Reagan Briefed on Space Station

Corporate executives inform the President it is a critical element needed to stimulate commercialization of space

By Craig Covault

Washington—Heads of 11 companies interested in private space investment told President Reagan last week that a space station is the most important element needed to stimulate and advance U. S. commercial operations in orbit.

The President was quoted as saying, "I want a space station too, I have wanted one for a long time." But he qualified the statement by commenting on the realities of federal budgeting.

The White House is actively exploring both space station options and how a station could fit into an even larger national space objective that could be announced by President Reagan.

A list of specific space station options was completed at the White House Aug. 4 and is scheduled to be presented to the Administration's Senior Interagency Group for space this week. Following review by this group, the options will be presented to Reagan within the next few weeks as a prelude to White House decisions on the Fiscal 1985 budget.

Aside from discussion of the station, the executives who attended the 90-min. meeting Aug. 3 said the President stated solid support for policies that would enhance space commercialization. He also gave the impression he would consider changing policies now inhibiting commercialization of space.

The group was impressed with the President's enthusiasm about the outlook for commercial space ventures helping maintain U. S. leadership in space.

"It looked like the light bulb really went on when we raised to him the benefits of space pharmaceutical manufacturing, the serious European competition with the Ariane and the multiple arguments underlying station justification," one participant said.

The same executive said the President left him with the impression he would work toward an eventual space station approval, a development the National Aeronautics and Space Administration now estimates will cost $7.5-9 billion.

Another participant said he got the impression the potential political advantages from such developments had caught the President's attention.

The objective of the meeting was for corporate managers to tell the White House the kind of policy changes needed to obtain the financing and space program stability necessary to stimulate growth of space commerce.

NASA and corporate studies show several hundred million dollars in private investment is on the verge of being poured into commercial space activities if the right mix of government policy and space program stability can be obtained.

The 90-min. luncheon meeting with the President was preceded by a 2-hr. White House session, where each corporate manager stated his commercial space policy recommendations to Administration officials. Presidential Science Adviser George A. Keyworth attended the entire session and Presidential Counselor Edwin Meese attended part of the meeting. The President told the group he did not want government policy to "muck up" the chances for space commercialization.

The corporate heads told the President that:

- The White House and federal government must take a much more aggressive and more publicly stated position that space commercialization would be good for the nation.
- The White House must follow up such support with consistent policies that will enhance, not inhibit space commercialization.
- The Administration's actions must foster space program stability so that investors know the business picture will not be disrupted by a new incoming presidential administration.
- Approval of a space station program would be the best way to introduce such support and stability while providing facilities in orbit that would stimulate space commercialization.

Key Issues

An agenda of space commercialization questions that had been proposed for discussion during the session was discarded and the group focused instead on the larger picture.

The group was unanimous in its concern that shuttle pricing and shuttle capacity availability were critical space commercialization issues needing continued attention.

In addition to the White House attention, space commercialization policy was also highlighted last week in Congress and at the annual meeting of the American Bar Assn. (ABA) in Atlanta.

"Government policy is the key to the success or failure of the current drive to commercialize," Kenneth J. Brown, Boeing Aerospace Co. division counsel, said at the ABA convention.

"Most often we have heard of concerns related to the government," Peter W. Wood, senior vice president with Booz Allen & Hamilton, told a House space station hearing last week. The company has spearheaded NASA's effort in searching for new space industrial interest.

In response to the space commercialization concerns like those raised at the White House, the ABA meeting and in Congress, NASA has just formed a Space Commercialization Task Force to draft specific policy recommendations.

The task force has three objectives:

