

THE CREATION OF NASA

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THE SUCCESSFUL ORBITING of Sputnik I on 4 October 1957, and massive Sputnik II on 5 November, caused a minor panic in the United States. Americans looked upon these Soviet achievements as symbols of military capability. The events of late 1957 were to have long lasting impact in such diverse areas as foreign relations, education, and military planning. The most notable reaction directly related to the Sputniks was the formation of the National Aeronautics and Space Administration (NASA). Although the creation of a United States space agency was probably inevitable, its character was not. NASA's structure was largely the result of planning and cooperation between eminent scientists and the administration of President Dwight D. Eisenhower.

Many earlier histories of the creation of NASA have concentrated upon the role of Congress [1]. This was due to the abundance of Congressional sources and the paucity of other documents. In recent years this situation has changed. Many crucial Presidential documents have been declassified, and several principals have published memoirs and consented to interviews. As a result, a more complete picture is emerging of the conditions surrounding the creation of a United States space programme.

The Sputnik uproar in the United States was answered in part by scientists, Congress, and the President. Scientific organisations made two proposals. Less than a week after Sputnik I, the American Rocket Society called for implementation of a national space programme. They envisioned a new "Astronautical Research and Development Agency" to conduct nonmilitary space exploration. The Rocket and Satellite Research Panel of the National Academy of Sciences followed on 21 November with a nearly identical programme. In January 1958, both organisations combined views in a joint proposal. This final proposal included a list of projects together with a timetable. The authors anticipated manned orbital flight in 1961 or 1962; manned lunar circumnavigation by 1965; a lunar landing by 1968; and a Moon base in 1970 [2]. These early proposals were made independently and had only a small effect on government planning [3].

Congress responded, most notably, through the Senate Preparedness Investigating Subcommittee. Under the chairmanship of Senator Lyndon Johnson, the committee launched extensive hearings. Witnesses such as Wernher von Braun told Congressmen in open hearings that the United States had earlier been capable of launching a satellite but had been fouled by bureaucratic entanglements [4]. From Johnson's subcommittee came a seventeen-point recommendation for strengthening the military security of the United States. Their recommendations advocated a national programme of space exploration but did not include plans for a space agency, either military or civilian.

On 7 November 1957, President Eisenhower responded to the Sputniks with a nationally televised speech reassuring the American people of their secure military standing. He admitted that the Soviets were "quite likely ahead in some missile and special areas" but maintained that the United

States could "bring near annihilation to the war-making capabilities of any other country" [5]. Also, Eisenhower acted on a suggestion of Columbia University physicist Isidor Rabi by creating the post of Special Assistant to the President for Science and Technology. James R. Killian, Jr., president of Massachusetts Institute of Technology (MIT), was appointed to fill the position. Within a few days of the announcement, Eisenhower assigned Killian the task of designing a space programme [6]. Later in November, the President elevated a committee of scientists from the Office of Defense Mobilization to the Executive Branch and designated it the President's Science Advisory Committee (PSAC). To Killian and PSAC went the responsibility of formulating a space policy for the United States. They began by establishing a Panel on Outer Space Science and Technology. This panel was chaired by Harvard University physicist Edward H. Purcell. From PSAC came the first proposal to form a new civilian space agency based on the National Advisory Committee for Aeronautics (NACA), a government agency that had been functioning since 1914.

At the time of PSAC's proposal, several contenders for the space job existed, some more eager for it than NACA. The military services and the Department of Defense (DOD) were trying desperately to hold on to as much of a space mission as possible. Congress was considering legislation to give the Atomic Energy Commission (AEC) the responsibility; other bills sought to create a Department of Science. These competing efforts spurred the Eisenhower administration to form a policy of its own and present it to Congress.

James McCormack and James B. Fisk first suggested, according to Killian, the scheme of building a new agency out of NACA. McCormack, a vice-president of MIT, made the initial proposal and Fisk, of Bell Telephone Laboratories, observed that NACA's role would diminish if it were not given the mission [7]. This plan fitted in well with Eisenhower's hope that space be kept a peaceful realm. The President also doubted the ability of the military services to get the job done with top efficiency. PSAC's intention to use NACA as a nucleus for a space agency became clear as early as December 1957 [8].

