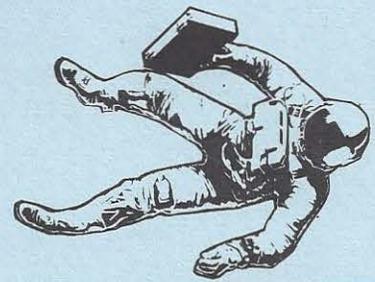


THE COMMERCIAL SPACE REPORT



PUBLISHED MONTHLY

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Dear Subscriber:

June, 1982

Space Legislation. In the past several months Congress has begun an examination of commercial space. A few pieces of legislation have been proposed which may affect the future of private enterprise in space. I will briefly examine each in turn.

S. 2448. The "Private Satellite Launching Authorization Act of 1982". Submitted by Senator Howard W. Cannon (D.-Nev.) primarily as a vehicle for discussion, this is the proposal mentioned in last month's Report. This bill would establish the F.A.A. as the licensing authority for space vehicles. Anyone (except, as usual, the Federal government) who plans on launching anything from the United States will have to obtain a license to do so. In its present form, the bill is relatively innocuous...as yet no specific requirements are set forth. It is assumed that future licensing standards will have to be set in a number of areas, including safety and liability.

Although it has a low priority in the Congress right now, the progress of this bill should be monitored. Given the apparent inevitability of such things as "space licenses", it still remains to make sure that the licensing requirements are reasonable and simple, not complex and restrictive. The standards that are eventually adopted could be either, depending on the input Congress receives. One possible danger--the bill requires the F.A.A. to consult with assorted agencies to create standards in their respective fields. These agencies include the State Department (international obligations), the Department of Defense (security), the F.C.C. (communications) and NASA (safety). With all these agencies involved, standards could become so restrictive that only clones of existing high-tech, high-cost launch systems would qualify. Imagine a commercial vehicle having to meet NASA safety and engineering standards! If a bill like this becomes law, it will be up to private interests to make certain that it is a law that can be lived with. Now is the time to be heard, while such legislation is in the formative process.

S. 1657. The "Uniform Science and Technology Research and Development Utilization Act." The essence of this bill is to allow large industries to retain patent and other rights to inventions resulting from Federal R. & D. money. Submitted by Senator Harrison Schmitt, (R-N.M.) and others, the intent of the bill is to encourage industries to commercialize concepts which would normally be stifled by government ownership of the rights to these concepts. (A similar law, the "University of Small Business Patent Procedures Act" is apparently already in force for small businesses, universities, and non-profit organizations.) The government retains the right to reclaim title to an invention under a number of different conditions. These conditions include national security, the "public interest", and failure of the company to commercialize the invention within a certain time period.

Considering the vast amount of space equipment and processes that have been developed by the Federal government via NASA, it is apparent that this bill could have a considerable effect on the commercialization of space. Will the effect be good or bad? At first glance it appears that the legislation will encourage commercialization of space by industries already active in the field.

However, although their hearts are in the right place, this legislation may not be such a good idea. The most important objection: the government has no business financing any kind of so-called "private" activities. Aside from it being a matter of principle, I feel that allowing existing firms to own and exploit taxpayer-funded inventions creates several unfair advantages over firms that must utilize private funding for their work. First, many industries that thrive on government largesse have gained a head start on private companies that already makes it difficult to compete with them in the open, non-government market. To add ownership of government R & D to this would make it even worse. Second, in the area of government contracts, the "good old boy" network (composed of the government and certain fortunate contractors) is tight enough as it is. Adding a plum like this to the public trough would make it even more likely that smaller and newer firms would be shoved aside from the juiciest contracts. There are already enough horror stories in this vein. Third, it is proper that research funded by the taxpayer should be made available to the taxpayer. Research generated by NASA and others, generally available to the public, has been essential to much of the efforts of small firms attempting to enter the field of private space systems. If this bill becomes law, it may create less competition than there would be if the whole situation was just left alone.

H.R. 4844. This bill is nothing more than an "instant loophole" action. It exempts imported materials certified by NASA as intended for use in space launch systems from U.S. tariffs. The major purpose for this is to lower the budget impact of importing the European Spacelab. It is unclear whether the bill is broad enough to cover private space systems--if it does, when the launch system market really gets going this little law will probably die a muffled death in a corner somewhere. (A regretful sigh from the Japanese...)

Update on Salyut 7. The first cosmonauts to inhabit the new Soviet space station were launched on May 14 in a Soyuz T-5 spacecraft. Soon after boarding, the cosmonauts launched a small amateur communications satellite from an air lock on the station. The satellite, literally shoved out the door, was hailed as the first launch of a satellite from a manned vehicle. This is not quite true--the Soviets have previously done so, and the American Apollo 15 launched a small satellite into orbit around the moon in 1971.

