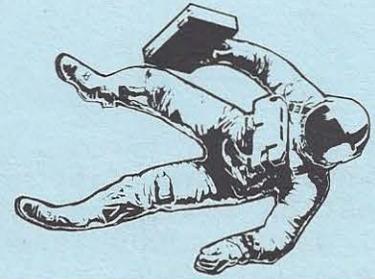


THE
**COMMERCIAL
SPACE REPORT**



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Gary C. Hudson, Editor

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Dear Subscriber:

June 1981

As recent developments in the field of space transportation make commercial space operations more and more feasible, the technological problems of getting to orbit have ceased to be a major issue. The Shuttle does work as advertised. The Ariane is recovering from its early launch failure and will be a major contender for commercial payloads. The Japanese and Chinese both have development programs underway. At least two private launch vehicle companies are prototyping systems and expect to be in service within the next two years and additional private ventures may be underway (see page 4 of this issue).

The next problem to be faced is one of marketing. This is, of course, a sensitive issue in the face of both government funded and private launch systems. The purpose of marketing is to determine the present and future needs of potential customers and interface those needs with the realities of design and production. It requires assumptions to be made about availability of facilities and materials, manpower and overhead as well as long term future trends. It requires flexibility and quick reaction to the needs of the market place.

Several years ago when we began The Commercial Space Report, it was the heyday of the conceptual space industrialization study. Sponsored by NASA, the aerospace companies and think tanks were cranking out thousands of pages of analysis and executive summaries on some of the most creative and innovative ideas for new products and services ever set to paper. Many evoked memories of the future visions foreseen at the beginning of space flight in the 1950s, visions often expressed in advertisements of corporate capabilities and new products.

But despite the proliferation of new concepts, we found a great gap existed between the cataloguing being performed by NASA and the reduction of those concepts to commercial practice. Their cost and manpower assumptions pushed hypothesized costs into the multi-millions and lead times into decades. Regardless of arguments over the appropriateness of government sponsored "market studies", the usefulness of those studies for either NASA or the commercial customer has been debatable. Marketing cannot be done in a vacuum (no pun intended) without customer input nor can it be done backwards in an attempt to justify an already completed new product development.

However, now that a proliferation of launch vehicles is upon us, the question remains, what are they going to be doing for a living? Didn't all those space industrialization studies prove that commercial space operations are still decades away? Why should private companies be getting into the act now and how will they handle competition with subsidized government agencies? How will the government projects handle competition with private industry?

Only the private companies know what assumptions they are operating on. However, in an effort to establish production levels for the Space Transportation System, An AIAA ad hoc task group has performed a study for the President's Office of Science Policy (OSTP) defining space transportation demand for the commercial sector through the year 2000. In the finest traditions of industry deadlines, the AIAA was given one month to complete a preliminary draft for use in the FY82 budget deliberations. The final draft was officially released on January 19th of this year and is based on the kind of facts and assumptions that make a good analysis worthwhile. The implications of the report for the entire spectrum of launch capabilities that will soon be available should be heartening to all the organizations who look to the future of space transportation.

Using primarily non-NASA information for their quantitative projections, the report attempts to define the demand for launches of communication satellites in detail and makes some interesting speculations for the advanced-technology sector, including space processing and manufacturing. While the translation of demand for transponders in geostationary orbit into Space Shuttle equivalent payloads makes their analysis cumbersome to use in comparing launch systems, the final conclusions of the report are encouraging for all launching organizations. If their assumption that only a third of non-government foreign payloads will be captured by U.S. launch systems is a conservative one, the implications are even greater.

According to the report's estimates, the projected Space Shuttle capacity will not meet the projected demand for launch services even in the latter part of the 1980's. It will not do so even if none of the anticipated non-federal demand in advanced technologies (such as space processing) materializes. And this conclusion is based on the assumption of minimal operational problems for the Space Shuttle. The report recognizes that commercial operations require maintenance of strict launch schedules. Delays in turnaround and saturation of launch facilities and production lines could widen the gap even further, to say nothing of preemption of launch vehicles for military emergencies. The report suggests that if STS launch services become saturated or too uncertain, companies interested in investing in space may direct their capital elsewhere.

