

# EIR Science & Technology

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## Space program threatened by industrial collapse

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*No nation can advance its technologies for space ventures and defense purposes on top of a rotting and bankrupt industrial base. Marsha Freeman reports.*

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The recent good news is that the incoming Bush administration is seriously considering announcing a long-term policy for the nation's space program this summer. However, the recent shutdown and quick reopening of one of the space program's and Defense Department's critical subcontractors demonstrates that a nation cannot advance its frontier technologies on a rotting and bankrupt industrial foundation.

At a business briefing on NASA's *Freedom* space station project Nov. 1, Bush campaign issues representative Jim Carpenter stated that the President-elect is considering the occasion of the July 20 twentieth anniversary of the first manned landing on the Moon, to announce a long-term program for space. To get there, Bush will "do everything in his power to have the station operational in 1996," Carpenter stated. He acknowledged that this would have to include a fight for the \$2.1 billion NASA is requesting for the station in next year's fiscal 1990 budget.

Bush supports "manned and unmanned exploration of the Solar System," he continued, and indicated that some version of a Moon/Mars effort was being considered to bring an optimistic vision for the future back to NASA.

But, while Mr. Carpenter was briefing the aerospace industry, about 60 miles away in Front Royal, Virginia, workers were picking up their pink slips at the Avtex Fiber Company plant. This factory is the *sole* producer of a specialty rayon fiber used in the booster rocket motors for the Space Shuttle and the MX Peacekeeper missile. Without this or a similar product, there is *no space program*.

By the time he takes office, George Bush is going to be faced with the most serious monetary, budgetary, and eco-

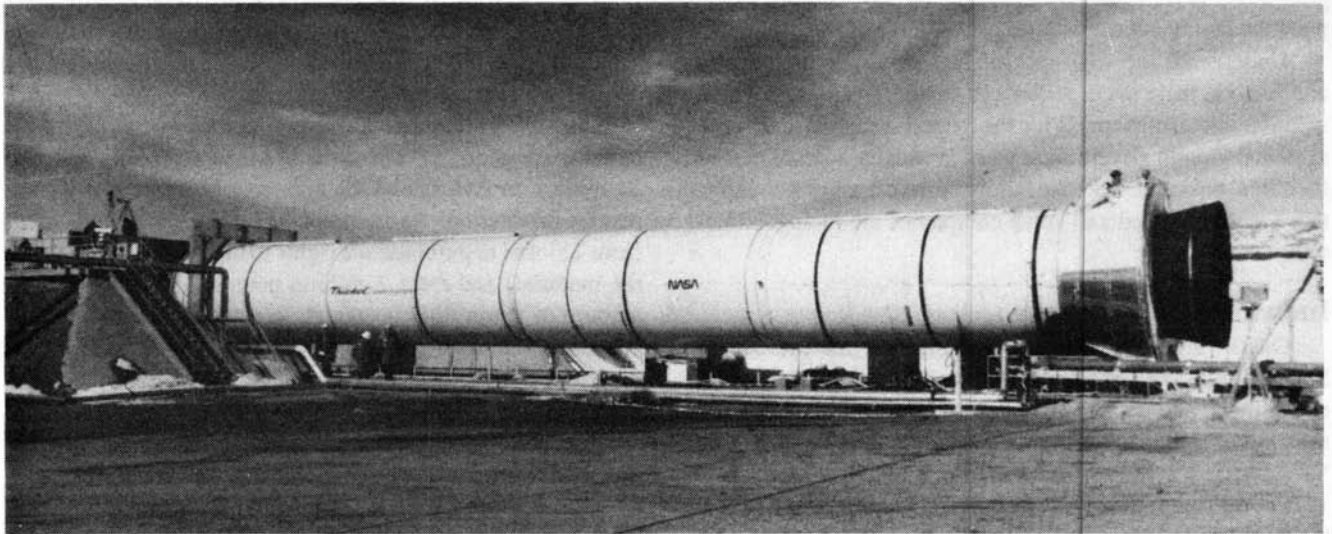
nomical crises to face any modern President. A space program with long-range goals, which thrusts this country out toward the frontiers of new technology, is the only sensible or even practical way to make sure we can produce our way out of the current crisis. But if the new administration does not completely revamp credit and investment policy for industry, agriculture, and infrastructure, no amount of long-term space plans will help.