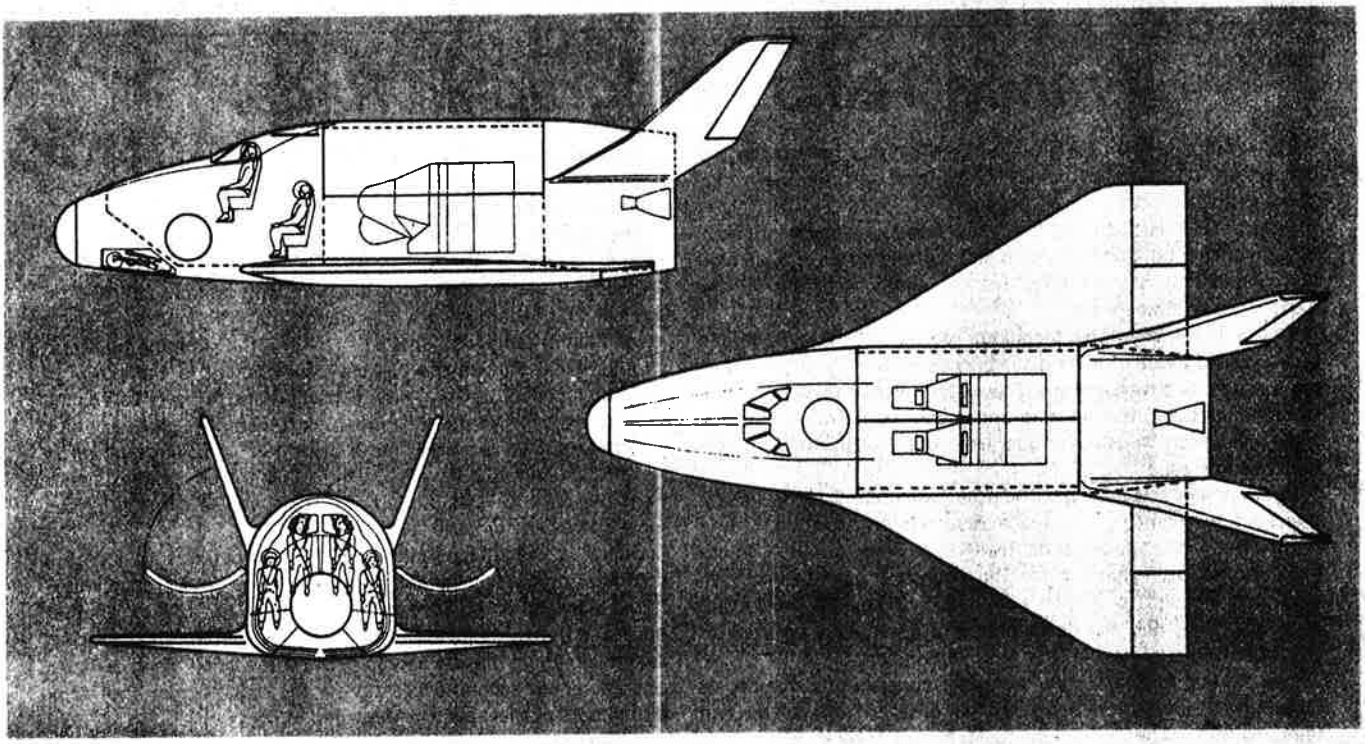
- Define a NASA policy that will encourage commercial space ventures.

Managers Meet With President Reagan

Washington—Corporate managers who met with President Reagan last week to discuss space commercialization were:

John F. Yardley, president, McDonnell Douglas Astronautics.
Maxime Faget, president, Space Industries, Inc.
Robert A. Hanson, chairman and chief executive officer, Deere, Inc.
Frederick W. Smith, chairman and chief executive officer, Federal Express.
George Jeffs, president, North American Space Operations, Rockwell International.
George Skurla, chairman and president, Grumman Aerospace Corp.
David Thompson, president, Orbital Systems Corp.
David Hannah, president, Space Services, Inc.
Oliver C. Boileau, president, General Dynamics Corp.
John Latshaw, executive vice president and managing director, E. F. Hutton Co., Inc.
John W. Townsend Jr., president, Fairchild Space Co.
Klaus P. Heiss, a consultant active in space commercialization efforts.

In addition to White House personnel, other government officials attending the meeting included NASA Administrator James M. Beggs, L. J. Evans, head of the NASA Space Commercialization Task Force, and Clarence J. Brown, deputy secretary designate, Commerce Dept.



France Proposes Minishuttle Spacecraft

Proposal for France's Hermes manned minishuttle spacecraft is shown in this three-view drawing. The French space agency CNES is evaluating future development of the Hermes for launch on the European Ariane 5 launcher configuration. The version shown here would accommodate four crewmembers in the cockpit and would incorporate a small cargo bay in the center fuselage section.

