America's future in defense and space

By the EIR *Science and Technology editorial staff: Marsha Freeman, Robert Gallagher, Charles Stevens, and Carol White.*

Recently, Speaker of the House Jim Wright (D-Tex.) echoed the words of Lyndon H. LaRouche, by setting an economic recovery agenda for the United States which would emphasize development of higher productivities through investment in advanced technologies. As experience has repeatedly demonstrated, for example, in the Second World War and in the aftermath of the Apollo program, the space and defense industries are key motors of development in the economy.

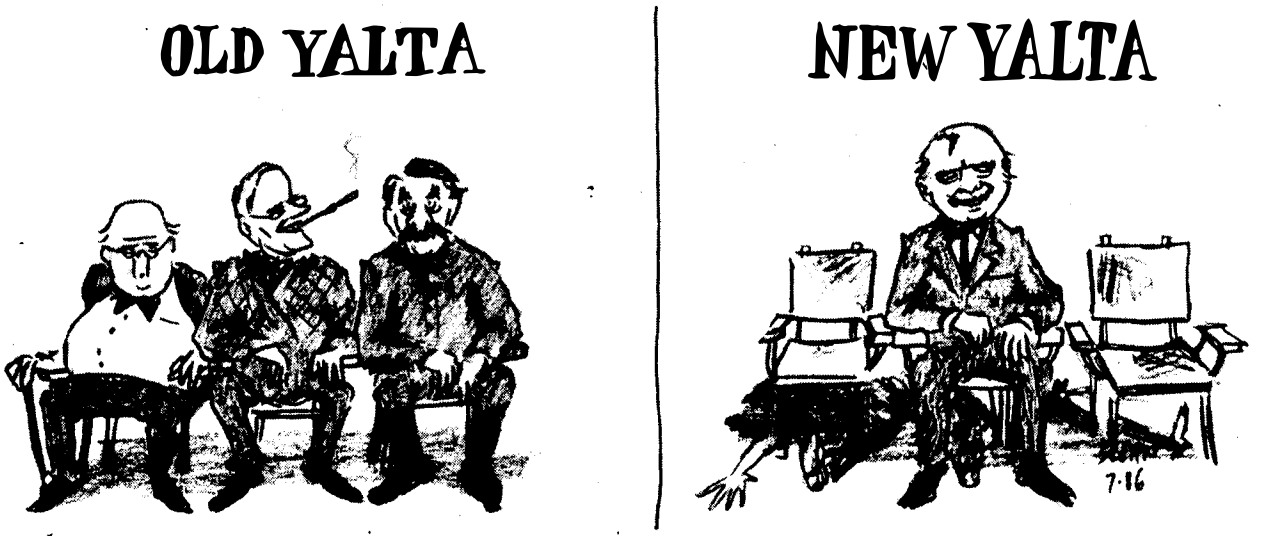
In this period, the President's Strategic Defense Initiative and the colonization of space represent the kind of goals which alone can do that job. Each in its own right is necessary, but without such catalysts it is doubtful that the present economic downswing could be reversed. Of course, neither program exists in a vacumm. Without a radical shift in U.S. economic policy neither the SDI nor a credible space program will be possible. And regardless of what Congress may decide, the Soviet Union is conducting a rigorous military program of which principal components are their own SDI and space efforts.

This past year began on the grim note of the Jan. 28 Shuttle explosion; however, its end gives cause for optimism. On the policy level, the report to the President of the National Commission on Space—still to be formally approved by President Reagan—posed the colonization of Mars and the industrialization of the Moon, as the major task before us for the first half of the 20th century.

As a practical political matter, the Strategic Defense Initiative is now acknowledged as the centerpiece of U.S. and Soviet military strategy. While at the Reykjavik summit, President Reagan came dangerously close to capitulating to Soviet maneuvers designed to decouple the United States from Europe, his refusal to compromise the SDI signified that the SDI is irreversible. For the first time, it is also now widely recognized that Soviet claims to oppose the SDI cynically disguise the fact that they have had a vigorous anti-ballistic-missile defense program for more than two decades. Compared to the $3.2 billion DoD expenditure on the SDI in the fiscal year 1987 budget of the United States, it is estimated that the Soviets have consistently spent in the range of $15 to $20 billion on all forms of strategic nuclear defenses (apart from anti-aircraft and civil defense) *since 1970*.