### Moon/Mars options

Engineers and managers at the National Aeronautics and Space Administration headquarters in Washington, and at the Johnson Space Center in Houston, are now engaged in an accelerated planning effort to develop a series of options for the leadership of the space agency and for Mr. Bush. By the end of January, the NASA administrator is supposed to have a first draft of possible policy options.

Four basic scenarios are being considered, though what is chosen could include any reasonable combination of these missions. The first scenario would be an unmanned mission to the Martian moon, Phobos. There is speculation that the two tiny moons of Mars contain water and other volatiles, which might provide the raw material for human consumables needed by a Mars crew. Though the Soviets have already sent two spacecraft to Phobos this year, only one is still operational.

A second possible long-term space goal would involve sending a human crew to Mars, or perhaps more than one group, but to go as soon as possible. Apparently, there are those in the space community who are worried that the Rus-



*The Space Shuttle booster motor in test stand at Morton Thiokol's Wasatch Division. Without the product of Virginia's bankrupted Avtex Fiber plant, it couldn't be produced.*

sians will land men on Mars before we do, and propose to go there as quickly as possible, to avoid this Soviet "first." Such a mission would most likely have to rely on technology that is near-term, or already in existence. This is dangerous.

Some of the older engineers are proposing to resurrect nuclear fission propulsion as a near-term goal, which would not have to be "man-rated" but could be employed to take separately the massive amount of cargo that is needed to support humans on Mars. When the cargo ship arrived, containing the consumables for people on Mars, and the fuel for the return trip of the crew, the much smaller manned vehicle could leave Earth orbit to rendezvous with the cargo ship.

In this general scenario, the manned vehicle would use today's chemical propulsion system, which is already used in the Space Shuttle. The idea is that this would not require any revolutionary new technology development, and could, perhaps, get Americans to Mars in the beginning of the 21st century.

The stay of the crew at the red planet, however, would be short, a few weeks, and the infrastructure needed for permanent habitation of the planet would be lacking. This mission would be akin to the Apollo program, where the American flag was left on the Moon, and some material was brought back to the Earth, but there was no long-term transport or in-orbit infrastructure to make the Moon a new home for mankind.

A third option under study is to establish a scientific base on the Moon. On the far side, away from the electromagnetic "noise" of Earth, large telescopes and other scientific instruments could be placed, for superb observation of the Solar System and the universe. This would require establishing at least a human "outpost" on the Moon, but not necessarily a large-scale manufacturing base.

The fourth, most ambitious, and actually "realist" pro-

posal, is an evolutionary approach to the colonization of the near-Solar System. This option is most similar to that recommended by the National Commission on Space in 1986, and by Lyndon LaRouche in his presidential campaign. The first step in this 30-year perspective would be a return to the Moon, for the purpose of building a scientific base, but also to take advantage of the raw materials available on this relatively large moon.

One of the most valuable materials on and near the surface of the Moon is a rare isotope of the element helium, which will be an important fuel for both space-based and terrestrial fusion energy reactors. Groups of researchers at various NASA research centers, Department of Energy laboratories, the Bureau of Mines, and in industry and universities, are studying the technologies required to mine helium-3 from the surface of the Moon.

This valuable commodity could be transported back to Earth, and perhaps become the first lunar import for our economy. Other manufacturing industries could likewise be established, to lay the basis for the Mars colonization which would follow.

The second major phase of this "evolutionary" future space scenario, would be the use of the industrial capability and experience of the lunar settlement, to send men to Mars. Over the two-decade period of lunar infrastructure development, the revolutionary technologies needed for Mars, such as fusion propulsion, would be developed and tested. Man's move further into the Solar System would be with the aim of permanently settling this new frontier.

There could be no more appropriate time for the next President to commit this nation, and the free world, to moving humanity into space, than during the celebration of what was the finest hour of this country in this century.

But some serious economic changes will have to accom-

pany the laying out of exciting goals for the space program.

Underneath the top layer of 200 or so major industry contractors, there are thousands of smaller companies which manufacture critical parts for the largest weapons and space systems, though government work is usually a small part of their total business. Like the family farms across this country, these medium-sized and small companies are facing extinction.