- Form an implementation plan for that policy.
- Establish an awareness program to inform the private sector what help is available within NASA that could stimulate a commercial venture and help guide it through the federal system.

The organization is not aimed at shuttle marketing or involvement with so-called space spinoffs. It is out to help multimillion dollar space commercialization investments that a growing body of research shows is near being committed by the private sector.

"It turns out to be more significant than I would have thought," L. J. Evans, assistant to the associate deputy administrator, who heads the Commercialization Task Force, said. "It is in the hundreds of millions of dollars to the point of eventually approaching billions of dollars within the next 5-7 years."

The figures do not include commercial communications satellite investments but new areas of space commercialization interest.

Work done by Booz, Allen & Hamilton for commercial station users also has turned up such interest.

"We now find that in addition to candidate user firms, we are being contacted by new space venture firms or subsidiaries, many proposing vehicles or free-flyer platforms that might complement early space station modules," Wood told the House Science and Technology subcommittee on Space Science and Applications. "We are also being contacted by venture capital firms which have begun to show a marked interest in commercial activity in orbit."

Speaking about the near-term investment interest, Evans said, "They have not signed on the dotted line to [the several hundred million dollar] level, but they have planned for it on their books and have planned to commit significant resources. They are trending in that direction but are not at the point where they couldn't back out if they got cold feet." The Space Commercialization Task Force is planning to make recommendations to NASA Administrator James M. Beggs by the end of the year. The recommendations will cover commercial launch vehicle policy, remote sensing policy, materials processing issues, advanced communications issues and other commercial space elements. The task force has broken the diverse commercialization areas down into three focal points.

"First and most important are the new high technology ventures," Evans said. "These are the kinds of projects like the McDonnell Douglas/Johnson & Johnson electrophoresis in space project that has the benefit of providing great benefit to the country.

"Second is the new application of existing technology. This would not be as significant as new high technology efforts, but we would try and do some things to stimulate it," Evans continued. Examples of projects that fall into this category are activities like Fairchild's Leasat concept and a Ball Aerospace proposal for a new payload carrier launched on shuttle.

"The third set includes commercial ventures that would move existing programs and services out of the government to the private sector," Evans said. "We would want to grease the skids to make it easier for that to happen but we would not want to subsidize it."

Some examples include the commercial

Challenger Rollout

Kennedy Space Center—Space shuttle system for the eighth shuttle mission was rolled out to launch complex 39A Aug. 2 as preparations continued for an Aug. 30 launch. Rollout was delayed about 24 hr. because of thunderstorm activity in the area.

The primary payload for Mission 8, the Insat Indian communications satellite, is scheduled to be installed in the cargo bay of the orbiter Challenger early this week. It will be propelled from a 150-mi. orbit into geosynchronous transfer orbit by a McDonnell Douglas payload assist module. The five-man crew, commanded by Richard H. Truly, participated in a dry countdown demonstration late last week.

Mission 8 will be the first night launch in the shuttle program. Liftoff is scheduled for 2:15 a. m. EDT.

France Tests Holographic Radar

Paris—France is testing a ground-based military holographic radar system designed to provide broad, precise coverage of airborne targets approaching its borders.

Program officials said the VHF radar network gives continuous coverage from horizon to horizon and out into space. They said a test installation has routinely tracked meteorite trails in the Earth's upper atmosphere.

The radar's holographic technique reconstructs amplitude and phase distributions of wave disturbances caused by targets moving through its coverage zone. The radar network uses a number of omnidirectional transmitters and receivers distributed over a wide area. Each transmitter operates continuously to illuminate the coverage zone.

Development and testing of the prototype radar system is being managed by France's aerospace research organization, Onera (Office National d'Etudes et de Recherches Aerospatiales). Onera provides research support for the country's military and civil organizations and to French companies. It has no production responsibilities, and any development of operational versions of the radar would be turned over to French industry.

Onera's test installation for the radar consists of a number of transmitter/receiver units distributed over an area of several hundred feet. "The holographic system has several advantages over normal radars," an Onera official said. "Its continuous, omnidirectional coverage capability is illustrated by the fact that we detect meteorite trails with our test installation. It would be very difficult to do this with normal radars because they would have to be pointing in exactly the right direction at the proper instant to detect the trail."

