

Mars – The Abandoned Mission:

An examination of the financial and political reasons for the Nixon administration's rejection of NASA's proposed post-Apollo manned Mars mission.

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Human Biology 1: Life On Mars?
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-1969, Report of the President's Space Task Group-

The Space Task Group in its study of future directions in space, with recognition of the many achievements culminating in the successful flight of Apollo 11, views these achievements as only a beginning to the long-term exploration and use of space by man. We see a major role for this Nation in proceeding from the initial opening of this frontier to its exploitation for the benefit of mankind, and ultimately to the opening of new regions of space to access by man. [...] As a focus for the development of new capability, we recommend the United States accept the long-range option or goal of manned planetary exploration with a manned Mars mission before the end of this century as the first target. (*Report...* 1-2).

-2001, Forty Years of U.S. Human Spaceflight Symposium-

Most of you are familiar with the 1969 recommendations of the Space Task Group that the U.S. accept a post-Apollo goal of manned planetary exploration before the end of the century and build a series of large space stations during the 1970s as steps toward that goal. What if, instead of rejecting that report out of hand in the aftermath of Apollo, Nixon said, "Yes, we'll do that." What might have happened? There is a fascinating book called *Voyage*, by British engineer Stephen Baxter, that starts with exactly this premise. The novel describes the first mission to Mars in the 1980s! It's a very enjoyable piece of counterfactual history. (Logsdon 86)

In the year 1969, NASA was at the peak of its prestige and visibility. The success of Apollo 8 had reinvigorated the lunar program at the beginning of the year, and by summer Neil Armstrong's "giant leap for mankind" appeared to be vindication of NASA's character and mission. That bridging of worlds, that first step by man onto an alien moon, marked the realization of President John F. Kennedy's commitment to go to the moon, and represents one of the greatest political and technological achievements in history.

But by 1969 NASA was also in need of direction. The moon had been won, the Soviets defeated – what to do next become a persistent question. The space agency needed a new destination, and that destination seemed to be Mars. Planners within NASA had studied the possibility of a manned mission to Mars since the agency's infancy in the 1950s – for many of space's original visionaries, most prominently Wernher von Braun, Mars had always been the primary target for exploration, with project Apollo and the moon landings viewed as a detour along the way (Ezell 22). There was an "unwritten schedule that always seemed to be below the surface; that is, after we go to the moon, we go to Mars" (Ezell 22). Going to Mars was the inevitable mission; it was bound to happen. And in 1969, coming off the success of Apollo, it looked like the time for Mars had come.

Yet no mission to Mars was launched. More than 30 years after the moon landings no man has set foot on Mars, and no real plans currently exist to send humans to the Red Planet. Ultimately, the politics of the 1970s doomed the Mars mission that had seemed so inevitable only a few years earlier. The combination of budgetary pressure, conflicts within a new administration, and President Richard Nixon's personal outlook on space exploration led him to reject a manned Mars mission as a follow-up to Apollo, and even had Nixon wanted to make a Kennedy-esque commitment to go to Mars, public and congressional resistance would have doomed the program.

A Clean Slate for Post-Apollo NASA

Just as President Eisenhower had postponed decisions about the future of the space program before leaving office, thus allowing the incoming president – Kennedy – to shape the program to his tastes, so did President Lyndon Johnson decline to make major space commitments near the end of his term, instead leaving the formation of post-Apollo policy to Nixon (Ezell 26). Johnson's reluctance to lay out plans for the future of NASA was purely political: when asked in 1965 if he would like a NASA study of possible future missions presented to Congress, Johnson quickly declined, saying "I would think we would have more leeway and running room by saying nothing[,] which I would prefer" (Dallek 79). Johnson's concern was the moon landing, and he refused to authorize or

publicize any major post-Apollo programs that might sap momentum or resources from Apollo. Even in 1966 a White House poll of congressional leaders found that most wanted to cut back on space spending; to convince them to keep Apollo's funding level, Johnson had to skimp on post-Apollo outlays (Dallek 83). So, when Richard Nixon assumed office in 1969, he inherited responsibility not just for Johnson's Great Society programs and the Vietnam War, but for formulating a new space policy as well.

The New Players: Nixon and Paine

The new president was no stranger to space, having served as vice president at the time of NASA's creation, but he was not a space partisan. During his tenure as vice president Nixon had confided to George Kistiakowsky, Eisenhower's science advisor, that "in his opinion we were stuck with the space program, not of much value by itself, but unavoidable politically" (Kistiakowsky 191). As president, Nixon, "while not above wining and dining astronauts as American heroes to further his political purposes, never exhibited the personal enthusiasm for or expansive commitment to the space program than Johnson and Kennedy had shown" (Hoff 93).

This is not to say that Nixon did not care about space, only that he approached it from a different perspective than either Kennedy or Johnson. For Nixon space was less about science or exploration and more about defense and security. "In one of his first meetings with [NASA Administrator] Paine, Nixon kept repeating the phrase 'space and defense,' leaving little doubt in the administrator's mind that they were inexorably connected in the president's" (Hoff 97). Furthermore, because he pursued a philosophy of *détente*, Nixon had little use for Cold War competition and Space Race rhetoric, and thus downplayed the international tension upon which Apollo had been built as a symbol of American technological superiority (Hoff 93). Several of the space programs that Nixon did initiate, such as the Apollo-Soyuz Test Project and Anti-Ballistic Missile program, showcased Nixon's interest in using space as a tool for continental defense and international cooperation.

But the new president would also be dealing with a new administrator at NASA, Thomas Paine, who did not share Nixon's emphasis on pragmatism. Paine had joined NASA in 1968 as James Webb's deputy administrator. He had no experience with space policy; Paine received his NASA appointment after offering himself for appointment to a high-level government office, nature unspecified (Heppenheimer, "Chapter 3" 5). Only a year later Paine would be named NASA's leader.

