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September 12, 1958

NATIONAL SPACE ACTIVITIES

A BRIEF SUMMARY

Prepared For
The National Aeronautics and Space Council

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INTRODUCTION

1. The legislation (Public Law 568) creating the National Aeronautics and Space Administration also created the National Aeronautics and Space Council (Sec. 201). The Council will consist of the President, who shall preside, the Secretary of State, the Secretary of Defense, the Chairman of the AEC, the Administrator of the NASA, an additional Government member and three members from private life.

2. The function of the Council will be to advise the President in regard to his duties which shall be to:

a. Survey all significant aeronautical and space activities, including policies, plans, programs, and accomplishments of all agencies of the United States engaged in such activities;

b. Develop a comprehensive program of aeronautical and space activities to be conducted by agencies of the United States;

c. Designate and fix responsibility for the direction of major aeronautical and space activities;

d. Provide for effective cooperation between the National Aeronautics and Space Administration and the Department of Defense in all such activities, and specify which of such activities may be carried on concurrently by both such agencies notwithstanding the assignment of primary responsibility therefor to one or the other of such agencies; and

e. Resolve differences arising among departments and agencies of the United States with respect to aeronautical and space activities under this Act, including differences as to whether a particular project is an aeronautical and space activity.

3. In preparation for the initial meeting of the Council, background material related to the Nation's space activities has been summarized and is contained herein. The material relative to the FY 1959 program, budget and division of responsibility between the NASA and the Department of Defense reflect the results of numerous meetings between representatives

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of these agencies, the Director of the Bureau of the Budget and the Special Assistant to the President for Science and Technology. The general agreements reached were recognized as tentative and subject to review of the Council.

4. Additional pertinent and informative material is contained in the NSC Paper 5814, titled "U. S. Policy on Outer Space", and "Introduction to Outer Space" prepared by the President's Science Advisory Committee.

[redacted]

5. [redacted]

6. [redacted]

[redacted]

7. [redacted]

[redacted]

8. [redacted]

9. [redacted]

10. [redacted]

11. [redacted]

12. [redacted]

13. [redacted]

14. [redacted]

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[redacted]

16. [redacted]

17. [redacted]

[redacted]

[redacted]

[redacted]

19. [redacted]

[redacted]

20. [redacted]

[redacted]

21. [redacted]

THE SPACE PROGRAM

THE EXISTING PROGRAM

Space Science

22. The existing Space Science program consists primarily of the Vanguard and Explorer earth satellite projects and the lunar probe projects. These projects in general are being conducted under the auspices of the International Geophysical Year.

23. The Vanguard project has five vehicles yet to be launched. The experiments to be conducted include measurements of ultra-violet radiation from the sun, the earth's magnetic field, cloud cover, air density and the difference in heat radiated from the sun to the earth and re-radiated by the earth. In all cases these are initial, unsophisticated experiments severely restricted by the allowable payload weight.

24. The Explorer project will use both the Juno I and the more advanced Juno II launching vehicles. The Juno I phase of the project has one remaining vehicle to be launched. The experiment consists of inflating and releasing in orbit a twelve foot diameter sphere. The relatively rapid rate of deceleration of the large, lightweight sphere will allow a determination of air density at high altitudes. The sphere experiment is also a technique step in the development and placing in orbit of much larger lightweight spheres for communications purposes. The Juno II phase of the program at present will consist of placing a 60-100 pound payload in orbit for the most extensive cosmic ray experiment to date. A second Juno II vehicle will be used to place a 100 foot diameter inflatable sphere in orbit. The sphere is an initial attempt at a "passive" communications relay system. Signals will be beamed from the earth and hopefully reflected by the sphere to other points on the earth.

25. The lunar probe program as presently planned has two remaining Thor-Able I vehicles and two Juno II vehicles to be launched. The initial Thor-Able I vehicle failed during the firing of the first stage. Both the Thor-Able I and Juno II projects will attempt to photograph the dark side of the moon as well as making measurements of cosmic ray intensity, magnetic fields and micrometeorite impacts between the earth and, or in the vicinity of, the moon. The last stage of the Thor-Able I vehicles will carry a retro-rocket which, if fired at the proper time, will enable the probe to go in orbit about the moon.

Satellite Applications

26. The 117L advanced reconnaissance satellite system is now being developed by the Department of Defense (ARPA-AFBMD). The system will make use of optical (photographic), ferret (electronic detection) and infra-red (heat radiation) equipment to collect information. The information will be relayed from the satellite to ground receiving stations by either electronic means or by ejecting and recovering a capsule containing the stored information. The use of the optical system is clear; the ferret system will be used to detect various pieces of electronic equipment such as radar; and the infra-red system, which is in the most primitive stage of development, offers promise as an early warning system by being able to detect the radiation from rocket engine exhausts soon after takeoff.

27. The satellite reconnaissance system (117L) flight test development program is divided into two phases. The initial phase, consisting of up to 19 vehicles, will begin testing in the fall of 1959, using Thor boosted vehicles. The second phase, using thirteen Atlas boosted vehicles, will begin testing in the first half of 1960. The satellite itself will contain a propulsion unit, known as the Hustler.