The new AIAA projection of foreign and communication payloads is more than double the number previously expected between 1981 and 1990.

By the year 2000 the overall world demand for telecommunications may grow by a factor of five and the growth in traffic handled by communications satellites will be even greater, perhaps by a factor of ten to thirty. The projections for space processing and manufacturing payloads is lower than some previous NASA estimates but significantly higher than many industry studies have suggested.

The final conclusions of the report are, of course, oriented towards recommendations for federal expenditures but a little reading between the lines is instructive. Given their analysis of expected Orbiter turnaround, facilities limitations and variables such as SRB-refurbishment, it is no longer a question of whether the Shuttle will get enough business to justify its development. It is a question of who will take up the slack caused by Shuttle success. In 1979 no expendable launch vehicle flights were projected for 1984 or 85. By 1980, ten were projected in 1984 and six for 1985. The 1983-86 requirement for Delta and Atlas/Centaur flights has already jumped to about 71 expendable launch vehicles to carry payloads outside the Shuttle-budgeted traffic. The production bottlenecks on these launch vehicles has already been reached. In the face of Shuttle success the demand for expendables, indeed for launch services of any kind, may grow even faster.

The final report makes a very strong case for a fifth Shuttle Orbiter to maintain sufficient vehicle reserve to cover downtime contingencies but is quick to point out that even without such contingencies the projected Shuttle capacities will not meet projected flight requirements. Expendable launch vehicles must continue to shoulder a significant portion of the U.S. launch burden into the indefinite future. It must be pointed out also that these AIAA projections are for launch vehicles whose price tags are currently running from \$25 to \$75 million per launch. The interactive effects of lower transportation costs on payload development has not even been considered on this pass.

So what does all this mean for the development of space transportation services? Even if a fifth Orbiter is built and the stable of government vehicles is used to capacity, the present growth rate for launch services is mushrooming beyond their capabilities. If the estimated percentages for launching of foreign payloads is correct, the Ariane is going to be just as busy. And as the number of launches per year goes up and over the learning curve the price per launch will come down and the market will be further stimulated to produce more payloads for launch. The question of government vs. private competition may never have a chance to come up. They'll all be too busy making a living to worry about it.

Undoubtedly this comes as no surprise to the various private launch endeavors currently underway. They wouldn't be getting into the business in the first place if such circumstances had not been fore-

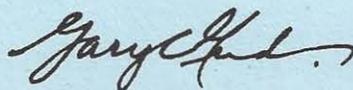
seen. The Japanese and Chinese may also have more in mind than national prestige. It even lends some credibility to plans that would privatize the Shuttle. Bill Good, founder of Earth Space Transport Systems in New York, is presently preparing a major legal challenge to take over NASA Shuttle operations by mid 1985 and, simultaneously, plans to raise private capital to enter the space transportation market.

In a separate action, Corporate Financing Week reported recently that William Sword and Co., the Princeton-based investment banking firm is considering putting together a group, possibly including foreign interests, to bid for the fifth and sixth Orbiters. Sword estimated the cost per unit at \$600 million and said that Sword or one of Sword Holding's subsidiaries, Space Transportation, might ultimately manage a fleet of shuttles.

Len Cormier of Transpace, Inc., who has worked for many years on single and two-stage-to-orbit manned systems for cargo and passengers in the half-billion to billion dollar development range is in the process of developing new plans for private funding of a commercial shuttle-like space transportation system. Cormier plans to raise the money necessary for such a system through a public offering of stock.

And in a surprising turn of events, the June issue of L5 News and May 11th issue of Satellite Week have reported on the activities of G.C.H., Inc. as it prepares for full-scale engine tests of a proto type low-cost launch vehicle system. If engine verification tests are successful a sub-orbital flight test is planned sometime thereafter. A paper discussing the vehicle design and parameters was presented on May 17th at the Princeton Conference on Space Manufacturing and will be presented in next month's newsletter.

Until next month...



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