Paine was a bold thinker who liked big goals and big missions. He was one of the lead proponents inside NASA for sending Apollo 8 into lunar orbit in 1968, even without the LEM lifeboat (Heppenheimer, “Chapter 3” 6). The task fell to Paine to convince Webb to go along with this risky mission plan, which he did. When Webb resigned near the end of 1968, the task of supervising Apollo 8 also fell to Paine, who became NASA’s acting administrator. But Paine offered his resignation after Nixon’s inauguration in 1969, assuming that the new president would want to appoint a new administrator. And Nixon did – his staff offered the chief NASA job to, among others, Air Force General Bernard Schriever, a leader of that agency’s missile program, and Patrick Haggerty, head of Texas Instruments (Heppenheimer, “Chapter 3” 8). Only after all his preferred candidates declined the position did Nixon decide to retain Paine.

Nixon did not place Paine at the head of NASA because he shared Paine’s commitment to big, bold space missions. Indeed the two men’s visions for the future of the space program could hardly have been more different. Even more incongruous was the fact that Paine was a liberal Democrat in Nixon’s Republican administration (Heppenheimer, “Chapter 3” 8). So why did Nixon appoint Paine? His reasons were most likely political. Hans Mark, former director of NASA’s Ames Research Center, described Paine’s appointment as a tool for Nixon to use to scale-back NASA:

He didn't want to be the president that would kill our space program, but he had no personal interest in it at all. [...] To give you an idea of why I think Nixon didn't give a damn about the space program, he didn't go out and look for a strong administrator. What better way to have a pliant NASA than to have a Democrat sitting there exposed to his people? When Paine was confirmed as administrator under Nixon, my reaction was, “Oh, my God – nobody is going to pay any attention to us.” (Heppenheimer, “Chapter 3” 8)

It’s also possible that Paine was a ready-made “fall guy” in case the Apollo program failed – having a Democrat, a Johnson-era holdover as NASA administrator would help deflect blame from Nixon if the lunar landings met with disaster.

Regardless of Nixon’s motivation for appointing Paine, the result was that the president and his NASA administrator – who would have to work together to shape a post-Apollo program – were poorly matched. Nixon was insular; he was highly reliant upon a few close advisors and his own priorities for formulating policy. Paine was an outsider; the NASA administrator and his science advisors “did not have the ear of the president or any of Nixon’s inner staff” (Hoff 94). The two men’s different priorities for the future of NASA quickly became clear, as well as their different styles of leadership. Paine worked in broad strokes and wanted a big new mandate for NASA. Nixon, the master of political maneuvering, didn’t want to make any quick commitments. A few months after

Nixon's inauguration, Paine approached the president and urged him to "define the future goals of manned spaceflight in the next few months," apparently hoping for a Kennedy-esque directive (Launius and McCurdy 8). Instead Nixon replied in a manner that would set the tone for his handling of space policy, saying that the American space program should no longer be "a series of separate leaps, each requiring a massive concentration of energy. [...] Space expenditures must take their proper place within a rigorous system of national priorities. What we do in space from here on in must become a normal and regular part of our national life" (Launius and McCurdy 9). Though Nixon's pragmatic view of space was better suited to the times than Paine's visions of new space spectacles, it boded poorly for a Mars mission.

The Space Task Group: Paine's Last Stand

In office for less than a month and already needing to assemble a post-Apollo policy for NASA, in February of 1969 Nixon called for the creation of a group to provide both "a definite recommendation on the direction which the U.S. space program should take in the post-Apollo period," and, tellingly, "a report on possible cost reductions in specified portions of our space program" (Hoff 98). The result was the formation of the Space Task Group, chaired by Vice President Spiro Agnew (since the vice president was, by procedure, chair of the president's space council) and including NASA Administrator Paine, Secretary of the Air Force Robert Seamans, and Presidential Science Advisor Lee DuBridge; Bureau of the Budget (BoB) Director Robert Mayo was also included as an observer (Ezell 30). The Space Task Group (STG) was charged with developing a coherent future program for NASA. Because Paine doubtlessly sensed that he could not individually persuade the president to endorse his bold goals in space, Paine instead poured all of his effort and political capital into shaping the STG recommendations. In particular, Paine tried to win the favor and support of the STG chairman, Agnew. The vice president was an attractive target because he had no previous experience with space policy, but like Paine he seemed to be looking for an "Apollo of the 1970s" (Ezell 27).

But first Paine needed a plan. When the STG initially asked Paine for a proposal from NASA as a starting point for deliberation, Paine asked the head of NASA's Office of Manned Spaceflight, George Mueller, to prepare a response. Not surprisingly, Mueller's plan linked NASA's future to a series of major manned spaceflight initiatives: the Mueller report centered around creating a cost-effective earth-moon transport vehicle, a space shuttle for routine access to low earth orbit, and the construction of several earth- and moon-orbiting space stations (Hoff 104). Mueller

noted the possibility that these capabilities might be used to support a manned Mars mission as early as 1986. Paine liked the plan's bold nature, but shifted the emphasis of the plan from *cis*-lunar operations to the ultimate goal of human planetary exploration. Once he had highlighted a Mars mission as NASA's primary post-Apollo goal, Paine aggressively sought to bring Agnew on board.

Agnew was still trying to get settled in the White House and find something to do. In Paine's words, "at that time, he hadn't figured out what his role was going to be in the administration" (Heppenheimer, "Chapter 3" 14). Paine "wooded" Agnew relentlessly, hoping to recruit the vice president to the side of a Mars mission (Heppenheimer, "Chapter 3" 15). Paine invited Agnew to Cape Canaveral for the Apollo 9 launch and treated him as an honored guest, giving him a tour of the facility led by Apollo 8 astronaut Frank Borman. What Paine seems not to have realized was just how little influence Agnew held with Nixon. Agnew's lack of experience, which made him an easy target for Paine's overtures, was also what had appealed to Nixon, though for a much different reason. Nixon picked Agnew as his running mate largely because Agnew had been governor of Maryland for only two years, and thus "had not been around long enough to draw opposition from any party factions" (Heppenheimer, "Chapter 3" 27). Nixon had little concern for Agnew's views about policy; Agnew had little leverage with Nixon.

