific American Launch Systems, Inc., Redwood City, Calif., has signed an agreement with Society Expeditions, Inc., of Seattle, Wash. to provide exclusive charter flights to low earth orbit beginning no later than 1991.

The agreement states that Pacific American will have the responsibility for designing, financing, manufacturing and testing the Phoenix-E reusable launch vehicle which will be used for the flights (the "E" stands for "Excursion"). Pacific American will then operate two Phoenix-E vehicles for Society Expeditions for a five-year period.

Society Expeditions, for its part, has agreed to charter seats from Pacific American. If all seat charter options are exercised, this portion of the agreement alone could eventually be worth up to $280 million in sales to Pacific American.



PHOENIX-E COMPARED WITH BOEING 747

In addition, Society Expeditions will receive options to purchase ten Phoenix-E vehicles from Pacific American. Should these sales options also be realized, Pacific American would pick up several hundred million more in revenues during the early 1990s.

Society Expeditions has been actively exploring the space tourism field for some time (C.S.R., June 1985, pp. 1-2). Originally, the travel firm had been considering the National Aeronautics and Space Administration (NASA) Space Shuttle as a launch vehicle. However, it was estimated that a Shuttle tourist would have to shell out about $1 million per seat, a price that considerably restricted the market, and Society Expeditions began looking into alternative launch systems. In the end, the decision was made for the company when NASA suddenly decided that it didn't want to get involved in tourism at all at this time (last month's C.S.R.), and Society Expeditions turned to Pacific American's Phoenix.

The obvious risks of specifying a vehicle which is still basically on the drawing boards are apparently outweighed by the potential benefits. As just one example, Society Expeditions estimates the price per seat aboard a Phoenix-E to be $50,000, or 1/20 the price of a seat on the Shuttle. This lower price, combined with plans for a multiple-vehicle fleet, can open up space tourism to a much larger market. Society Expeditions' own market studies indicate that several thousand people per year would be willing to pay this price for a flight into space.

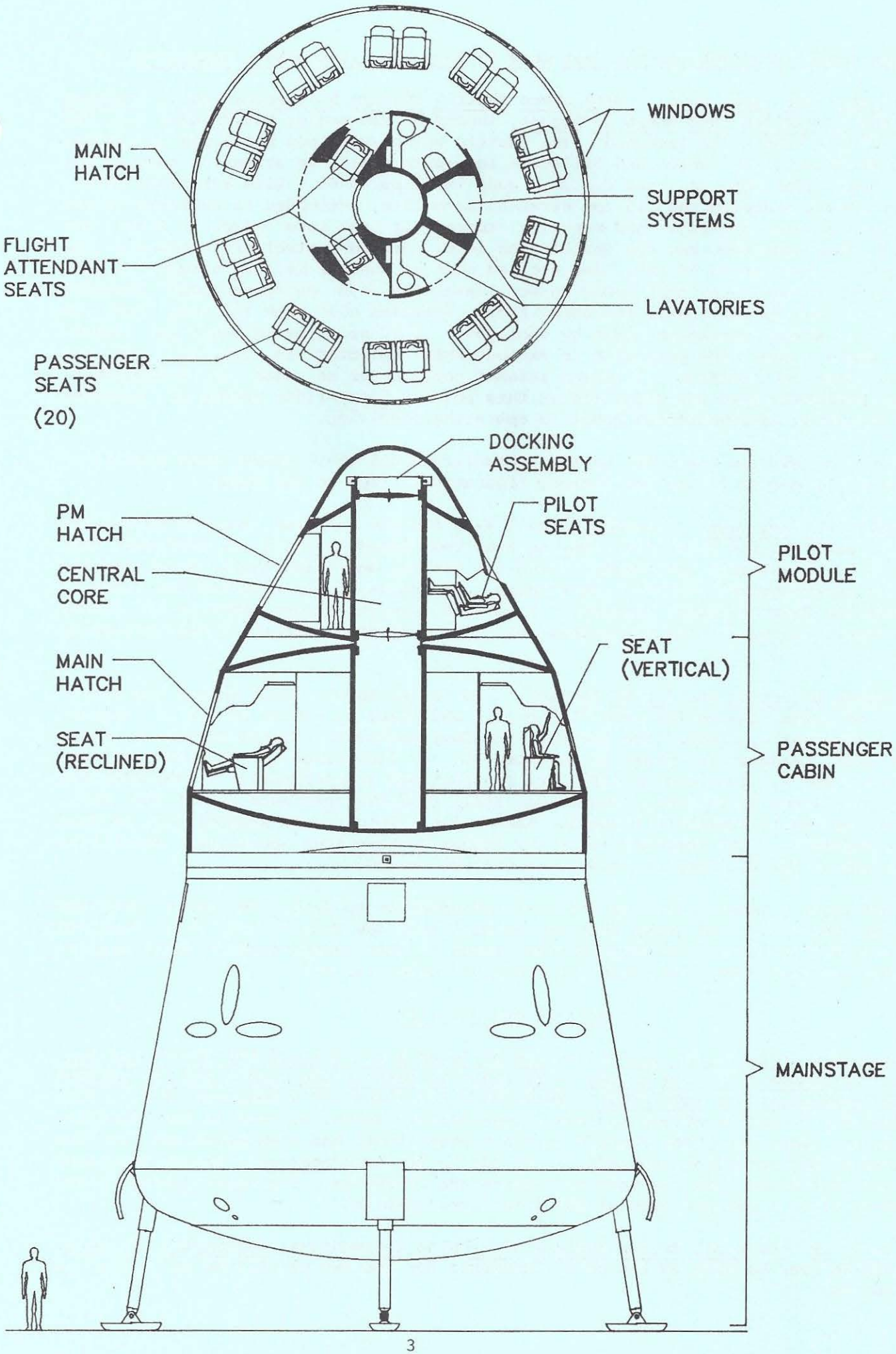
Pacific American president Gary C. Hudson calls this agreement "the largest private commercial space sale ever made, and the first sale of a launch service which carries passengers and crew on orbital missions." It is also the first sale made by the company since it was founded in March, 1982, and began promoting the Phoenix concept (C.S.R., Nov. 1982, Jan. 1983, Oct. 1984).