One of the meteor trail detections was processed by Onera to determine the type of data returned by its prototype system. The data show the trail was tracked at an altitude of 150 km. (93 mi.). Upper atmosphere winds had sheared the trail, dividing it into two echos detected by the radar. The upper echo was moving at a speed of 8.5 meters/sec. (27.88 fps.), and the lower echo had a speed of 22 meters/sec. (72.16 fps.).

An advantage of the radar in military applications is its damage resistance. It will continue to operate even if some of the individual transmitters and receivers are destroyed. There is some system degradation as the number of transmitter/receiver units are reduced, but the reduction in operating performance is "limited, and acceptable," the official said. Overall coverage can be provided until 50% of the transmitter/receiver units are eliminated.

The system also is less susceptible to jamming than other radars, according to the official. "It is a basic fact that any jamming at VHF is difficult to perform with jammers carried on aircraft. Our radar network operated in the VHF band, so there is some built-in protection against such airborne jamming threats."

A key challenge in the radar's development is the powerful computer needed for real-time computations. A massive volume of data is received from the numerous transmitter/receiver units. Onera personnel estimate that a computer sufficiently powerful for the system would have to perform 100 trillion complex operations per second. This is many times above the capacity of the most advanced computer today, officials said.

Onera is evaluating optical processing methods to increase computer processing capabilities. At the same time, French industry is working on surface acoustical wave devices as another approach to improve computer processing speed. Onera officials said this method may be able to perform the 100 trillion complex operations per second necessary for the radar system, but computer costs of this approach may be too high.

Initial evaluations of Onera's test radar installation were not conducted in real time because of the computer processing constraints. The data were recorded and processed later on Onera's Cyber 205 computer.

The next step will be development of a computer to handle the radar's real-time processing tasks. The computer could use either the optical processing technique or surface acoustical wave devices—or a combination of the two. Computer development is expected in the next two or three years, officials said.

Onera also is studying other applications for its holographic radar concept. One possible use is with sonar systems, where the computer processing tasks would not be as demanding because of the slower velocity of acoustical waves. Computing of data in sonar applications could be done by a standard digital computer, officials said. One example evaluated by Onera is a torpedo seeker using a number of sonar units distributed around the seeker head's circumference. A computer carried inside the torpedo would process data for the seeker.

launcher policy proposals for private funding of a fifth shuttle orbiter or transition of NASA operational shuttle responsibility entirely to the private sector.

Transitioning operational shuttle responsibility out of NASA received support from both the commercial and government sides at the White House meeting.

Evans said the task force is being formed into three principal working groups. One is to focus on "barrier elimination and incentives," a second on overall space commercialization policy and a third is designated the "commercial endeavor evaluation group."

Criticism of existing space commercialization policy, which the task force hopes to improve, was the central issue in space law presentations made to the American Bar Assn. annual meeting last week.

"Regardless of where one begins in his quest for understanding of our national space commercialization policy, you always come to the same conclusion," Brown told the ABA. "Our government policy is fragmented at best and simply doesn't encourage financial participation by industry. It seems to lack the kind of enthusiasm needed to permit vigorous development of our resources in the sciences and engineering."

Wood told the House subcommittee that studies frequently turn up the same concerns:

- First timers worry about doing business with the government.
- They worry about whether the government will allow a fair return on investment.
- The bureaucracy appears forbidding. An example is the one to three years required to obtain approval for a joint venture agreement with NASA.
- Government programs and policies are viewed as unstable and there is worry about military preemption of space station slots.

Business lawyer Arthur Dula of Houston from the firm Dula, Shields & Egbert, has been active in space commercialization legal issues. He told the ABA meeting that "it may be desirable to give business an incentive to help with the great financial risks involved in building space industry. Congress could, for example, give a direct tax credit for capital expenditures made in space manufacturing, much like present tax credits for solar energy work.

"Today space is an underdeveloped area. Many nations that seek industry agree to waive taxes on new industry for some period," Dula told the ABA. "Congress could declare that business done and sale of products made in space would be tax exempt until the year 2020, after which normal tax rates would apply. All of these ideas and examples have one common touchstone," he continued. "Government and industry must work together as friendly, flexible partners to develop the frontier of space." □