Still, Paine succeeded in turning Agnew into space's biggest supporter inside the White House. The vice president declared himself "all-out for space," and on July 16, 1969 – while on hand to watch the Apollo 11 launch in Florida – Agnew told reporters that he thought the nation's new spaceflight goal ought to be a manned Mars mission by the end of the century (Heppenheimer, "Chapter 3" 28). This was the opportunity Paine had been looking for, and he went into action to promote Mars to the STG. He wheeled out "NASA's big gun," Wernher von Braun, and asked him to prepare a plan for a Mars mission by 1981. An old Mars partisan, von Braun was happy to comply. But even von Braun, as dedicated a Mars supporter as any, seemed to sense that NASA was overreaching, observing after the moon landing that: "The legacy of Apollo has spoiled the people at NASA. They believe that we are entitled to this kind of a thing forever, which I gravely doubt. I believe that there may be too many people in NASA who at the moment are waiting for a miracle, just waiting for another man on a white horse to come and offer us another planet, like President Kennedy" (Heppenheimer, "Chapter 4" 2).

Nevertheless, Paine recognized that this was his window of opportunity: the STG had heard many proposals but accepted none, its chair had just publicly endorsed a Mars mission, and Apollo 11 was about to make history for NASA – one good push from von Braun might get the group to adopt Mars as a destination

(Heppenheimer, “Chapter 3” 29). At the August 4 meeting of the STG, Paine called Apollo 11 the start of a “movement that will never end, a new outward movement in which man will go to the planets, first to explore, and then to occupy and utilize them” (Heppenheimer, “Chapter 3” 29). A presentation from von Braun about potential Mars missions followed.

The result was a deadlock. All four primary members of the STG supported NASA’s idea for a space shuttle. Seamans and the Air Force were brought on board by the shuttle’s potential for hoisting spy satellites, and the idea of routine, low-cost access to space appealed to the independent scientists whom DuBridge consulted (Kay 136). The potential for international collaboration (such as European design of the Spacelab module, and Canadian construction of the shuttle’s robotic arm) would also appeal to Nixon. But the group was split over the Mars mission. Paine and Agnew were for Mars; DuBridge was unconvinced, and Seamans was strongly opposed, saying “I don’t believe we should commit this Nation to a manned planetary mission, at least until the feasibility and need are more firmly established” (Heppenheimer, “Chapter 3” 26). The STG agreed to settle the issue by presenting Nixon with a choice between several plans rather than attempting to force consensus on a single one. Paine won the chance to write the draft version of the STG report, giving him an opportunity to craft the various proposals in a way that tilted heavily towards NASA’s interests:

1. “Austere”: Level funding at \$4 billion per year, with no commitment to Mars but with an option for such a mission retained.
2. “Intermediate”: Funding increasing over the next five years to \$5-6 billion per year, with a commitment to Mars. This commitment would carry no fixed date, but the mission would probably fly in the mid- to late-1980s.
3. “Vigorous or all-out”: Funding increasing to \$7 billion per year in the mid-1970s and possibly to \$8-10 billion in the latter half of the decade, with a commitment to an early Mars mission. (Heppenheimer, “Chapter 3” 30)

Importantly, the middle option – the one most likely to be selected by the president if it came to choosing a compromise position – included Mars in the plan. Also, all three plans – even the “austere” option – would have represented a funding increase over NASA’s sub-\$4 billion budget in 1969. This draft version of the STG report was Paine’s best, and perhaps last, chance to sell Nixon on a Mars mission. Unfortunately for Paine, reality would soon intrude in the form of the STG’s important observer – BoB director Robert Mayo.

The Budgetary Battleground

The budget was the chief roadblock to NASA’s grand plan; the budget was also one of Nixon’s highest priorities. In 1969 the Vietnam War cost the federal government \$2 billion each month (Ezell 27), inflation was

spiraling out of control, and Great Society programs were consuming dollars at a frightening pace – these facts, combined with Nixon’s determination to impose fiscal restraint, meant something had to give. NASA’s budget had begun to shrink back in 1967, but was still large enough to present an attractive target. (See Appendix I for complete NASA budget tables and history.) On July 22 – in the middle of the historic Apollo 11 lunar mission – Nixon sent a memo to Congress warning about the need for further budget reductions, and noting that he had directed all federal administrators to submit lower spending requests (Nixon, *Statement on... 2*). In the memo, he wrote: “No federal program is above scrutiny. Some highly desirable programs will have to be stretched out, others reduced” (Nixon, *Statement on... 2*). Ironic timing aside, space would be one of the programs to be reduced.

Unfortunately, NASA – Paine, especially – was poorly prepared to deal with the rigors of the competitive budgetary process:

The early 1970s brought NASA a drastically less favorable political environment, as support from all sources was much lower than it had been throughout most of the 1960s. The precipitous political decline shocked NASA. Coming from a spectacular success that many thought was merely the beginning of NASA’s glory days, the agency was surprised to find itself attacked rather than rewarded. In addition, NASA’s enviable political environment in the 1960s meant the agency was not accustomed to the relentless struggle for political support that government agencies typically have to wage. [...] Until 1970 NASA had been tampered with from time to time but was, politically speaking, a virgin. (Byrnes 114)

Paine’s efforts to win over the STG to the exclusion of first dealing with Nixon’s Bureau of the Budget gatekeepers would ultimately negate the STG’s influence on the future of the space program (Hoff 98).

When budget director Mayo wrote to the executive department heads in early 1969 to ask for the spending reductions that Nixon had requested for the 1970 budget, Paine responded with a long letter that instead asked for a \$198 million increase in NASA funding (Heppenheimer, “Chapter 3” 13). Mayo quickly ruled out any extra funds, and instead cut \$45 million off of the space program. He also sent a message to Nixon advising him not to endorse any future space efforts before the budget picture became clear.