Pacific American has already located an undisclosed amount of start-up funds, and is actively pursuing the large-scale funding required to develop the Phoenix. The company states that about 3 1/2 years will be required for vehicle development, and an additional 1 1/2 years for flight testing. Over fifty flight tests will be conducted prior to the first commercial missions. Safety standards equivalent to those presently applied to commercial transport aircraft will be used during design, test and operation.

The Phoenix-E will be assembled by Pacific American at an integration facility to be built in the San Francisco Bay area. Significant portions of the vehicle will be designed and manufactured by aerospace industry subcontractors who will be named over the next year.

The Phoenix-E is designed to carry up to twenty passengers along with a crew of five. The Phoenix, which takes off and lands vertically, is a single-stage-to-orbit vehicle, and could be safely operated from almost any point on the globe, enhancing flexibility. A preliminary design for the Phoenix-E is shown at right in a side view with the manned areas cut away. Also shown is a plan of the passenger section, indicating the radial seating pattern that would give every passenger his own window. Two crew members would be located on the main deck, with the remainder of the crew located in the Pilot Module. The Pilot Module connects to the main deck through a central passageway.

Further details of the Phoenix launch system are available in a Pacific American brochure, titled the Phoenix Reference. Subscribers can receive photocopies of this reference by sending $2.00 for copying and postage to the Commercial Space Report. Requests for information on space tours should be directed to Colette Bevis, Project Space Voyage Coordinator, Society Expeditions, Inc., 723 Broadway E., Seattle, WA 98102 U.S.A. For information phone: (206) 324-9400. For reservations (reservations!) phone: (800) 426-7794.


WINDOWS
MAIN HATCH
SUPPORT SYSTEMS
FLIGHT ATTENDANT SEATS
LAVATORIES
PASSENGER SEATS (20)
DOCKING ASSEMBLY
PILOT SEATS
PM HATCH
CENTRAL CORE
PILOT MODULE
SEAT (VERTICAL)
MAIN HATCH
SEAT (RECLINED)
PASSENGER CABIN
MAINSTAGE

Hughes Leasat Problems, or "It Just Goes To Show You, It's Always Something..."

