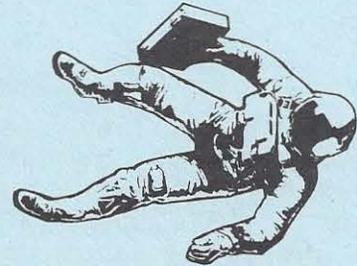


THE FOUNDATION

COMMERCIAL SPACE REPORT



PUBLISHED MONTHLY

Gary C. Hudson, Editor

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Dear Subscriber:

November

We have delayed the issuance of this newsletter so as to be able to report on the results of the November elections. Given the victory of President-elect Ronald Reagan, what will be the effect of his election upon the "space program" and the future of private space enterprise?

The naive assumption is that it will almost certainly be improved over what another four years of Jimmy Carter might have meant. Yet the Reagan administration will be under strong pressure to cut spending across the board (with the exception of DoD expenditures) and this could mean a NASA slowdown. With the strong free enterprise bent of the new administration we might expect to see a more important role for the private sector in space activity - a role that this newsletter has advocated for several years now. It is no secret that the first move in this direction might be in the arena of remote sensing of earth resources from space. Reagan has been advised to establish such a private system.

It may be that the combination of a Republican President and a Republican-controlled Senate will be a vital determining factor in the course NASA will follow in the next decade. A President alone is often limited in what he might do (since there is a tendency in the Congress to view him as just another special interest group), but the combination which will exist next January 20th may mean that NASA can expect new directions and new starts. (Ironically, one of those comes as a result of the Carter administration, which was no friend to space exploration; the Venus Orbiting Imaging Radar mission (VOIR) will be approved as a NASA new start.)

If there are NASA new starts and a major role for private enterprise in the new administration, that will be due to the man who may be in line for the Chair of the Senate Subcommittee on Science, Technology and Space: Harrison Schmitt of New Mexico. Schmitt has been a Reagan advisor on space, and it may be safe to assume that he will continue to be an advocate of a strong space policy. We wish him well.

We cannot foretell just what is going to happen in the next several years in the joint fields of space exploration and exploitation. We can, however, safely assume that the results will be in a positive direction for space advocates and that the general tenor of the business environment which will contribute to space indus-

tialization will improve. Space will increasingly play a role in defense projects, such as the concept of space-based ballistic missile defense which is strongly supported among Reagan defense advisors. This too will mean more money for space and technological spin-offs which cannot but improve the odds for real space enterprise. On balance, things are much brighter now than they were a few months ago for space enthusiasts.

OTRAG UPDATE

In the September issue of the Report we passed along news from the Space Information Center in Belgium that OTRAG had secured a new launch site, again in a developing country, and had released plans for a pair of suborbital flights before the end of 1980 with further developments for 1981 and 1982. At that time we speculated that their new site might be in Brazil and that such a move would help insulate them from the kind of outside pressure that forced them out of Zaire. We wished them luck and a measure of political stability with their business ventures.

According to reports from several reliable sources (including media) they seem determined to have neither. Their new site is once again in Africa and one again holds an unprecedented potential for controversy and negative business consequences. It is in Libya.

From a technical and logistical point of view, Libya is well situated for a commercial launch site. It is near the equator, and it is close to sources of fuel and materials and within easy reach of potential European customers. We can assume that the price and availability of kerosene is ideal.

However, from a realistic business standpoint, we have begun to wonder if OTRAG has any intention of building boosters for a living. Part of the agreement between OTRAG and Zaire involved cooperative activities in road construction, bridge building and other civil engineering activities. The OTRAG subsidiary company, Stewering and Fils S.p.a.r.l. was formed to fulfill these obligations. By all reports it is still doing this very successfully. Only the booster activity has been fraught with problems and one again OTRAG seems determined to keep it that way.

Admittedly, the accusations from the USSR which touched off OTRAG's move from Zaire will probably not be forthcoming this time. The arms link between the Soviets and the Libyans is well known. However, the reactions of neighboring Egypt and Israel as well as Western nations remains to be seen. We can only speculate whether cooperative agreements exist between OTRAG and its new landlord and what form those agreements might take. Will Israel allow the primary funding source for the "Muslim Bomb" access to a potential delivery system? Will the NATO alliance allow a backer of world terrorism access to reconnaissance satellites? Will Anwar Sadat allow his self-avowed enemy access to either of these military advantages? The answers are left as an exercise for the student.