By the time that Paine was drawing up his three proposals for the STG – all of which involved some increase in NASA’s budget – Clay Whitehead, one of Nixon’s special assistants, approached Mayo with a much different request. He told Mayo that “the President is personally interested in a serious evaluation of several alternative NASA budget levels, including one in the vicinity of \$2.5 to \$3 billion” (Heppenheimer, “Chapter 4” 7). This would represent a major cut from NASA’s 1970 budget. So Mayo prepared an internal BoB paper with three options of his own to contrast with Paine’s plan for NASA’s future:

One alternative, at \$3.5 billion per year, eliminated NERVA and stopped production of Saturn V and Apollo spacecraft. This option, however, would maintain a vigorous program in piloted flight, featuring Skylab with three visits as well as six additional Apollo lunar missions. Better yet, such a budget would accommodate “Space Transportation System and Space Station module development with launch of both in 1979.”

Two other options, at \$2.5 billion, also permitted flight of Skylab with its three visits, along with the six Apollos. There could even be a space station in 1980, with Titan III-Gemini for logistics. However, there would be no space shuttle. NASA-Marshall would close, while activity at the Manned Spacecraft Center would fall substantially.

At \$1.5 billion, the piloted space program would shut down entirely: “All manned space flight ceases with Apollo 14 in July 1970.” Not only NASA-Marshall but the Manned Spacecraft Center would close, with the Saturn launch facilities at Cape Canaveral shutting down as well. Yet NASA would continue to maintain a vigorous program of automated space flight. Even at \$1.5 billion, the agency could send six Viking landers to Mars, and could take advantage of a rare alignment of the outer planets to send spacecraft to Jupiter, Saturn, Uranus, Neptune, and Pluto. (Heppenheimer, “Chapter 4” 8)

Mayo’s low-budget plans would influence the final STG report, which became a melded version of the Paine and Mayo alternatives.

However, the disconnect between NASA and BoB would first get worse. On July 28, Mayo sent Paine projections for future NASA budgets and a stern warning: “A stringent and frugal approach must characterize our 1971 budget proposals. Very few program expansions and new starts can be accommodated” (Heppenheimer, “Chapter 4” 9). Mayo listed NASA’s budget target as \$3.5 billion per year from 1972 to 1978. But, holding out hope for STG endorsement of his Mars plan, Paine disregarded Mayo’s cautionary message and \$3.5 billion target, and instead shaped the NASA budget to reflect the levels required for a Mars mission as early as 1983 (Heppenheimer, “Chapter 4” 7). NASA either could not or would not understand the importance of complying with the budgetary process; as a result, their protestations about declining funding fell on increasing uncaring ears. “Paine’s behavior during the budget process of 1970-71, in particular, appeared to Nixon stalwarts as at best irrational and at worst as obstinately arrogant” (Hoff 95). Instead of the \$4.2 billion Paine had planned for, Nixon’s final budget request included only \$3.33 billion for NASA (Heppenheimer, “Chapter 4” 17). Such monies were clearly not enough to support a new start on a manned planetary program or even the space shuttle that year.

When word of Paine’s recommendations – and the developing tone of the STG report – reached the president, the reaction was one of alarm. John Erlichman, one of Nixon’s top deputies, confronted the vice president over the STG’s plan to recommend a Mars mission:

I had read a briefing paper on the question the evening before, and it seemed obvious to me that Agnew and DuBridge owed it to the President not to include a proposal our budget couldn’t pay for. A Mars space shot would be very popular with many people. If the committee proposed it and Nixon had to say no, he would be criticized as the President who kept us from finding life on

Mars. On the other hand, if the committee didn't recommend it, we avoided the problem altogether. [...]

I finally took off the kid gloves: "Look, Mr. Vice President, we have to be practical. There is no money for a Mars trip. The President has already decided that. So the President does not want such a trip in the Space Advisory Committee's [sic] recommendations. It is your job, with Lee DuBridge's help, to make absolutely certain that the Mars trip is not in there." [...]

I left Agnew about 9:45 a.m. At 10:00 a.m. the Vice President called me. He had decided to move the Mars shot from the list of "recommendations" to another category headed "technically feasible."

When I saw President Nixon later that day I told him about our session with Agnew and his telephone call.

"Good," Nixon said. "That's just the way to handle him; use that technique on him anytime." Nixon looked at me vaguely. "Is Agnew insubordinate, do you think?" (Heppenheimer, "Chapter 4" 7-8)

The final STG report downgraded both Paine's most optimistic plan and Mayo's lowest-budget plan to reference points as upper and lower bounds, while offering Nixon three more moderate options, including, importantly, the option to defer any Mars mission (*Report...* 16-17).

Rhetorically, the STG's recommendations still pressed strongly for manned planetary exploration. The report noted that "[w]e have found questions about national priorities, about the expense of manned flight operations, about new goals in space which could be interpreted as a 'crash program.' Principal concern in this area relates to decisions about a manned mission to Mars," but concluded that "NASA has the demonstrated organizational competence and technology base, by virtue of the Apollo success and other achievements, to carry out a successful program to land man on Mars within 15 years" (*Report...* 1). The STG then backed off, saying that there "are a number of precursor activities necessary before such a mission can be attempted. [...] Acceptance of this goal would not give the manned Mars mission overriding priority relative to other program objectives, since options for decision on its specific date are inherent in a balanced program" (*Report...* 1).

As Erlichman had demanded, the STG's three proposed post-Apollo programs gave Nixon a way out. (See Appendix II for a more complete description of the STG report's recommended options.) The three options can be summarized as follows:

-----	Option I	Option II	Option III
<i>Funding</i>	\$10-8 billion/year	\$5.7-4 billion/year, with later \$8 billion spike for Mars mission	\$4 billion/year
<i>Goals</i>	Orbiting lunar station, space station, lunar surface base, space shuttle	Space shuttle and space station (simultaneously)	Space shuttle, space station (sequential)
<i>Mars Mission?</i>	Yes – launch in mid-1980s	Yes – launch possible in late-1980s	Decision deferred

Data: (*Report...* 17)

In a minor sense, Paine got what he'd always been after: the STG report pushed for a manned mission to Mars, and the mission was included in the compromise plan, Option II. Even the low-cost Option III left the door open for a Mars mission further on down the line. But the lengths to which Nixon's senior staff had gone to distance the president from the Mars plan, and the fact that NASA's budget was moving in the direction opposite to that which a planetary mission would require, showed that there was little hope that Nixon would put a man on Mars. By the start of 1970, NASA's efforts largely shifted to trying to save at least one new start: the space shuttle (Heppenheimer, "Chapter 4" 26). The STG report went to the president in September of 1969.