The fight to defeat Soviet maneuvers to decouple the United States from Europe, ably seconded by treasonous members of the United States Congress, is being vigorously countered by the NATO defense ministers, and a positive sign of the success of that opposition is the fact that the United States has officially broken with its *de facto* compliance with the SALT II "treaty." In justification of this, *EIR*'s contention that the Soviets have systematically violated both the SALT I and SALT II treaties, has been confirmed by Defense Secretary Weinberger, who reported to a meeting of the American Legislative Exchange Council on Dec. 11, that the Soviets have extensively deployed two new missile systems: the SS-X-24 and SS-25.

De facto noncompliance with the SALT II treaty by the United States, however, presumes adequate financing of the defense of the Western Alliance. One of the casualties of "Reaganomics" has been the defense budget, which has been ruthlessly cut this past year. Now, we learn that the Pentagon has scaled down its initial request for appropriation for the next fiscal year, below that of this past year. Last year's defense budget was cut so drastically that less money was allocated to DoD-sponsored SDI research on directed energy weapons than in the previous year. For the budget for fiscal year 1988, the DoD has announced an initial request of $312 billion, $7 billion less than they requested at the start of this



past year's budget process. This lower figure represents a modest correction for inflation, but otherwise would keep the allocation fixed in real-dollar terms at the present $290 billion level. Such "fiscal realism" will undermine U.S. ability to resist Soviet aggression and will in the end have a result similar to that of continued compliance with the SALT II treaty: to wit, Soviet military hegemony.

America's allies come on board

A series of agreements have been completed between the United States and its European allies, and another with Japan. The Federal Republic of Germany has signed an agreement with the Defense Department for the involvement of West German companies in the development of the SDI. Research contracts have been awarded to several firms in Britain, West Germany, Italy, and France. While contracts offered by the Strategic Defense Initiative Organization, so far, amount only to tens of millions dollars, for studies on both strategic defense of the U.S. and how to defend Europe against Soviet short-range ballistic nuclear missiles, it is the principle rather than the amount which is critical. It is now established [and will be reported on in full in January of 1987 as a Science-and-Technology feature] that a "tactical" defense initiative for Europe will prove easier and cheaper to deploy than the strategic defense initiative. It is estimated that Japanese cooperation on the SDI will reduce the time needed for development of an SDI capability by two years.

Soviet dissimulation admitted

What *EIR* has been documenting for years, for example, in the 1985 special report, *Global Showdown: The Soviet Imperial War Plan for 1988*, is now being widely acknowledged: The Soviets have an advanced ABM capability of their own. They have an operational ABM system around Moscow (allowed by treaty agreement) which protects all of western Russia and which they are presently extending to the whole of Russia, in violation of Kissinger's ABM treaty. Not only have they consistently violated the SALT II treaty, but they have a ring of nine phased-array ABM battle management radar stations in the U.S.S.R., such as the well known Krasnoyarsk radar; their only purpose can be for detecting and tracking ballistic missiles as part of a nationwide ABM system.

Headlines in major news media in early December brought to the attention of a broad general public the Pentagon estimate that the Soviets will be able to mount an ABM defense around the country within six months. U.S. intelligence has also discovered construction of three new ABM battle management phased-array radars in northern and western Russia.

EIR first reported the news on the Soviet ABM system now grabbing the headlines on May 3, 1983 and Feb. 7, 1984. *EIR* then wrote that the Soviets are stockpiling ABM anti-missile-missile interceptors of the same types now based around Moscow with mobile ABM radars for integration with the network of ABM battle management phased-array radars still under construction. *EIR*'s Feb. 7, 1984 issue put forward precisely the evaluation that intelligence analysts are now being forced to accept. The principal change in the Soviet ABM system since then, has been the addition of five phased-array radars, either complete or under construction, and platoons of missile batteries.

