37. National Aeronautics and Space Administration

Congress should shut down the National Aeronautics and Space Administration (NASA). To that end, it should

- scrap plans to build a space station or, failing that,
  - o upon completion, sell off the station to private purchasers and
  - o allow the private sector to provide and pay for all future travel to and from the station as well as station operations, maintenance, and expansion;
- sell off the space shuttle or, failing that, turn over as much of shuttle operations as possible to the private sector;
- build down government civilian space activities by
  - o barring NASA from building and operating launch vehicles and requiring NASA and all other nondefense government agencies to purchase future launch services from the private sector,
  - o requiring NASA to accept bids from private firms for the acquisition of scientific data including data traditionally collected by planetary probes, and
  - o eliminating Mission to Planet Earth or turning it over to other government agencies and contracting with private service providers for all data needs.

From *Exploration to Freight Hauling*

The possible discovery of extinct Martian life has renewed discussions of the future of America's space program. While the Clinton administration immediately used the discovery to justify NASA's budget, it fortunately

has not pushed for a manned mission to Mars, though it is envisioning an unmanned landing and sample return mission for 2005. However, especially in recent decades, NASA actually has hindered the advance of space science as surely as economic planning in communist countries undermined prosperity. The federal role in civilian space ventures should be cut, not expanded.

The space program and NASA were born of the Cold War wish to wipe out the embarrassment of early Soviet space successes. While the government has a legitimate defense role in space, commercial ventures, and most scientific research and exploratory ventures, ideally should be carried out by the private sector. But in the late 1950s many Americans believed that only governments could undertake such endeavors. The lunar landings forever will be celebrated as great human and technological achievements. Yet today NASA is wasteful and ineffective, squandering the public's goodwill, enthusiasm, and tens of billions of dollars.

In the early 1970s, as NASA saw Moon landings curtailed and Moon bases ruled out, it sought to preserve its big budgets and staffs with another big project: the Space Shuttle, which was sold to policymakers as a reusable and thus cheaper way to put payloads into orbit than expendable launch vehicles. In effect, NASA's mission went from science and exploration to freight hauling.

If at that time NASA had begun to turn over space activities to the private sector, space stations and Moon bases might be a reality today. Market competition usually brings down the real price of goods and services. For example, the price of airline travel in constant dollars since the mid-1970s has been cut by as much as half. Shipping costs for oil have dropped by 75 percent. In 1981 a megabyte of computer memory, which was not even available in the first IBM personal computers, would have cost around $45,000. Today a megabyte can be had for only a few dollars. And in the communications satellite industry, the one space activity principally in the private sector, costs have dropped dramatically in real terms.

By contrast, as nearly as can be determined from impenetrable NASA accounting, the cost of putting payloads into orbit has skyrocketed. David Gump in his book *Space Enterprise* estimates that the cost in constant dollars went from $3,800 per pound with Apollo to $6,000 with the shuttle. Alex Roland of Duke University estimates that the cost of a shuttle flight, including development and capital costs, is not the $350 million claimed by NASA but closer to $2 billion, which works out to about $35,000 per pound.

As NASA developed and flew early shuttle missions, it had to fend off private competitors. In the late 1970s and early 1980s federal agencies were forbidden to contract with the infant private launch industry to put government payloads in orbit.

As it became apparent in the early 1980s that the shuttle was a costly white elephant, NASA needed a mission to justify the shuttle's continued existence. Regardless of any commercial or scientific benefits, an orbiting space station seemed to serve that purpose. But the cost of the station, initially named "Freedom," went from a promised $8 billion to nearly $40 billion before the current stripped-down $30 billion model, renamed "Alpha," was redesigned in 1993. A recent General Accounting Office report found that, through June 2002, the actual cost of designing, building, and launching the station will be $48.2 billion. The cost of operating the station after its assembly through 2012 will add another $45.7 billion to the price tag for a total station bill of $93.9 billion.

As NASA sought to protect its big budgets, it continued to ignore the private sector. For example, Space Industries of Houston in the 1980s offered to launch for $750 million a mini-station that could take government and other payloads a decade before the planned NASA station. The government would not contract with that private supplier.

NASA's projects and decisions continue to be driven by politics, and by the need to preserve the agency's budgets and scope of responsibilities. In a sense it now runs like its Soviet rival of three decades ago, attempting to impress the public with no regard for the economics of its operations, with politics rather than markets dictating decisions.

An indication of the unsound habits that still infest NASA is its preliminary consideration of a plan to use the shuttle to rescue a Chinese communications satellite, purchased from Hughes Satellite, that was launched into a useless orbit by a Chinese Long March rocket on August 18, 1996. The insured value of the launch and spacecraft is $102 million. The shuttle rescue would cost $400 million.