A Foregone Conclusion

On March 7, 1970, after "reviewing" the STG report, Nixon announced his decisions for the future of the U.S. space program. In a general statement, he encouraged the development of a space shuttle and more economical launch vehicles, and called for increased international cooperation in space (Nixon, *Statement About...* 3). He also committed to the final Apollo missions and Skylab, but noted that the space budget would be cut even further in 1971. His selections represented a cross between the STG's Option III and Mayo's low-budget plans. Nixon referred to the STG's centerpiece – Mars – as a "long-range goal," stating only that "we will eventually send men to the planet Mars" (Nixon, *Statement About...* 3).

Eventually, perhaps, but certainly not as a part of his administration's space program. Nixon wrote in the introduction to his statement: "We must build on the successes of the past, always reaching out for new achievements. But we must also recognize that many critical problems here on this planet make high priority demands on our attention and our resources. By no means should we allow our space program to stagnate. But – with the entire future and the entire universe before us – we should not try to do everything at once" (Nixon, *Statement About...* 1).

Later, in 1972, Nixon would formally announce a plan for the creation of the space shuttle (Hoff 106). The shuttle was, in many ways, "a political commitment (by a reluctant president) to rescue the space policy bureaucracy from the decay spiral in which it had been caught" more than any single person or agency's preferred space program (Schulman 1366). And by 1972, when Nixon took the shuttle public, most of the players in the Mars debate were already gone. Paine and Mayo had both resigned. In 1973 Agnew would resign; in 1974 Nixon himself would resign. The unfinished legacy of NASA's deferred, "long-term" Mars mission would disappear along with them.

Congressional and Public Opposition

Even if Nixon had been persuaded to endorse a Mars mission, it is still unlikely that the crew would have ever left the ground. Even a Kennedy-esque proclamation could not have saved a Mars mission from widespread public resentment and congressional opposition. The situation in America had changed drastically since 1961, and the model that had worked for Kennedy, that had brought the nation to accept and embrace an expensive and dangerous program like Apollo, would no longer have worked.

The rapid mobilization, widespread support, and heavy spending that made Apollo possible stemmed from the fact that public opinion about the need for space missions was intense while the space program itself was insufficient to placate that perceived need (Schulman 1355). Fears about the missile gap, the dramatic Russian space firsts – the launching of Sputnik, the flight of Gagarin – fed the worry that the United States was losing the Cold War, and thus put pressure on government to respond. Congress wanted to be seen as “doing something,” and thus was ready to receive Kennedy’s Apollo challenge. But by 1969 the treaty on peaceful uses of outer space had largely “de-fused” the Space Race (Dallek 81), and the very success of Apollo – how handily the Soviets had been beaten, and NASA’s perceived excess – had undercut public support for space. A July 1969 Gallup poll found that 53 percent of Americans opposed a subsequent mission to Mars, with only 34 percent in favor (Schulman 1363). A *Newsweek* poll later that year found that 56 percent of respondents wanted Nixon to spend less on space (Heppenheimer, “Chapter 4” 19). So, even had Nixon attempted to go ahead with an expensive Mars program, the measure would have been undermined by public resentment; big science programs cannot survive long in the face of “overt public hostility” (Kay 136).

Nor would a Mars mission have ever won approval from Congress. As even Representative Olin Teague – chair of the House Subcommittee on Manned Space Flight and one of space’s biggest congressional supporters – observed, “the easiest thing on earth to vote against in Congress is the space program. You can vote to kill the whole space program tomorrow, and you won’t get a single letter” (Heppenheimer, “Chapter 4” 19). And many members of Congress wanted to do just that. Senate space committee chairman Clinton Anderson stated that “now is not the time to commit ourselves to a manned mission to Mars” (Heppenheimer, “Chapter 4” 18). Representative Joseph Karth, another House space subcommittee chair, was even more direct: “Very bluntly, a manned mission to Mars or Venus by 1975 or 1977 is now and has always been out of the question – and anyone who persists in this kind of

misallocation of resources at this time is going to be stopped” (Ezell 28). In response to the Mars missions outlined in the STG report, Karth added that “NASA must consider the members of Congress a bunch of stupid idiots. Worse yet, they may believe their own estimates – and then we really are in bad shape” (Heppenheimer, “Chapter 4” 20).

In 1970, Karth even introduced an amendment on the House floor to kill NASA’s preliminary funding for space shuttle research. The reason he gave for doing so was interesting: “This in my judgment at least – and there is a great deal of evidence to support my theory – is the beginning of a manned Mars landing program” (Heppenheimer, “Chapter 4” 21). The vote on his amendment was 53-53, and so the space shuttle was saved solely by House procedural rules stating that amendments are defeated by a tie vote. There is little doubt that a full Mars program, with a much higher price than the \$110 million for shuttle research (Heppenheimer, “Chapter 4” 21), would not have managed even a tie. Thus:

NASA’s programs were not simply the failure of presidential leadership – the so-called myth of the imperial presidency – or of NASA and congressional leadership but were related to larger questions facing the United States in the 1970s. To a very real extent, the space agency was throughout the decade of the 1970s out of sync with U.S. political, cultural, and socioeconomic trends, and it is unlikely that affirmative leadership at any level could have overcome that. (Hoff 119)

Conclusions and Lessons for the Future

The air of inevitability that hung about a manned Mars mission in the wake of NASA’s 1969 triumph was largely imagined – in fact, the political deck was stacked against human planetary exploration. So it was for political, not technical, reasons that Mars became – and still is – NASA’s abandoned destination. Communication failures, intra-administration conflict, and budgetary constraints all conspired to keep a manned Mars mission off the launch pad in the 1970s. And, even had the Nixon administration wanted to endorse such a mission, presidential leadership alone would not have persuaded a reluctant public and Congress.