Two of these were discovered in August of 1986, but news of this was supressed by Secretary of State Shultz's State Department as part of their drive to force through an arms-control agreement with the Soviets. These radars were located, one near Skrunda on the Lithuanian border, and the other near Mukacheva on the Czech border. On Nov. 10, U.S. intelligence confirmed another huge new Soviet radar on the Polish border, near the town of Baranovichi. Discovery of the three construction sites was officially confirmed by Defense Secretary Weinberger Dec. 11.

Conservative news media, politicians, and strategic analysts are now echoing *EIR*'s warnings of 1983 and 1984, repeated in 1985's *Global Showdown* report, that the Rus-

sians have already deployed a partially effective nationwide ABM system and are upgrading that into a complete nationwide ballistic missile defense system. They have tested new surface-to-air missiles in an AMB mode, using their sophisticated air-defense radars. They are also developing the capability to produce components of an ABM system, which would reudce construction time for individual ABM sites from years to months.

While the ABM system now in use in Russia employs anti-missile missiles armed with nuclear warheads (as opposed to Danny Graham's peacenik "non-nuclear" kinetic energy weapon concept), the Soviets are considered by some to be as much as five years in advance of the United States in developing x-ray laser systems. Their directed-energy program is led by Yevgenii Velikhov, a vice-president of the Soviet Academy of Sciences and deputy director of the Kurchatov Atomic Energy Institute. U.S. reconnaissance satellites have located two large laser facilities being constructed on mountaintops near the Soviet border with Afghanistan.

On May 9 of this year, Dr. Edward Teller testified before the Senate Defense Appropriations subcommittee. At that time, he confirmed the warning by SDI Director Lt.-Gen. James Abrahamson that the Soviet Union is anywhere from two to five years ahead of the United States in x-ray laser development. At that time, Teller requested that an additional $200 million be added to the SDI program to finance tests of the x-ray laser. Despite the so-called Soviet moratorium on nuclear bomb testing, it is well established that the kind of explosions necessary for purposes of testing the x-ray laser are easily masked in the large underground tunnels used for that purpose by the Soviets. The United States uses simple vertical bore holes for underground nuclear explosions. The use by the Soviets of extensive, evacuated tunnels indicates that they are carrying out actual weapons-simulation tests. According to Abrahamson, U.S. intelligence data indicates that Soviet underground tests of x-ray lasers took place at least as early as 1982.

The May 12, 1986 issue of the weekly *Tech Trends* reported on U.S. intelligence to the effect that the Russians are carrying out "an energetic developmental program for nuclear-pumped x-ray laser devices. . . . The effort . . . involves tens of thousands of scientists, engineers, and technicians, according to the Defense Department and intelligence community officials. . . . Space-based sensors have observed numerous tests at the Degalin x-ray laser test site [near the Ural mountains] with as many as 40 trailers containing diagnostic equipment with line of sight from the surface to the x-ray test area underground."

The Soviet SDI

The emerging Soviet ABM system is based on two types of ballistic-missile interceptors. Both of these are antimissile-missile type systems with nuclear or high-explosive warheads. It is not known whether the Russians have yet integrated directed-energy weapons into their emerging nationwide ABM system, although the pulsed laser at Sary Shagan is a likely candidate.

TABLE 1
Emerging Soviet ABM system

Missile type	Defends against	Coverage	When deployed
"Galosh"	ICBM; SLBM	Western Russia	1964*
SA-5	Bombers; ICBM	Nationwide	1967*
SA-10	Low-alt. bomber cruise, Pershing	Nationwide	1980
SA-11	Pershing; bombers	Nationwide	1985
SA-12	Pershing II; SLBM ICBM; cruise	Western Russia	1985
ABM-X-3	ICBM; SLBM	Mobile**	198?