To formulate a final proposal, Killian approached officials of the Bureau of the Budget (BOB) for assistance in planning an administrative structure for the new agency. Several innovative features were added to the nascent plan when the BOB became involved. The NACA had functioned, throughout its 43 year history, as if it were a corporation. A Board of directors formed policy and elected a Chairman. The Chairman, in turn, hired a Director who actually ran the agency and carried out the directives of the Board. In 1957, the chairman was James H. Doolittle, an aeronautical engineer and famous World War II aviator; and the director was physicist Hugh L. Dryden. From the BOB came the suggestion that the board-chairman-director system be eliminated. Maurice H. Stans, William F. Finan, and Alan Dean of the BOB favoured an organisation run by a single all-powerful director responsible only to the President. The

space agency, they saw, would become a powerful and expensive body. Clear lines of authority and command were needed. Killian, on the other hand, initially favoured continuing the NACA-style board. He was, however, persuaded by the management experts in the BOB to support a single executive [9]. Hugh Dryden was unaware of the BOB innovations, having been “appropriately . . . excluded” from the planning when NACA became the prime candidate [10].

The formal proposal was made to President Eisenhower on 5 March 1958. The memorandum from the President’s science adviser, BOB, and the Committee on Government Organisation noted that space had “relatively limited military significance”. Thus, it was illogical to allow either a military service or the DOD to manage the space programme. The authors of the memorandum felt that NACA was most appropriate for the job for several reasons: it already existed; NACA was involved in space-related research; if not given the role, it would probably atrophy; NACA had worked successfully with the military services (a necessary prerequisite since nearly all hardware at that time belonged to the military); NACA was civilian; and NACA could easily be converted into a new agency. These positive aspects outweighed the liabilities, which included both inexperience in handling large contracts and in operating continuing programmes. The advisory board was not abolished altogether. It remained as a source of information and judgment for use by the director. This plan, drafted by the BOB in conjunction with Killian’s office, was signed as a matter of form by Nelson Rockefeller, the chairman of the Senate Committee on Government Organization [11].

When the plan was revealed within the administration, some members of the NACA board were unpleasantly shocked. Although NACA had quietly lobbied for the space mission since December 1957, the 5 March memorandum offered more than was wanted. In December, NACA issued the confidential paper “NACA Research Into Space”. The paper commented that “NACA is an organization in being, already engaged in research applicable to the problems of space flight”, and has the facilities and personnel to carry out a space programme [12]. On 16 January, NACA elaborated on the plan. It suggested a programme coordinated by itself drawing on the DOD, National Science Foundation, National Academy of Sciences, universities, and industry. Two days after the 5 March memorandum, James Doolittle wrote to Hugh Dryden that the NACA was on the “horns of a dilemma”. He stated that unless NACA were “given at least some part of the space program” it would “decline with the airplane” [13]. The price of involvement, however, seemed to be NACA’s destruction. James Killian has more recently recollected that he “had the impression that we would have to sell NACA” on the chance to become a space agency [14]. Killian believed that some members of the NACA advisory board were willing to stay solely in aeronautics and allow the space mission to be assigned elsewhere. Although NACA Chairman Doolittle later promoted the administration’s plan, he reported to Killian that the BOB concept of a single director “distressed” him. “I believe”, he wrote, “the Board should advise the President, and should establish policy for and support and protect the Director” [15]. Doolittle’s support was never overwhelming. To a Senate committee, he stated that he would prefer keeping the NACA structure “but I do not believe it is sufficiently important to hold up the legislation” [16].

Prepared concurrently with the 5 March memorandum was a primer on space exploration, eventually released as an “Introduction to Outer Space”. This document came directly out of the Purcell Panel of PSAC. The report, in simple, straightforward language, discounted the military potential of space and emphasised the scientific motives for exploration. Eisenhower particularly liked the “Introduction to Outer Space” and insisted that it be printed for release to the

public. Killian has testified that the President readily accepted the report because it matched his own beliefs [17]. The paper concluded with a list of objectives, although unaccompanied by firm time estimates. Objectives included “moon contact” at an “early” period, and “human flight in orbit” at a “later” time.

The formative period of NASA was mostly complete by 2 April 1958. On that date President Eisenhower sent to Congress the draft legislation. He also instructed NACA and the DOD to prepare for implementing the bill. Senators Lyndon Johnson and Styles Bridges introduced the Eisenhower bill into the Senate; Representative John McCormack presented it to the House of Representatives. The President’s bill called for the creation of a National Aeronautics and Space Agency, controlled by a director appointed by the President. A National Aeronautics and Space Board would advise the director prior to major policy decisions, however, the board could not force its will upon the director. Board members could only appeal to the President. The agency had the power to enter into contractual arrangements for the development and operation of space vehicles as well as to conduct extensive in-house research and development. In addition, the agency could undertake cooperative projects with international scientific organisations or the armed services. As for space projects currently under other government departments, the new agency could acquire them if directors of the involved organisations consented. The President also had the authority to transfer programmes as he wished. Congressional approval was not needed for transfers completed before the end of three years after the signing of the act.