If there is a lesson here, it is this: “Just because something is interesting and challenging, just because it is technologically feasible, just because ‘it should be done,’ does not mean that it will be done. We have come to be increasingly aware of the fact that we live in a world of finite economic and natural resources and that the competition for budget dollars has become a keen one” (Ezell 31). If there is a policy prescription here, it is that large, non-incremental policies like the Apollo program will arise only under rare circumstances, during moments of shared public, executive, and congressional concern. Thus, if NASA wishes to revive the plan for a Mars mission in the future, to take another shot at the Red Planet, it will not be enough to sell the program to a president or a few key

congressional leaders – dedicated support in all quarters must be carefully cultivated. It may be that such programs are only possible in response to national emergencies; it is more likely that consensus may be built, though only through sustained effort. Big science demands political consensus, and those who would aim for Mars must first win the political battle here on earth.

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* Note: page numbers, as used in parenthetical references, refer to *the page number of a copy printed from the web*.

APPENDIX I:
Federal Budget Tables (1962-1976)

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THE BUDGET FOR FISCAL YEAR 2003, HISTORICAL TABLES

Table 4.1—OUTLAYS BY AGENCY: 1962-2007

(in millions of dollars)

Department or other unit	1962	1963	1964	1965	1966	1967	1968	1969
Legislative Branch	196	192	199	212	234	252	269	289
The Judiciary	57	62	66	75	80	88	94	110
Agriculture	6,437	7,414	7,569	6,940	5,633	5,952	7,430	8,446
Commerce	215	354	702	736	485	477	582	607
Defense—Military	50,111	51,147	52,585	48,780	56,629	70,069	80,355	80,771
Education	816	985	973	1,152	2,416	3,596	4,072	3,990
Energy	2,755	2,700	2,726	2,579	2,343	2,253	2,474	2,393
Health and Human Services	3,529	4,110	4,610	4,700	5,715	9,639	13,074	15,411
Housing and Urban Development	826	-609	73	492	2,482	3,093	3,727	713
Interior	606	730	755	745	866	863	973	1,073
Justice	299	322	342	399	380	416	441	513
Labor	3,914	3,523	3,454	3,121	3,239	3,562	4,180	4,161
State	457	572	455	552	629	655	645	631
Transportation	4,138	4,441	5,086	5,587	5,550	5,738	6,100	6,272
Treasury	8,560	9,645	10,391	10,901	11,880	12,871	14,437	16,641
Veterans Affairs	5,608	5,501	5,662	5,710	5,962	6,691	7,018	7,670
Corps of Engineers	944	1,065	1,091	1,171	1,245	1,273	1,252	1,222
Other Defense—Civil Programs	956	1,077	1,287	1,465	1,681	1,937	2,206	2,557
Environmental Protection Agency	70	87	117	134	158	190	249	303
Executive Office of the President	12	13	15	16	16	19	21	24
Federal Emergency Management Administration	134	187	228	205	105	70	199	249
General Services Administration	382	425	520	612	561	629	482	526
International Assistance Programs	3,171	3,169	3,226	3,248	3,260	3,375	2,814	2,803
National Aeronautics and Space Administration	1,257	2,552	4,171	5,092	5,933	5,425	4,722	4,251
National Science Foundation	183	206	310	309	368	415	449	490
Office of Personnel Management	1,017	1,175	1,304	1,454	1,726	1,934	2,154	2,284
Small Business Administration	230	142	133	243	210	151	284	110
Social Security Administration (On-budget)						94	94	414
Social Security Administration (Off-budget)	14,365	15,788	16,620	17,460	20,694	21,631	23,760	26,885
Other Independent Agencies (On-budget)	2,283	1,615	1,178	1,815	2,494	3,683	4,290	2,918
Undistributed offsetting receipts	-6,707	-7,274	-7,321	-7,677	-8,443	-9,578	-10,712	-11,087
(On-budget)	(-5,878)	(-6,450)	(-6,435)	(-6,746)	(-7,464)	(-8,371)	(-9,289)	(-9,407)
(Off-budget)	(-830)	(-824)	(-886)	(-931)	(-979)	(-1,207)	(-1,424)	(-1,681)
Total outlays	106,821	111,316	118,528	118,228	134,532	157,464	178,134	183,640

THE BUDGET FOR FISCAL YEAR 2003, HISTORICAL TABLES

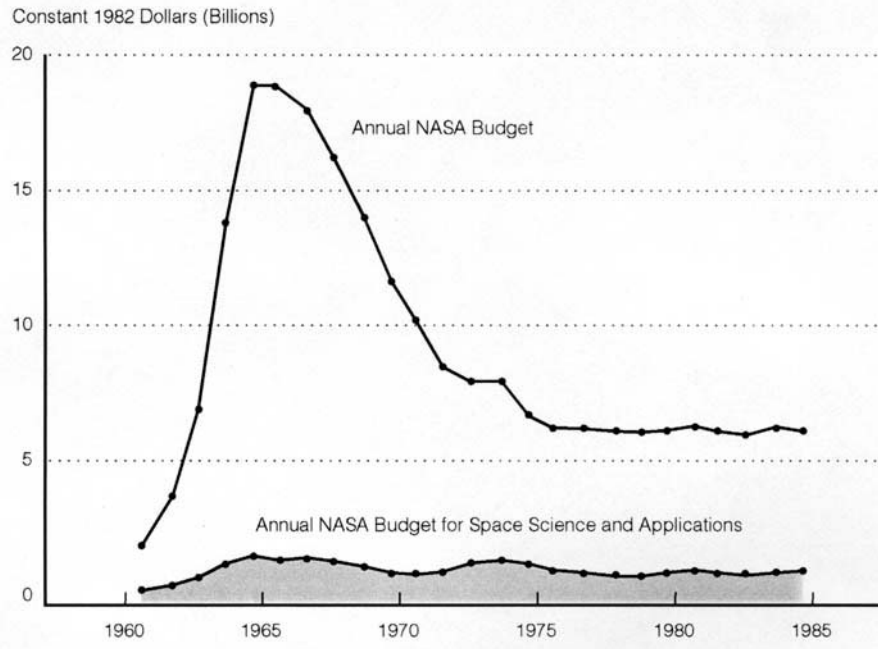
71

Table 4.1—OUTLAYS BY AGENCY: 1962-2007—Continued

(in millions of dollars)