* The Galosh and Gammon systems have gone through multiple upgrades, the most recent being the complete replacement of the missiles in the Galosh system from 1979 to 1985.
** Nationwide potential

The first category of interceptor is that of the ABM missiles stationed around Moscow which protect the entirety of western Soviet Russia. These missiles were designed solely for an ABM purpose and include the long-range SH-04 "Galosh" exoatmospheric interceptor, and the short range hypersonic endoatmospheric interceptor, the SH-08. Together they provide a layered defense for western Russia.

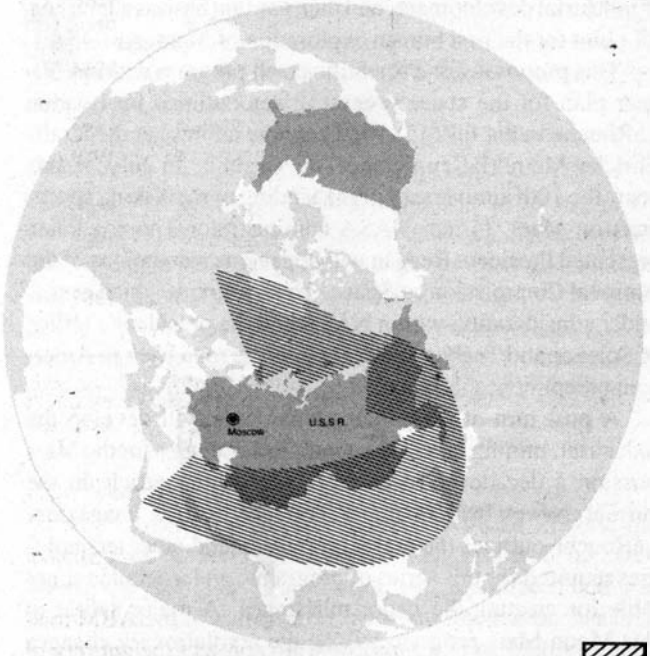
It is the SH-04 and SH-08 missile systems in a mobile mode, that the Russians have been producing at a rapid rate since at least 1982 or 1983, and stockpiling with the mobile ABM-X-3 radars in warehouses around the country. It is these systems that are expected to be deployed once the network of ABM battle management phased-array radars is complete. The ABM-X-3 radar system is composed of the Flat Twin tracking radar and the Pawnshop missile guidance radar.

The second type of missile system integrated in the Soviet ABM network is dual-purpose anti-aircraft and anti-missile systems which, in a treasonous concession to the Russians, Henry Kissinger excluded from coverage by the 1972 ABM Treaty (see *EIR*, May 3, 1983). While the system based in Moscow can take out any American ballistic missile, these dual-purpose systems can defend against tactical ballistic missiles such as the Pershing II, submarine-launched ballistic missiles, and some of our intercontinental ballistic missiles, such as the Minuteman II.

The SA-10, SA-11, and SA-12 are newer surface-to-air missile systems which each have a defense capability against cruise missiles and the Pershing tactical ballistic missile. Such systems are permitted under the 1972 ABM Treaty. However, a system that is capable against tactical ballistic missiles, such as the Pershing, is also capable against sub-

FIGURE 1

Coverage of ballistic missile detection and tracking systems in U.S.S.R.



Source: Soviet Military Power 1985.

marine-launched ballistic missiles, because both types are intermediate-range ballistic missiles and their trajectories are similar. As of 1984, there were 520 SA-10 missile-launchers with 4 missiles each, deployed around the Soviet Union. At the then-reported production rate, the Soviets would have about 800 of these systems deployed around the country at this date. Early in December, it was reported that new mobile SA-10 installations had been discovered in both eastern and western Russia. In both areas, they will defend against ground-launched and air-launched cruise missiles and submarine-launched ballistic missiles.

There are approximately 2,000 SA-5 "Gammon" dual-purpose missiles deployed around the Soviet Union. According to many analysts, this so-called anti-aircraft system is also capable against the U.S. Minuteman II ICBM. It was this system that Kissinger "overlooked" in the course of the negotiations leading up to the 1972 ABM Treaty.