The motivations for this business decision are not clear to us. It can only result in another expensive and time-consuming move. Does OTRAG plan on building commercial launch vehicles or a running tax loss? In the meantime, which activity is paying the bills? We hope they intend to enter the arena of commercial space. If so, we wish them luck again. We think they'll need it.

LAUNCHING ROCKETS AND THE LAW

Last month, while reporting on the concept of off-shore launch sites, we commented that the laws regarding rocket launchings are few and relatively unimportant. In fact, we said that there are no Federal regulations regarding launches.

Well, our good friend Harry Stine has correctly taken us to task for that comment. There is a Federal Aviation Administration regulation which Harry quotes as Part 101, Sub part A, Part 101.1 which deals with rocket launchings. Actually, this part deals with balloons, kites of over 5 pounds weight, and unmanned rockets which are not classed as model rockets or fireworks. Subpart C, Section 101.13 is the part that has particular applicability to the launch of heavy rockets of the type that commercial space operations will employ. The rules are very sensible: they require that the operator notify the nearest Air Traffic Control center of the launch at least 24 hours before flight, not fly within 1500 feet of property not controlled by the operator, and so forth. There is no adversarial relationship assumed between the operator and the FAA.

Additionally, rocket flight may have to comply with EPA, OSHA and related regulations, but these rules are the present price of life in the United States and are not specifically meant to prohibit rocket launches.

Harry also points out in his letter to us that the National Fire Protection Association of Boston has promulgated a "Code for Unmanned Rockets" (NFPA 1122L) which has been adopted into law by some 46 states. This code prohibits the launching of rockets over 4 ounces weight of rocket propellant. That would seem to rule out private space vehicles, but the code has a specific exemption (Chapter 1, Section 1-1.4) which exempts commercial launch vehicles: "This code shall not apply to the design, construction, production, manufacture, fabrication, maintenance, launching, flight, test, operation, use or other activity in connection with a rocket or rocket motor when carried out or engaged in by: . . .(c) any individual, firm, partnership, joint venture, corporation, or other business entity engaged, as a licensed business, in research, development, production, test, maintenance, or supply of rockets, rocket motors, rocket propellant chemicals, or rocket components or parts. . ."

Finally, he notes that the United Nations "Declaration of Legal Principles Governing the Activities of States in the Exploration and Use of Outer Space" prohibits launching without the approval and continual regulation of the home country of the business. Our counsel advises us that the treaty, while

adopted and signed by the United States, has never had "enabling legislation" introduced into the Congress and approved, thus creating the following situation. The U.S. can regulate launches and space operations, but there is no U.S. legal basis for it to do so as yet. Thus, there exists a positive right for private launches to occur until the U.S. Congress rules otherwise.

Our thanks to Harry Stine for bringing up this issue. We now know more about the law of launching rockets than we care to! Seriously, we have good legal opinions now which means one more positive step towards the day that private launchers will operate out of the United States.

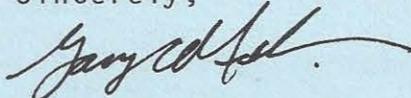
SPACE SHUTTLE AND JOBS

A quick note about the Space Shuttle, now scheduled for launch on March 14, 1981. Report sources have advised us that a problem with the Orbital Manoeuvring System (OMS) may delay the launch until the fall of 1981. There has been no mention of this possible delay in any published material that we can find on the Shuttle and no confirmation by NASA. We will keep you informed as we learn new information.

Meanwhile, the Advanced Propulsion Technology Division of GCH, Inc. in Sunnyvale, California is now hiring engineers, technicians and staff for the development of a low cost launch vehicle system. If a risky job like this appeals to you, send your resume to Gary C. Hudson, G.C.H., Inc., 1288-A Anvilwood Avenue, Sunnyvale, CA 94086 as soon as possible.

Until next month,

Sincerely,



Gary C. Hudson

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**COMMERCIAL
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