The House acted first on the legislation. Majority leader McCormack led the high-priority Select Committee on Aeronautics and Space Exploration in hearings which opened on 15 April. The point of conflict appeared early. The congressmen were concerned about the separation of military and civilian space projects. They wanted to insure that a powerful civilian programme would not unnecessarily limit the development of military space programmes. They also wanted enough cooperation between the services and the space agency to avoid duplication of effort and excess spending. With these concerns, the House wrote into the legislation a provision establishing a Military Liaison Committee. This committee, patterned after one existing in the AEC, would provide an avenue for sharing technology. In other matters, the House raised the status of the agency by transforming it into an *administration*. The *director* thereby became the *administrator*, and a deputy administrator was added to assist him. In another substantive change, the space board’s power over the administrator was reduced. The congressmen felt that it was too restrictive to require the administrator to consult with the board. They allowed the board to remain but removed consultation “as a condition to taking executive action” [18].

In the Senate, the primary controversy centred around the space board. The administration’s bill listed a board composed of a maximum of 17 members, all chosen by the President. Not more than eight were to be from government agencies. At least one of the eight had to be from the DOD. The Senate Special Committee on Space and Aeronautics, led by majority leader Senator Johnson, objected. The suggested legislation could permit an unbalanced board, formed of one person from the DOD and 16 from private life or industry. The senators believed such a composition would not insure that the government’s interests were best represented. Senator Johnson offered amendments that radically altered the composition of the space board. Johnson’s revised space “council” consisted of the President, Secretary of Defense, Secretary of State, Chairman of the AEC, one more government member, and three private members. The space council was intended to dictate policy

to the director.

Both the House and Senate committees improved the original bill through clarified language and clearer explanations, and both received the cooperation of the administration. This cooperation, however, ended with the Johnson amendments to the space board. Both Houses of Congress passed the bills as they were reported out of their respective committees. But because substantial differences existed in the two versions, a conference committee was necessary. While the conference committee wrote a new bill which retained the Military Liaison Committee, President Eisenhower made it known that he would not accept the space council as fashioned by the Senate. To break the impasse, Johnson visited Eisenhower. According to the autobiographies by both men, Johnson suggested that the council remain and the President be made chairman. Eisenhower found this acceptable and Johnson introduced this amendment to the conference committee [19]. The President had objected to a council that would, by law, control the NASA administrator. He feared that a President would be placed in the situation whereby an executive agency could dictate national space policy. Johnson's amendment circumvented this difficulty and in practical terms returned the council to the status of an advisory board. In the compromise, the President was made chairman over a committee a majority of whose members were directly subordinate to him. This gave Eisenhower the power to dictate policy to himself. As President, he could also enlist the services of science advisers. In practice, President Eisenhower made little use of the space council. He never appointed the staff to serve the council members. Instead, he received staff aid from the office of his science adviser [20]. This gave his NASA administrator a large degree of freedom.

The conference committee also made one other significant alteration of the space bill. In the administration's proposal, no special arrangements were included to cover the use of patents originating from government contracts. The writers of the legislation assumed that existing government patent regulations would apply to the new NASA. The conference committee, responding to pressure from industry, made the patent policy more flexible. They empowered the administrator to allow the use of such government-financed patents by private groups.

The conference committee reported out the space bill on 15 July 1958. The following day, both houses passed the bill without further amendment. The final bill, although considerably more lucid than the original version, made few substantive changes [21]. Congress specified that the administrator and deputy must be civilians; clarified the arrangements for international cooperation; and formalized the relations between NASA and the military services. The bill became law with the signing by President Eisenhower on 29 July 1958.

The Eisenhower administration was responsible for three crucial aspects of NASA. First, in the closing months of 1957, Eisenhower and his advisers in PSAC decided that the United States space programme would not be under military control. This course was taken even though the military services possessed virtually all of the hardware for space exploration, as well as operational organizations prepared to accept a space mission. The administration forced the space role on a somewhat reluctant civilian group, the NACA. Second, even the decision to pursue a peaceful programme did not necessitate the use of NACA as a foundation. Other proposals included both creating an entirely new organisation and giving the assignment to the AEC. The decision, however, was that aeronautics and astronautics would not be separate. NACA was pushed into duty. The third unique aspect of Eisenhower's NASA is one that is easily underestimated in importance. The administrative structure of a single agency

chief responsible only and directly to the President allowed NASA to become a functioning arm of national and international political policy. Had NASA retained, as it easily could have, the NACA structure of board-chairman-director, the entire agency would have been insulated from direct and active manipulation by the President. If this happened, the subsequent use of NASA by Presidents John F. Kennedy and Lyndon Johnson would probably have been vastly different.

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