The SA-5 missile is reported to be modeled on the U.S. Nike-Zeus ABM missile developed in the 1960s. The SA-5 has a 160-mile range, and can climb to an altitude of 100,000 feet.

The accompanying map from the 1985 edition of Defense Secretary Weinberger's *Soviet Military Power*, shows the area of coverage of Soviet ABM phased-array radars known to exist or be under construction at that time. The areas are marked with hatch marks in big sweeps around Soviet Russia but there is one gap which runs from the Kola peninsula in northwestern Russia all the way around to the west and south at the Caspian Sea. This gap is now being filled by the three phased-array radars detected under construction in the past few months.

Before it was acknowledged that the three new Soviet radars were under construction, *Jane's Defense Weekly* in November discussed the dangers posed by the Soviet ABM battle-management radar under construction at Krasnoyarsk, the radar that is in clearest violation of the ABM Treaty. Warning that the Soviets could have a functioning ABM defense system deployed no more than six months from now, *Jane's* wrote in November:

"Krasnoyarsk will close the gap on the Soviets' map forming an arc of radar coverage from the Kola peninsula in the northwest around Siberia to the Caucasus in the southwest. . . . Mobile radars . . . can link Krasnoyarsk with other command and control centers and a network of 5 other large phase-array radars. . . .

"If Krasnoyarsk does come up as a command and control radar and the Soviets continue to develop the boosters in a mobile capacity [the SH-04 and SH-08] then the U.S.S.R. will be in a position—experts say within six months after Krasnoyarsk becomes operational—to put up an ABM ring around the country. . . .

"American strategists . . . will have to assume . . . a worst case situation. They presume that the Soviets are not likely to be looking for a full-scale return strike from the U.S.A. If the Soviets preempt, they will only see in return a broken back attack from the U.S.A.—mostly sea-launched ballistic missiles. Because of their speed and re-entry angle, these are an easier target for the U.S.S.R.'s defensive missiles than ICBMs. They are not as big and cannot carry as many penetration aids.

"And here, says the U.S.A., is the crunch. Some U.S. analysts seriously think that the U.S.S.R., with the Krasnoyarsk command and control system operational, might estimate that they have enough edge to take a retaliatory response, that is, to take the damage that would follow their first strike."

The status of the U.S. SDI research

Significant results have been achieved in the development of free electron laser technology at Lawrence Livermore Laboratory, Los Alamos National Laboratory and Stanford University. Both Los Alamos and Stanford demonstrated in the past several months the achievement of a very high efficiency of recovering energy from an electron beam, after it has been used to generate coherent radiation in a free electron laser. This development promises to increase the efficiency of free electron lasers. Los Alamos reported recovery of 70% of the beam energy, and Stanford reported recovery of 90%.

The past year also saw the SDIO conduct two impressive space-based tests of strategic defense technology. In the first

test, a small rocket, fired from a testing range in Alaska, carried experimental equipment into the upper reaches of the atmosphere to investigate whether artificial auroras, created by Soviet directed-energy technology, could serve as a screen for descending Soviet reentry vehicles attacking the United States. Soviet work in the production of artificial auroras from electron beams injected into the ionosphere from small rockets that carried the beam equipment into these upper regions of the atmosphere, was reported in *EIR* April 24, 1984.

Second, the SDIO conducted a successful test of command, control, and computer software, and conducted some ground-breaking spectroscopic measurements of the radiation and shape of plumes of the hot gases emitted from ballistic missiles as they left the atmosphere and traveled into space. The test, which also included the first successful launching of a Delta rocket following the string of launch incidents crippling the U.S. space program, reportedly gathered critical data for the detection and location of missile boosters enveloped within their own rocket plumes as they boost into space.

In his May 9, testimony before the Senate, Dr. Teller announced that experiments done by the Lawrence Livermore Laboratory, have confirmed that the nuclear explosive powered x-ray laser, whose principle "is established," can be designed to send a beam a thousand miles with a spread of no more than five feet. This degree of focusing, which is thousands of times better than SDI critics claimed to be phsycially possible, means that a single x-ray laser device could destroy upwards of tens of thousands of nuclear warheads and missiles at any stage of their trajectory.