First, the good news: NASA Space Shuttle Mission 51-I successfully launched three new satellites into orbit in August, including the Hughes Navy/Leasat F-4, the fourth of its kind to be launched. The Shuttle astronauts then proceeded to rendezvous with Leasat F-3, which had failed in low earth orbit, to attempt a complex in-orbit repair (for details, see C.S.R., June 1985, pp. 5-6). With admirable skill, the astronauts grappled the 7.5 ton stranded satellite, succeeded in rewiring it and restoring ground control, and manually "tossed" it back into space. After the repairs were completed and the Shuttle had left, ground controllers commanded the satellite to spin up to 24 rpm, and settled down to monitor it. An attempt to fire the solid rocket motor that would inject Leasat F-3 into geosynchronous transfer orbit will not be made until the solid fuel, freezing cold from its long soak in space, is slowly warmed up again by sunlight. Cold solid propellants can crack, which could cause the satellite to explode when the motor is ignited. At the present rate of warming, a firing attempt could occur as soon as mid-October. Hughes officials give the satellite at this point a fifty-fifty chance of successfully attaining geosynchronous orbit in operating condition.

So, the Shuttle and crew, having accomplished all their tasks, came barrelling home with all colors flying and a broom figuratively tied to the mast.

Now, the bad news: remember Leasat F-4, the one that was launched before the Shuttle went to fix F-3? F-4, having been redesigned to avoid the problems that befell F-3, flawlessly activated, fired its motors, and triumphantly propelled its way into geosynchronous orbit. Once there, thousands of miles beyond the reach of any possible Shuttle repair mission, it settled down and almost immediately kicked the bucket, losing all UHF communications. The suspected culprit: a malfunctioning cable.

Hughes officials are fit to be tied. So is the Navy, which leases the satellites from Hughes (hence the name "Leasat"), and plans on taking it out of Hughes' hide. Apparently, under the terms of the Navy contract, Hughes must have three operational Leasats in orbit by November 30, or face fines of $10,000 per day (Leasats 1 and 2, launched in 1984, are in orbit and operational). If the repaired Leasat F-3 works in October, Hughes may still pull its chestnuts out of the fire. Another option is launching a spare, Leasat F-5, which could probably not be done before December. The contract calls for Hughes to have four operational satellites by the end of March, 1986, or more fines will be levied.

Obviously, Leasat F-3 has not been reengineered to avoid the cable problems plaguing the F-4. God knows what Hughes will tell the Navy if the F-3, repaired with such difficulty by the Shuttle crew, makes it into geosynchronous orbit against the odds and then comes down with the dreaded "cable crap-out."

Ariane Launch Fails

Europe's Ariane-3 V15 launch vehicle suffered a third stage failure on its September 12 launch, forcing ground controllers to destroy the rocket and its payload of two communications satellites, Eutelsat's ECS-3 and GTE's Spacenet F-3. This incident may cause the Ariane to lose a considerable amount of face to the Shuttle, its major competitor (the Shuttle launch system itself has been blameless in the failures of its satellite payloads). To add to the embarrassment, French President Francois Mitterand was on hand to observe the fireworks, the night being clear enough to allow a perfect view of the satellites' demise.

This is the first Ariane failure after nine consecutive successful flights. Arianespace may be able to launch replacements for the two satellites as early as next spring.

Insurance Industry Takes Satellite Failures Badly

It has not been a good week for the companies responsible for insuring all these satellites. At this point, the space insurance industry seems to be spending much of its time sitting in a corner, biting its nails and quietly gibbering.

In February of 1984, the Palapa B-2 and Westar 6 satellites failed in low earth orbit, resulting in nearly $180 million in losses (although both spacecraft were recovered by the Shuttle, no customer has yet purchased the refurbished satellites). In June, 1984, a General Dynamics Atlas/Centaur failed, resulting in the loss of Intelsat 5, insured for $80 million. The two failed Leasats were insured for $85 million each (underwriters paid Hughes for the loss of Leasat F-3 despite the Shuttle repair mission--they may get about $65 million of that back if the satellite becomes operational). The satellites aboard the destroyed Ariane were insured for a total of nearly $180 million.