It is time for the federal government to follow a builddown strategy to extract itself from most civilian space ventures and let the private sector take over.

Scrap the Space Station

Estimates of the actual costs of completing the station range from around $18 billion to nearly $100 billion. Once built, the station will be operated

by NASA at an annual loss of at least $2 billion in taxpayers' funds. Among the station's problems:

- There is no prospect of any profitable commercial venture coming from NASA's operation of the station. No customers are committed to paying the actual costs of renting space on the station. NASA will have to give away space at a loss. Because the station is to be run as a command economy, there are no opportunities for private companies to take over parts of the operation at lower costs.
- Costs are creeping up again. For example, two shuttle flights, planned for 1998 and 1999, respectively, that were supposed to use the station for experiments are now being used, along with at least $230 million in science funding, for station construction.
- A special Presidential Advisory Commission, chaired by Martin Marietta Corporation's CEO Norman Augustine, in 1991 stated, "We do not believe that the space station ... can be justified solely on the basis of the (nonbiological) science it can perform, much of which can be conducted on Earth or by unmanned robots." That conclusion is hardly surprising. Building a station with a price tag of nearly $100 billion to handle scientific experiments valued in only hundreds of millions of dollars is like insisting on a chauffeur-driven limousine to go to the corner store for milk.

If the political will to scrap the station cannot be mustered, a second-best option would be to

- sell the station off to private purchasers upon completion and
- allow the private sector to provide and pay for all future travel to and from the station as well as station operations, maintenance, and expansion.

The station will have to be sold at a loss, but at least taxpayers will not continue to lose money on its operation. Under nonsubsidized private management, a real market will develop for use of the station based on the actual costs for private launchers to transport payloads and technicians to the station. The prices for use of the station will change with real costs. Thus, for example, the price for space on the station may start low, but as launch costs come down, greater demand for space will cause its value and prices to rise. Most important, station policy will not be determined by politics or bureaucratic power.

A variation of that approach is suggested by Rick Tumlinson, president of the Space Frontier Foundation. While still involving government fund-

ing, his ''Alpha Town'' approach contains elements to help create markets in space. One element would be tax and regulatory exemptions for space enterprise. Another would force NASA to sell off rather than scrap unused assets. For example, each shuttle flies 98 percent of the way to orbit with an external fuel tank the size of a 17-story building. Once the nontoxic liquid oxygen and hydrogen from those tanks burn off, they are dropped into the ocean. If they were placed in orbit, they could be sealed and ''homesteaded'' by private owners who could use them as platforms for experiments, space hotels, or any other activity of which an entrepreneur could conceive. But NASA currently has no incentive to create competition for its own space station by placing the tanks in orbit for private use.

Those approaches to privatization are similar to the approach used to privatize assets in communist countries. Putting assets in private hands best guarantees their profitable use. Thus, future expansion of the station would only occur in response to market demands rather than bureaucratic dictates and would be paid for by customers, not taxpayers. If done right, such a privatization would help create a true private market for space services.

Sell Off rfie Space Shuttle

Without a space station to build, there will be little reason to keep the overpriced shuttle in operation.

The Clinton administration announced a "privatization" of the shuttle in 1995, but what it actually meant was that the operation of the shuttle would be contracted out to a single private company at some set rate per flight. United Space Alliance will operate the shuttle for a price still being negotiated but probably around $400 million per flight on the basis of seven flights per year.

But the American taxpayers still will foot the bill. Without a station to build, the shuttle could be allowed to fly any science missions already scheduled. But no new mission should be accepted by NASA.

If NASA continues with station construction, as much of the shuttle's operations as possible should be turned over to the private sector. Perhaps NASA could allow the private operator of the shuttle to sell launch services to customers. United Space Alliance could seek paying customers and could "rent" the shuttle from NASA for such a profit-making venture. Since United Space Alliance would have to put some of its own money at risk, it would have an incentive to reduce the real costs of a shuttle flight.

That approach or some variation of it might help ensure that the life spans of the shuttles were determined more by economic than by political considerations.

Other reforms have been discussed on Capitol Hill by those seeking to break NASA's exclusive power to decide which experiments will be flown into orbit on each flight in cargo space not needed for station-construction activities. The current arrangement gives NASA no incentive to increase shuttle efficiency. Some people suggest that funds be given directly to perspective users, scientists and other experimenters, in the form of vouchers for the purchase of launch services. Proponents of that approach believe it could create more marketlike demand for launch services, forcing the operator of the shuttle to compete for business. Many questions are raised by that approach; for example, would such vouchers become a kind of high-tech entitlement for scientists? But the suggestion does demonstrate the wide recognition that the current NASA shuttle cannot be expected to give way to an efficient private space transportation system.