In early 1986, Los Alamos National Laboratory announced that the first stage of its Trailmaster electrical pulsed-power program had been successfully completed. According to the program manager, Dr. Charles Fenstermacher, this new technology will provide an extremely economical, quickly assembled, and highly versatile means of experimentally exploring a wide range of high-energy-dense processes, such as ignition of thermonuclear fusion reactions, creation of laboratory x-ray lasers, and laboratory-scale simulation of nuclear weapons effects.

On May 9, Los Alamos reported another major new development, which would allow them to realize the shorter wavelength gamma-ray laser, a device which has a potential, directed-energy firepower millions of times greater than the x-ray laser. This was the completion of the first of a series of crucial series of experiments that can lead to the world's first nuclear laser.

The future of the U.S. space program

May 25 of this year marked the 25th anniversary of President Kennedy's announcement that America was going to "send a man to the Moon, and return him safely to Earth," by the end of the 1960s. The lunar mission, however, was not the goal. The reason to go to the Moon was to establish the preeminence of the United States in space—the Apollo Program was the way Kennedy chose to do that.

The only way to achieve that goal of preeminence in space, is for this nation to return to the Moon for the purpose of industrial development, and then use that base as a jumping off point for the first human exploration of Mars.

This proposal, for a scientific crash program within a 50-year plan for the space program, was outlined by Lyndon LaRouche in his July 15, 1985 keynote address at the Krafft Ehricke Memorial conference in Virginia. In July of this year, the 10th anniversary of the landing of the Viking spacecraft on Mars, former NASA administrator Thomas Paine presented President Reagan with the recommendations of the National Commission on Space. This program, which is now under consideration within NASA and the president's Office of Science and Technology Policy, is the road back to American preeminence in space.

A post turn-of-the-century lunar base will develop the industrial, mining, and life-support technologies for the Mars mission a decade or so later. In his feature article in the current November/December issue of *Fusion* magazine, LaRouche outlines the major propulsion and other technologies required for this series of programs, and a detailed timetable for meeting the major milestones. A major aspect to this Moon-Mars program will be the revolutionary changes produced in our Earth-bound economy.

Again the budget

The United States today is in the midst of losing that preeminence, to the Soviet Union, the coordinated efforts of the Western Europeans, and Japan. In August the American Institute of Aeronautics and Astronautics (AIAA) held a two-day workshop to review the status of the space program. In their Aug. 13 report on that workshop, the participants state: "The present course is a status-quo caretaker path with no potential growth." They state that there is "a fundamental inconsistency in attempting to achieve a U.S. preeminence in space under present budget policies," and that the budget must be doubled.

The AIAA members stated that the "ambitious long-term goals established by the National Commission on Space, and the space infrastructure developments required to achieve them are not compatible with the present administration view that NASA budgets should remain at best approximately constant. . . . The nation has a clear choice—provide the necessary funding or redefine our goals."

The President has, as yet, made no move to implement the recommendations for the Moon-Mars mission. NASA continues to limp along at a budget level which is still less than 50% of what is required for a healthy space program, while even the next-step space station, which is a prerequisite for going anywhere in space, is being "redesigned" to keep it "within cost."

There is still time to salvage the outstanding space science and technology that this nation developed over the past 25

years. But there is not much time.

The explosion of the Space Shuttle orbiter *Challenger* on Jan. 28, with its crew of seven and the first teacher in space aboard, left an indelible picture in the minds of most people around the world. The first crew of cosmonauts to launch after the disaster, carried a photograph of the Challenger crew with them, on their first trip to the Mir space station, which became operational early this year.

After *Challenger,* came the explosion of an Air Force Titan rocket on April 18 seconds after launch, followed by the failure of a NASA Delta rocket, which grounded the entire U.S. space program. The succession of disasters to the U.S. and Western European space programs throughout the year, has raised the still unanswered question: Was there deliberate sabotage of the Western space program? Necessarily, the most difficult, and unfortunately the most public investigation of this string of mishaps, was that of the Shuttle accident.