Department or other unit	1970	1971	1972	1973	1974	1975	1976	TQ
Legislative Branch	353	395	499	553	638	739	788	226
The Judiciary	133	145	173	188	207	284	325	85
Agriculture	8,412	8,673	11,053	10,200	10,338	15,556	17,743	5,020
Commerce	778	783	850	934	992	1,077	1,484	396
Defense—Military	80,123	77,497	77,645	75,033	77,864	84,852	87,917	21,807
Education	4,594	5,099	5,537	5,709	5,747	7,331	7,897	2,035
Energy	2,393	2,200	2,299	2,304	2,233	3,230	3,841	1,048
Health and Human Services	17,397	20,391	25,309	25,578	28,062	33,751	40,261	10,530
Housing and Urban Development	2,432	2,796	3,600	3,580	4,781	7,512	7,026	1,361
Interior	1,087	1,345	1,609	1,780	1,854	2,221	2,433	855
Justice	641	919	1,182	1,534	1,805	2,077	2,247	582
Labor	4,966	8,137	10,008	8,610	8,964	17,610	25,526	5,889
State	661	680	747	807	955	1,075	1,393	407
Transportation	6,724	7,656	7,932	8,616	8,574	10,073	12,723	3,189
Treasury	19,276	20,716	21,861	30,627	35,842	42,501	44,155	10,459
Veterans Affairs	8,652	9,758	10,713	11,970	13,339	16,577	18,416	3,959
Corps of Engineers	1,168	1,337	1,490	1,676	1,664	2,031	2,112	581
Other Defense—Civil Programs	2,974	3,510	4,002	4,505	5,216	6,319	7,358	1,958
Environmental Protection Agency	384	701	763	1,114	2,030	2,531	3,118	1,108
Executive Office of the President	29	38	47	50	67	93	80	16
Federal Emergency Management Administration	191	11	169	518	225	346	486	117
General Services Administration	530	546	655	795	929	376	25	42
International Assistance Programs	2,655	2,888	2,980	2,317	3,029	3,665	3,742	1,329
National Aeronautics and Space Administration	3,752	3,382	3,423	3,312	3,255	3,269	3,671	953
National Science Foundation	464	522	567	585	647	662	733	207
Office of Personnel Management	2,652	3,167	3,776	4,607	5,708	7,062	8,323	2,354
Small Business Administration	253	333	452	1,317	753	666	624	94
Social Security Administration (On-budget)	469	784	955	1,518	3,750	6,246	6,574	1,531
Social Security Administration (Off-budget)	29,812	35,408	39,620	48,565	55,373	64,159	73,384	19,763
Other Independent Agencies (On-budget)	4,263	5,223	5,436	5,654	7,849	9,708	9,576	2,570
Undistributed offsetting receipts	-12,567	-14,869	-14,672	-18,846	-23,333	-21,267	-22,186	-4,477
(On-budget)	(-10,362)	(-12,288)	(-11,909)	(-15,870)	(-20,048)	(-17,547)	(-18,411)	(-4,135)
(Off-budget)	(-2,205)	(-2,582)	(-2,763)	(-2,975)	(-3,284)	(-3,719)	(-3,775)	(-342)
Total outlays	195,649	210,172	230,681	245,707	269,359	332,332	371,792	95,975

(Fiscal... 70-71)



NASA's actual budget in constant dollars, 1960–1985. (*Scientific American*)
(Heppenheimer, "Chapter 4" 23)

APPENDIX II: Space Task Group Recommendations

We stand at a crossroads, with many sets of missions and new developments open to us and with three main avenues for funding to pursue these opportunities. [...]

(1) an upper bound, defined by a program conducted at a maximum pace - limited, not by funds, but by technology; (2) options I, II, and III which illustrate programs consistent with the Task Group recommendations, but conducted under varying degrees of funding restraints; and (3) a low level program constructed with an increased unmanned science and applications effort consistent with the Task Group recommendations but, because of the significantly lower budget levels, without a manned flight program after completion of Apollo and Apollo Applications. [...]

Although the program represented by the upper bound appears technically achievable, would provide maximum stimulation to our over-all capabilities, and is fully consistent with the Task Group recommendations, it represents an initial rate of growth of resources which cannot be realized because such budgetary requirements would substantially exceed predicted funding capabilities. This has therefore been rejected by the Space Task Group, and is presented only to demonstrate the upper bound of technological achievement.

We have therefore developed a set of options which falls within these limits to illustrate programs conducted at budget levels which appear possible during the next decade.

Option I is illustrative of a decision to increase funding dramatically and results in early accomplishment of the major manned and unmanned mission opportunities, including launch of a manned mission to Mars in the mid-1980's, establishment of an orbiting lunar station, a 50 man earth-orbit space base and a lunar surface base. Funding would rise from the present \$4 billion level to \$8-10 billion in 1980. Decision to proceed with development of the space station, earth-to-orbit shuttle and the space tug would be required in FY 1971. Firm decisions on other major systems or missions would not be needed until later years; for example, a decision to develop the Mars excursion module for an initial manned Mars expedition would not be required before FY 1974.

Options II and III illustrate a decision to maintain funding initially at recent levels and then gradually increasing. These options are identical with the exception that Option II includes a later decision to launch a manned planetary mission in 1986 and in Option III this decision is deferred. Both options demonstrate the effect of simultaneous development of the Space Transportation System and earth orbital space station module, each of which is expected to require peak expenditure rates of the order of \$1 billion per year, and both options include a substantial increase in unmanned science and applications from present levels but less than that in Option I. Maintaining the unmanned program at the Option I levels would require several hundred million dollars in additional funding. Decision to develop both space station and earth-to-orbit shuttle would be in about FY 1972, resulting in initial availability of these systems in 1977. Similarly, other major milestones would occur later, with decision on the Mars Excursion Module estimated for FY 1978. Funding for both options would remain approximately level at \$4 billion for the next two fiscal years and then would rise to a peak of \$5.7 billion in 1976 - this increase reflecting simultaneous peak resource requirements of space station and space shuttle developments. If these developments were conducted in series, lower funding levels (\$4-5 billion) could be achieved. Option II would have a later peak of nearly \$8 billion in the early 1980's resulting from the manned Mars landing program.