Build Down Government Civilian Space Activities

Congress should take the following steps to build down government civilian space activities.

Bar NASA from Building and Operating Launch Vehicles and Require All Other Nondefense Launches and All Nonemergency Defense Launches to Be Purchased from the Private Sector

The market for private-sector launch services has been actively discouraged by NASA in the past. And today, instead of contracting for launch services, NASA still is addicted to purchasing expensive hardware while spending very small amounts on actual science. As part of a builddown of government involvement in civilian space activities, NASA and all other government agencies should be required to contract out for all launches.

The telecommunications revolution has pushed up demand for communications media. Satellites now cannot be launched fast enough to meet demands for World Wide Web use, direct digital television, and other uses. American firms such as Boeing and Lockheed have entered partnerships with Russian suppliers to provide launch services. The French company Arianespace continues to be a world leader in space transportation.

The Pentagon ought not be exempt from the push to privatize. The Defense Department clearly should continue to own and control interconti-

nental ballistic missiles that might need to be launched at a moment's notice. But many defense functions, such as remote sensing with satellites that require launch services, are planned years in advance. There is no reason why launches for such systems could not be secured from the private sector. Yet the Defense Department, continuing to protect its budget, currently is spending $2 billion to develop a new expendable launch vehicle.

Market conditions are ripe for competition to help create more private-sector launch alternatives, which will bring down prices and provide better service. The U.S. government should not be in competition with the private sector in the provision of those services any more than it should be competing in trucking or air travel. If the government does have legitimate cargos to place in orbit, it should go to private providers.

Require NASA to Accept Bids from Private Firms to Acquire Scientific Data

NASA's scientific activities involve not just launches but data collection. Far more valuable from a scientific perspective than the space station and the shuttle have been the planetary probes overseen by the Jet Propulsion Laboratory in California, which is under NASA but has considerable independence. And while costs are not as high as those for the shuttle or station, the process is still wasteful and politicized. For example, 60 percent of the support contracts that the JPL issues to the private sector are reserved for minority contractors.

Rather than build their own probes, even if they are carried into space by private launchers, JPL and other NASA or government agencies should allow scientists to purchase data from the private sector. What that means, in effect, is that, as part of the builddown of NASA, certain data would be offered for a price and private suppliers would devise the most cost-effective ways of acquiring those data to secure contracts.

That approach was considered for one of the toughest possible projects. In 1987-88 an interagency U.S. government working group considered the feasibility of offering a one-time prize and a promise to rent to any private group that could deliver a permanent manned Moon base. When asked if such a station was realistic, private-sector representatives answered "Yes!" but only if NASA stayed out of the way and did not force the private providers to use the shuttle or proposed station. Needless to say, that approach never saw the light of day.

Eliminate Mission to Planet Earth or Turn It Over to Other Government Agencies and Contract with Private Providers for All Data Services

NASA in recent years has seen environmental projects as potential cash cows. It has fought with other agencies—through its Mission to Planet Earth, a project to study Earth's ecology—for jurisdiction over satellites to monitor the environment. Typical of its tactics, in February 1992 it made screaming headlines with its announcement that a huge ozone hole could be in the process of opening over the Northern Hemisphere. In fine print the data were skimpy at best. Still, the agency got the politically correct headlines as its funding was being debated. There were few headlines months later when no ozone hole developed.

The mission itself is of questionable value. It seems aimed more at selectively acquiring data to push politically correct agendas than at collecting information that is urgently needed by policymakers but cannot be acquired by other, less costly means.

Even if the mission is not shut down, it does not belong in NASA's portfolio. Some other department should direct the project. Further, government agencies should not be in the business of launching remote-sensing satellites into space or owning those satellites. There are private-sector providers that could collect the desired data; those providers would submit bids to the agency wishing the information.

Conclusion

NASA administrator Daniel Goldin has struggled to bring greater efficiency to his agency and find innovative ways to overcome bureaucratic inertia. In some cases he has made improvements. But he is like the former Soviet Union's Mikhail Gorbachev, trying to save his failed system by introducing limited market reforms when what is needed is a real free market.

Those who believe that mankind has a future in space should think deeply and seriously about how to ease the government out of civilian space activities. Only by approaching this challenge with the same honesty and clarity of mind that were needed to put men on the Moon can a landing on Mars and other future goals be attained.

Suggested Readings

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