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Title: James R. Killian, Jr., "Memorandum on Organizational Alternatives for Space

Research and Development," December 30, 1957.

**Source:** Dwight D. Eisenhower Papers, Eisenhower Library, Abilene, Kansas.

In the wake of Sputnik I and II, there was a wholesale reexamination of the U.S. organization for space-related activities. In 1955, when a scientific satellite program was initiated, it was given a low priority in comparison to other military efforts. At the time, there was concern that even a small civilian space program, if given too many resources, could adversely affect critical ballistic missile programs. The issue was not so much one of cost, but of the scarcity of human resources and development and test facilities. However, the political firestorm set off by the Soviet satellite brought into question the relatively low priority given the scientific space program. From the time the first Sputnik was launched until NASA was established, almost all elements of the government were engaged in the debate on how best to redress the situation and reestablish the prestige of the United States. The failure of the first Vanguard launch on December 6, 1957, only intensified the calls for change. Sputnik also created the necessary impetus in the White House for the creation of the position of presidential science advisor. On November 7, James R. Killian, the president of the Massachusetts Institute of Technology, was appointed to this position. One of Killian's first duties was to address the issue of alternatives for space research organization. Some of his thoughts in this early memorandum eventually formed the basis of the Eisenhower administration's future policy toward the creation of a space agency.



## December 30, 1957

## MEMORANDUM ON ORGANIZATIONAL ALTERNATIVES FOR SPACE RESEARCH AND DEVELOPMENT



- A. That the Department of Defence proceeds with its amounced plan
  for a Special Projects Division, reporting directly to the Secretary
  and including, as one of its major responsibilities, space research
  and development for the DOD.
- B. That there is a broad area of non-military basic research relating
  to space which will command the interest and participation of
  scientists and engineers in a variety of non-government and governmust institutions.

With these assumptions in mind, we can proceed to a discussion of how the Covernment's sponsorship of space research and development can be handled and how the military and non-military programs can be related.

There have been proposals for a new Government agency analogues to either NACA or the AEC to handle all space research and development. In appraising this approach, the following considerations are of importance:

A. The DOD is committed to a space program and is in process of setting one up, although the nature of the program has not been clearly defined.

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B. Those aspects of space research and development which relate to the use of missile engines, and the testing and launching of vehicles must be closely associated with DOD missile programs.

The necessity of such close association may dictate the placing of responsibility in the DOD for the development, testing, and use of rocketry for putting up space vehicles. It would seem unwise for a new agency, independent of the DOD, to have to create and use test facilities other than those built by DOD.

It seems of greatest importante that the DOD's own space program
be very closely related to its missile program or for the two programs
at some time to be marged.

These considerations seem to indicate clearly that the DOD must play a major role in space research and development if we are to use the sation's manpower and facilities in this area to the greatest advantage.

The DOD will, of course, be primarily concerned with those aspects of space research and development which will have military value. It is hard at this stage, however, to separate out of space R&D those elements, however basic and purely scientific, which would not contribute to military objectives. It seems entirely feasible for DOD to be the major sponsor and entrepreneur of space research and development, both military and "non-military."

There are many scientists and others, however, who are opposed to the contralisation of all space R&D under the DOD. There are deeply-felt convictions that the more purely scientific and non-military aspects of space research should not be under the control of the military. In the first place,

such an arrangement might improposity limit the program to narrowly concerned military objectives. In the second place, it would be our basic space research as military and place the U.S. in the unfortunate position before the world of apparently tailoring all space research to military ends.

The problem of planning our non-military space research, then, becomes one of devising the means for non-military basic space research while at the same time taking advantage of the immease researchs of the military missile and recon satellite programs, there are several possible ways of doing this:

- A. The D. O. D. as a part of its program would establish a control space laboratory with a very broad charter which would permit the conduct of the most basic sort of research as well as R and D, having obvious military objectives. We see the pattern for this is such a laboratory as the Los Alamos Scientific Laboratory of the A. E. C. Such a laboratory might also have the authority to sponsor research in civilian institutions.
- B. The Department of Defense might confine itself to its military mission and some other agency or agencies external to the D. O. D. might engage in basis research. One obvious way of doing this would be to encourage N. A. C. A. to extend its space research and to provide it with the necessary funds to do so. A second.

method (and this one might be handled along with an N. A. C. A program) would be to provide funds either through the Department of Defence or otherwise to the National Research Council, the Council in turn sponsoring a series of projects in universities and industrial laboratories. The N. A. C. A. itself might do sub-contracting as indeed it does now to a limited extent. The problem here would be not to burden the N. A. C. A. with so large a program that the nature of N. A. C. A. would be changed. In its present form, it has been very successful but an under emitrgement of its program might reduce its affectiveness.

If either the N. A. C. A. or N. R. C. methods or both were followed it would be necessary to carefully to work out a cooperative arrangement with the D. O. D., for the D. O. D. would have to be an attive partner with these agencies.



Such combination of sponsorable and programs would probably be the most advantageous way of carrying on space research for meeting both military and non-military objectives.

In considering these various alternatives and means, it is important to keep in mind existing resources available in the D. O. D., the Army's ABMA has a highly competent group for space research. The Air Force's BMG has important resources, including a going program for the development of a recon satallite. Gal Tech's Jet Propulsion Laboratory has advantages and resources for space research - a laboratory which has been closely associated with the Army. In the interest of conserving

man power and utilising skill and experience already in being, these agencies must be considered in planning a new program. Someone or combination of these might well be made the nucleus of an extended program.

There should be some mechanism, however, which gives coherence to the broad program and which avoids a program encouraging interservice rivalries.

The over-all plan must permit and provide for bold, imaginative research and planning. It must recognize the importance of providing the means and incentives for pure scientists to move effectively into space research without regard to practical applications. We must realize obvious. that in addition to such objectives as space travel and recommissance there are extraordinary opportunities to extend our knowledge of the earth and its environment and engranously to extend astronomical observations. It may well be that these kinds of pure, non-practical research objectives may prove to be the sport important and in the end the most practical.

The over-all plan, then, must keep steadily in view the need for thosomeons and programs which will command the interest and participation of our best scientists. We must be ve far more than a program which appeals to the "space cadets." It must invoke, in , the despect serve, the attention of our best scientific minds if we as a nation are to become a leader in this field. If we do not achieve this, then other nations will continue to hold the leadership. December 29, 1957

J. R. Killian, Jr.