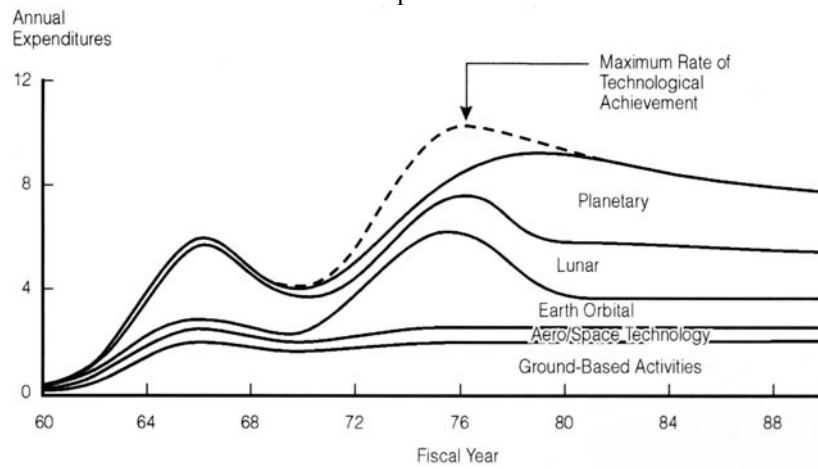
The lower bound chosen by the Space Task Group illustrates a program conducted at significantly reduced funding levels. It is our judgment that, in order to achieve these significantly reduced NASA budgets, it would be necessary to reduce manned space flight operations below a viable minimum level. Therefore, this program has been constructed assuming a hiatus in manned flight following completion of Apollo applications and follow-on Apollo lunar missions. It thus sacrifices, for the period of such reduced budgets, program objectives relating to development of new capability, and the contribution of continuing manned space flight to several of the other program objectives recommended by the Task Group. It does, however, include a vigorous and expanded unmanned program of solar system exploration, astronomy, space applications for the benefit of man and potential for international cooperation. Funding for such a program would

reduce gradually to a sustaining level of \$2-3 billion depending upon the depth of change assumed for the supporting NASA facilities and manpower base.

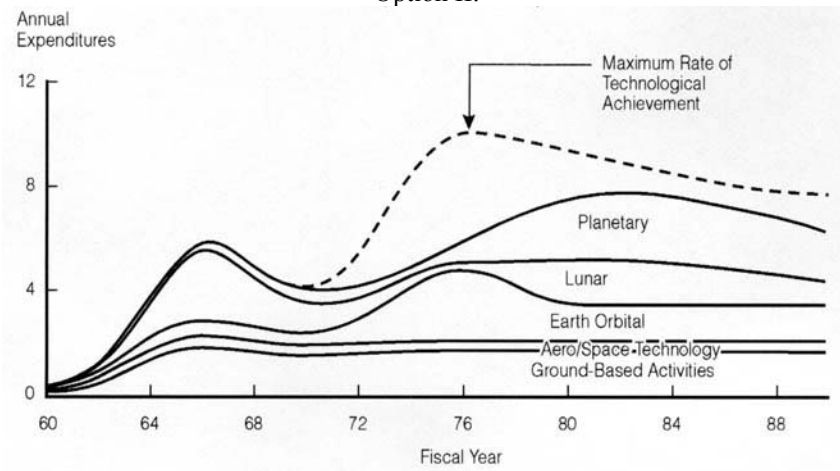
The Space Task Group is convinced that a decision to phase out manned space flight operations, although painful, is the only way to achieve significant reductions in NASA budgets over the long term. At any level of mission activity, a continuing program of manned space flight, following use of launch vehicles and spacecraft purchased as part of Apollo, would require continued production of hardware, continued operation of extensive test, launch support and mission control facilities, and the maintenance of highly skilled teams of engineers, technicians, managers, and support personnel. Stretch-out of mission or production schedules, which can initially reduce total annual costs, would result in higher unit costs. More importantly, very low-level operations are highly wasteful of the skilled manpower required to carry out these operations and would risk deterioration of safety and reliability throughout the manned program. At some low level of activity, the viability of the program is in question. It is our belief that the interests of this Nation would not be served by a manned space flight program conducted at such levels.

(Report... 16-18)

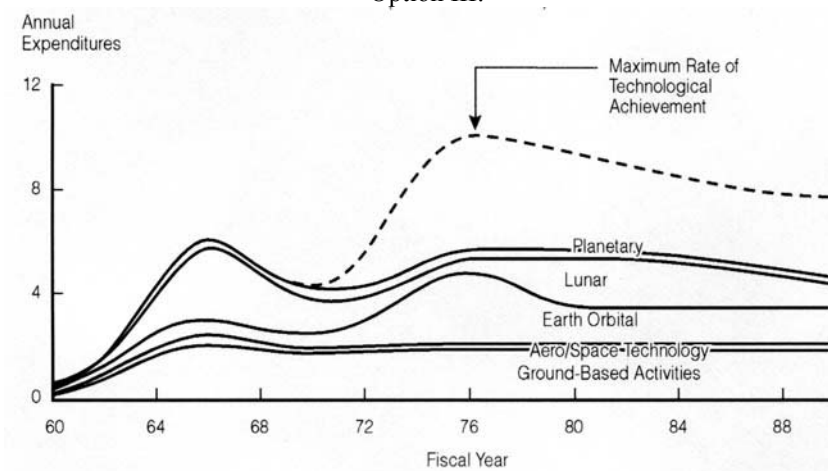
Option I:



Option II:



Option III:



(Heppenheimer, "Chapter 4" 12)