## Industrial base collapse

One of the recent examples of the fact that the United States is quickly losing even the most basic of industrial capabilities, and what that means for our national security, is the case of the Avtex Fiber Company plant in Front Royal, Virginia.

For 50 years, the plant has been producing rayon, and is the largest rayon plant in the country. A small part of its total production, roughly 5-6%, is a base fiber for a resin-impregnated cloth used in the production of rocket nozzles that go into solid rocket booster motors. These solid-fueled boosters are used in the Space Shuttle and the MX Peacekeeper missile, among others.

On Oct. 31, John Gregg, Avtex's chief executive officer, announced that the plant was going to shut down, putting 1,300 employees out of work. The reason the company's management had made that decision, was largely because their rayon competitors were importing cheaper wood pulp from South Africa, below the cost of Avtex's Canadian and domestic suppliers.

In addition, over the past few years, Avtex management has been forced to spend millions of dollars trying to bring the plant into compliance with environmental and health and safety regulations. On Nov. 2, Virginia Attorney General Mary Sue Terry filed a \$19.5 million law suit against the company for noncompliance. This, despite the fact that ongoing negotiations between Avtex and the Environmental Protection Agency had led to a plan whereby the EPA's Superfund was slated to fund the clean-up, with the company reimbursing the government.

Only when the story that Avtex had closed its doors hit the newspapers, did booster manufacturer Morton Thiokol realize there was a problem: Without production of the specialty fiber, there would be no Shuttle boosters available after 1990. A spokesman for Avtex stated to this reporter that the company had "conversations with the government for months" about its tenuous economic situation.

It did not take too long for NASA and the Air Force to realize that they had to do something very quickly. Although Avtex had washed out the piping of the factory with water, viscous material, once frozen into the equipment, would make it economically impractical to reopen the facility once it were actually shut down.

Avtex had closed the plant when it could not meet its payroll. Management estimated that it would take \$38 mil-

lion to bring the factory back into operation—to pay employees, buy raw material feedstock, make needed improvements, and ship out product.

On Nov. 9, less than a week before the last worker was to leave for good, NASA, through Morton Thiokol, relayed \$7 million to Avtex, and the company announced it would resume production. An additional \$11 million was forwarded from Thiokol to purchase the rights to the process for making the material, and for 1.1 million pounds of the fiber. That amount of rayon fiber is enough to produce boosters for 12 additional Shuttle flights. The Air Force is in the final stages of writing the necessary documentation to assure the remaining amount of money.

The plant shipped its first product at the end of the Thanksgiving holiday week. The management of Avtex plans to keep the factory open, and restructure its product line toward specialty products, like the carbonized rayon, where it will have an assured market.

It is possible that other materials could be substituted for the rayon fiber. However, the extensive testing that would be required for such a change in the booster, especially for the Shuttle program, which must be man-rated, would mirror the two-year booster redesign and testing effort forced by the Challenger accident.

Avtex spokesman Nick Nichols pointed out that the two other companies in the U.S. that could produce the specialty material are *both* foreign owned. At least some people in the Department of Defense are alarmed at the weakness of the defense industrial base in the United States, and fear any reliance on non-domestic components for military systems.

For the past two years, the Defense Department has been developing a computer-based tracking system for defense subcontractors, called DIDNET—Defense Industrial Network. DIDNET program manager Dan Dennison stated to *Washington Technology* newspaper in mid-November that the program should allow a user to find some of the prime-contract suppliers used by companies like Morton Thiokol.

"Obviously we didn't have the capability to get all the way to Avtex," he stated. Even if they did, it does not seem that DIDNET could *do* anything, except identify possible alternative suppliers for a product *after* it becomes known that the usual supplier is in trouble. DIDNET does not seem able to do anything to ensure that economic circumstances are changed so that American companies can stay in government and commercial business.

That kind of change—in credit and investment policy—will require, for one thing, that the reality of the nation's worsening economic-military vulnerability be brought into general deliberations on overall economic policy.

One thing is clear: Without a halt to the shutting down of the workplaces that supply this country's most advanced aerospace/defense industries, we will not be able to start or finish a Strategic Defense Initiative, or a Moon/Mars mission.