Along with other, smaller claims, the total cost to the satellite insurance industry is well over $600 million in only the past two years. No wonder they're gibbering.

One company, International Technology Underwriters (Intec), now refuses to underwrite satellite insurance unless the satellites are placed in their proper orbits, checked out, and delivered to the customer. Intec was an underwriter for both failed Leasats and the two satellites lost on Ariane V15. Intec president James W. Barrett said that the present way of doing things was "like selling an airplane to an airline without proving it will fly." The objective is to place more of the responsibility for success on the satellite manufacturer rather than the customers and insurance companies.

* * *

Ortho Drops Out Of Space Processed Medicine Project

The Ortho Pharmaceutical Corp., a division of Johnson & Johnson, has withdrawn from a joint effort with McDonnell Douglas to develop a process for manufacturing drugs in space. The project, called Electrophoresis Operations in Space (EOS) uses microgravity processing to separate elements of pharmaceuticals many times faster than similar processes on Earth (C.S.R., Mar. 1983, pp. 1-3). Of particular interest was a certain hormone which the two companies were investigating.

Ortho has apparently discovered a technique using bioengineering which can produce the hormone rapidly on Earth--and considerably more cheaply. Although the two companies will continue to cooperate on future projects, McDonnell Douglas is seeking a new partner for the project.

McDonnell Douglas has already tested a prototype electrophoresis system on the middeck of several Shuttle flights. A larger system, to be mounted in the Shuttle payload bay, will be flown in the summer of 1986.

Space Forums Announced

The Presidentially appointed National Commission On Space is holding a series of Public Forums on future civilian space goals. The purpose is to solicit opinions from the general public, industry and academia concerning long-range goals for U.S. civilian space activities to the year 2035.

Individuals wishing to testify at a Forum must submit a written statement summarizing the proposed testimony, including name, mailing address, phone number, and (if appropriate) group represented. This information should reach the

Commission no later than 7 days prior to the date an individual wishes to testify. Oral presentations are limited to 10 minutes, but a longer written statement can be submitted and will be made part of the Commission's open files. A list of dates for the Forums appears below (unfortunately, this list was received here too late to announce the earlier ones before they took place).

Los Angeles, Calif.	Sept. 13	Cleveland, Ohio	Oct. 30
Salt Lake City, Utah	Sept. 30	Iowa City, Iowa	Nov. 1
Albuquerque, N.M.	Oct. 4	Washington, DC	Nov. 4
Boulder, Colo.	Oct. 5	Seattle, Wash.	Nov. 12
Houston, Texas	Oct. 15	San Francisco, Calif.	Nov. 13
Huntsville, Ala.	Oct. 16	Ann Arbor, Mich.	Nov. 15
Tallahassee, Fla.	Oct. 18	Honolulu, Hawaii	Jan. 17
Boston, Mass.	Oct. 28		

It is hoped that voices will be heard at these forums speaking up for private enterprise and alternatives to a government space monopoly. Whether or not one gives testimony, readers are encouraged to attend these forums which are open to the public. Contact the Commission for further details on times and places.

The address for the National Commission On Space is: 490 L'Enfant Plaza East, SW Suite 3212, Washington, DC 20024. For further details, contact Linda Billings, Leonard David, or Steve Hartman at (202) 453-8685.

* * *

Note to Subscribers

It has probably not escaped your notice that the Commercial Space Report is running about a month behind as far as issue dates go. A word of explanation: The C.S.R. has no paid staff. I do the most of the work myself. This has a number of advantages--it allows me to keep close tabs on things and helps keep subscription prices low. The main problem is that, although the newsletter pays for itself (even turning a small profit), it does not bring in enough to pay the rent and bills, and the necessity of making a living as a freelancer sometimes forces the newsletter onto a back burner and makes hash of all my deadlines. As you see, the effects tend to accumulate. I hope to work on this problem in the future, and apologize for any inconvenience or confusion (particulary in the area of renewals) that this may be causing.

Meanwhile, rest assured that despite erratic mailing dates, all subscribers will receive exactly the number of issues they have paid for. Please contact me if there are any problems, and thank you for your patience.

Until next time,

Tom Brosz

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

Subscription rates are: U.S., Mexico, Canada: 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.