The true sabotage

Led by former Secretary of State William Rogers, the investigation never focused on the most fundamental sabotage of the program—a systematic erosion of the funding of the National Space and Aeronautics Administration, at a time of escalating demands for performance. The narrow, short-term criterion of supposed cost-effectiveness was used to undermine the real mission of the U.S. space effort. The sabotage of the Shuttle Program began within days of its announcement in 1972, when the same cast of characters wrecking President Reagan's policies today, such as George Shultz, slashed the NASA budget by nearly a half billion dollars.

The question of who was ultimately responsible for the decision to launch the Shuttle under unfavorable weather conditions has never been adequately addressed, although rumors circulating at the time ascribed it to pressure from Donald Regan upon Graham. How interested the commission was in finding out what actually happened may be indicated by the fact that neither just-ousted NASA administrator James Beggs, who had supervised 24 successful Shuttle launches, nor the man who probably made the decision to launch, Graham, were ever called to testify by the commission.

The other open question is the role of the Justice Department, and, in particular, of Stephen Trott, then in charge of the Criminal Division, in an attempt to railroad former chief administrator Beggs out of that agency and into a jail cell. Trott was personally responsible for forcing through prosecution of Beggs in the flimsy General Dynamics case, despite the advice of those in his department directly responsible for investigating the case.

Prior to the surfacing of indictments against Beggs, Graham had been placed as second-in-command under Beggs, despite strenuous opposition from within NASA. Graham was obviously not competent to undertake the responsibilities of number-two man, far less lead the U.S. space effort. The forcing through of his appointment was little less than deliberate sabotage of the program in Washington.

When the Shuttle flies again

The Space Shuttle is now scheduled to resume flights in early 1988, a slow schedule determined by the pace of funding. The backlog of payloads has forced a beneficial reassessment of national launch policy. Expendable rockets will now be reintroduced for use by the military, industry, and also NASA. This will provide a needed in-depth launch capability, and will take the pressure off the Shuttle to be all things to all users. There are also indications that the former policy of making the Shuttle "operational and cost-effective" will now be revised.

For eight months, the space agency and the nation eagerly awaited a decision from the White House to replace the lost *Challenger*. That decision, which should have been made within 24 hours of the accident, was the object of administration in-fighting for months, with the Office of Management of the Budget and Donald Regan insisting that there was no need, and no money, for the replacement orbiter. Other government agencies saw the disarray in White House space policy as an opportunity to push their own pet projects within the administration.

This lack of leadership is now threatening to create a situation where NASA cannot "recover" from the accident and have the Shuttle flying on schedule. Veteran astronaut John Young, the commander of the first Shuttle flight in 1981, stated on Dec. 13 that he thought the agency is "running short of money" in fixing the Shuttle. After the 1967 Apollo launch-pad fire, Young reported, nearly 1,700 changes had to be made, but the program was only down 18 months. Now, about 50 or 60 changes are "required for the flight of the orbiter," Young stated, but the progress is slower.

NASA Administrator James Fletcher stated the first week in December that NASA's budget picture for next year was "a mess." Though the space agency ended up with a budget authorization of over $10 billion for FY87, which is an increase of over 30% from fiscal year 1986, all of that increase was to cover the projected costs of recovering from the accident and building a replacement orbiter.

In the midst of negotiations with the Office of Management and Budget for FY88, Fletcher stated Dec. 8, "The President wants us to follow the Gramm-Rudman rules." Fletcher said that he does not "feel confident at all" that NASA will be allowed to stay at the $10 billion level next year.

Even with no new starts on space science projects or other needed future missions, Fletcher reported that the budget that the OMB is recommending endangers the 1991 date to fly a replacement orbiter. "Technically, certainly we can do it. . . . It's already been delayed by Congress, and the President took a long time to make up his mind whether he wanted a fourth orbiter, so we've already lost some ground. So, I'd say it's iffy."