Preparations are under way for the joint Soviet-French flight presently scheduled for June 24.

U.S.-Soviet Space Cooperation Pact Expires. The space cooperation agreement is now dead, a victim of deteriorating political relations between the two nations. The pact, which was glorified by the Apollo-Soyuz mission, also involved large exchanges of scientific data. It is uncertain how this will affect research in both countries, although some scientists feel that the impact will not be that great.

On the other hand, the space station research and development gap

mentioned in last month's Report can only grow wider because of this information cutoff. If commercial interests are ever going to reap the benefits of a manned presence on orbit, an American (or other free nation) space station development program becomes even more important.

NASA Subsidizes Shuttle Customers. Because of earlier agreements, NASA may find itself losing huge quantities of shuttle use fees over the next six years. Due to a policy set in 1977, the Space Shuttle was to charge \$18 million per flight for the first 3 years of operation (phase 1). After 3 years, prices could then be adjusted to reflect actual costs and recoup losses. The Department of Defense got an even sweeter deal: \$12.2 million per flight guaranteed for 6 years, and no recouping of losses afterwards.

Unfortunately, operating costs have risen to about \$30 million. And that's an average over 12 years--costs in the Phase 1 period could be in the neighborhood of \$60 million per flight (all figures in 1975 dollars). Needless to say, a lot of red ink results--about \$1.2 billion worth by 1985 according to the General Accounting Office.

NASA will try to make up for this by radically increasing prices after three years (see March, 1982 Report), a touchy proposition when competition from Ariane is lurking in the wings. And this is only for non-defense customers--NASA is apparently stuck subsidizing the D.O.D. for some time to come, although attempts are being made to renegotiate these terms. This has not escaped the notice of Senator William Proxmire, who has charged the Pentagon with diverting funds away from civilian space projects through this drain of funds.

Prudential Investment. The Space Transportation Company, the lead story in last month's Report, has acquired the Prudential Insurance Co. as its primary financing partner.

The Baltimore Gun Club Would Have Loved It. According to an article in the Minneapolis Star (March 30, 1982), an Arab investor is attempting to bring scientists and engineers to a place called Highwater, located on the U.S.-Canadian border between Quebec and Vermont. The investor, an Egyptian-born Moroccan named Saad Gabr, is planning to turn the site into a modern space and military research center. The focus of the project: launching communications satellites into orbit using a huge cannon.

Gabr purchased the 5,000 acre site after the original owner, Space Research Corp., went out of business. He claims he is putting \$250 million into the project, and is looking for matching funds from the Canadian government. The cannon concept seems to involve the actual use of a chemically-propelled projectile, as opposed to the standard electrical accelerators normally envisioned by NASA and other studiers of projectile-launch systems. According to the company, previous tests, run in Barbados while Space Research was still in charge, involved a 16-inch gun capable of firing a projectile 115 miles up. Present company officials claim the project may produce a gun as large as 32 inches, something they say has never been tried.

I find this project intriguing, although a bit unlikely. I, personally, do not believe that a cannon can be an effective method of launching complex communications satellites. (Sorry, Jules.)

Just a short look at the physics: A typical comsat is placed in geosynchronous orbit. This requires a total delta-V of about 45,000

ft./sec. I'll give them a break and assume low earth orbit from an equatorial site. I'll give them a further break and assume no air resistance and no gravity losses. This leaves a delta-V requirement of about 25,000 ft./sec. So, what would be involved in imparting a velocity of 25,000 fps to a projectile?

By my rough calculations, A cannon 1000 feet long would require imparting an acceleration to the satellite/projectile of 10,000 G's. To reduce this to 10 G's, more in the range of a rocket launch, would theoretically require a cannon almost 200 miles long. Certain payloads may be able to handle extremely high shock loads, but I don't think communications satellites fall into that category. In any case, I believe the future belongs to the large communications platform, assembled in space and probably manned.

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Important Note to Subscribers: Up until now the Report has been written here in California and published in Minnesota. I have recently acquired the publishing rights to the Report, and, beginning with the July issue, all of the operation will be handled from this address. The major important change that this will bring about is that the editorial address and subscription address are now the same, i.e. Box 60547, Sunnyvale, CA 94088. All mail concerning the newsletter (renewals, new subscriptions, comments) should now be sent here.

Hopefully, the switchover will result in a minimum of confusion...the mailing list will now be computer generated and should not create any problems. The July issue will be the first one mailed out using this system, and any problems should be brought to my attention as soon as possible.

Incidentally, if your mailing label does not have the date "7-82" or a later date, please send in your renewal (to the new address) as soon as possible--preferably before June 20. This will insure that you do not miss an issue. Make remittances payable to "The Commercial Space Report".

Until next time,



**THE
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