28. In summary, the U. S. currently has 8 satellites and 4 lunar probes in some stage of preparation in the space science program. The maximum payload of these satellites will be about 100 pounds, the maximum payload of the lunar probes will be 25-40 pounds. All twelve of these vehicles are scheduled for launching between September '58 and May '59. The direction of the space science program will pass from the Department of Defense to the NASA as it becomes staffed and operational. The 117L project will begin launching the first of its test satellites in the fall of 1959. Thirty-two vehicles are now planned in this project with either 400 or 2700 pound payload capabilities.

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29. A tentative launching schedule of vehicles in the existing program is given below.

	1958				1959				
Project	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May
Vanguard	x	x	x	x	x					
Explorer(Juno I)		x								
Juno II					x*	x*	x			x
Thor-Able I		x*	x*							
117L			x(Thor phase launchings start here)							

* Indicate lunar probes.

THE FY 1959 PROGRAM

[redacted]

30. [redacted]

(a) [redacted]
(b)
(c)
(d)
(e)
(f)

31. [redacted]

[redacted]

32. [redacted]

Satellite Applications

33. Reconnaissance - The 117L reconnaissance program has been discussed in the Existing Program. Its presently planned program, which will carry the system through development, has flights scheduled through 1960.

34. [redacted]

35. [redacted]

36. [redacted]

37. The 1959 FY budget allows for 6-10 satellite experiments in the fields of communications, meteorology and navigation, and up to 32 satellite flights in the reconnaissance field.

[redacted]

38. [redacted]

39. [redacted]

40. [redacted]

41. [redacted]

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NOTICE OF REMOVED PAGES

Pages 10 through 12 are not provided because their full text does not contain CORONA, ARGON, LANYARD programmatic information.

Space Program Summary

50. There are 12 satellite and lunar probe vehicles in the Existing Program. The FY 1959 program allows for the procurement of 45 to 55 additional vehicles, including 32 vehicles in the 117L program. These vehicles will be scheduled for launching in Calendar Years 1958, 1959 and 1960. The payload capability of these vehicles as earth satellites range from 22 to 2700 pounds. [redacted]

DIVISION OF RESPONSIBILITY

51. The legislation provides that the NASA shall be responsible for all space activities except "that activities peculiar to or primarily associated with the development of weapons systems, military operations, or the defense of the United States (including the research and development necessary to make effective provision for the defense of the United States) shall be the responsibility of, and shall be directed by, the Department of Defense: and that determination as to which such agency has responsibility for and direction of any such activity shall be made by the President in conformity with Section 201(e).

52. During the preparation of the proposed space program discussed herein, in which the Department of Defense and the NASA played primary roles, an unwritten working relationship gradually evolved for the purpose of defining the responsibilities of the two agencies. This relationship is best described in terms of what space activities the Department of Defense will conduct, assuming all other activities will be conducted by NASA. In the presently evolved program it is generally agreed that the Department of Defense will conduct space activities, including necessary research and development, related to satellite applications and leading to foreseeable desirable military operational systems. This results at present in the Department of Defense conducting programs in reconnaissance (also surveillance, early warning) communications, meteorology, and navigation. Stated somewhat differently, the military will conduct research and development at the present in these four areas which obviously represent potential operational systems that have military application. Since these fields, with the exception of reconnaissance, also have important non-military applications, the civil agency will also conduct activities in this

area but in the near future will emphasize research as opposed to application. An example of this difference of emphasis lies in the field of meteorology where the Department of Defense will initiate development of a system as soon as possible to measure cloud cover to aid in worldwide weather forecasting; the NASA will initiate experiments which should aid in understanding the weather process. In general the NASA will be responsible for the Space Science programs.

53. The responsibility for the development of a manned satellite presented the most difficult problem in the "Division of Responsibility" area. It was recognized that both the NASA and the DOD have an interest in this area, and it was tentatively agreed that for the present both organizations would conduct studies and developments in this category. Present plans do not call for actually placing the man-in-orbit in FY 1959.

54. In summary, the NASA will be responsible for space science programs: both NASA and DOD will participate in satellite applications, with NASA stressing research and development, and the DOD emphasizing development of military operational systems; and both the NASA and DOD will conduct activities directed toward the development of a manned satellite.

THE FY 1959 NATIONAL SPACE BUDGET

55. A summary of the space budget for FY 1959 as proposed and modified by congressional action is presented. The proposed distribution of space funds between the NASA and Department of Defense was 242 and [redacted] respectively. As a result of congressional action, the NASA space budget was reduced to 197 million. The total national space budget for FY 1959 will be [redacted]

		NASA		DOD
		Proposed to Cong. Millions	Mod.-Result Cong. Action Millions	Approved Millions
a.	Space Science	85.0*	56.5*	
b.	Satellite Applications (Communications, Meteorology & Navigation)	10.0	8.5	16.0
c.	117L Advanced Recon. Satellite System			[redacted]
d.	Technology of Manned Satellites	30.0	30.0	10.0
e.	Space Technology	87.0	72.0	70.3
f.	Facilities (including tracking and operating expenses)	30.0	30.0	11.7
	Total National Space Budget	242.0	197.0	[redacted]

*(Includes 13.6 million to complete existing program)