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OPENING STATEMENT
Dr. Wernher von Braun
House Science and Astronautics Committee
16-18 February 1960

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Mr. Chairman, Gentlemen of the Committee:

I am presently employed as the Director, Development Operations Division, Army Ballistic Missile Agency. In approximately thirty days, if the transfer plan submitted by the President becomes effective as provided by law, I will leave the Army's employ to join the National Aeronautics and Space Administration.

It seems proper, therefore, to frame my remarks in the context of the pending NASA affiliation.

I believe the members of this Committee are thoroughly familiar with the composition of the Development Operations Division as it has been established by the Army at Redstone Arsenal. You know that we have executed ballistic missile development programs under the Army's management since ABMA was activated February 1, 1956.

Our primary assignments were to develop the land-based Jupiter Intermediate Range Ballistic Missile and to complete development of the Redstone Ballistic Missile System. Both tasks have been practically completed. The Redstone was first deployed in Europe by U. S. Army elements

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in June, 1958. The Jupiter system has been deployed in Italy and will also be deployed in Turkey under agreements between those nations, the North Atlantic Treaty Organization and the United States.

The Army Ballistic Missile Agency will have continuing responsibilities in the areas of field maintenance and support so long as the weapons systems remain in use. However, a decreasing amount of effort will be required from the Development Operations Division.

A third ballistic missile system, the Pershing, has been carried forward under a somewhat different concept than that selected for the Redstone and Jupiter programs. In this case practically all of the design and development effort, except for design of the guidance system, has been performed by industrial contractors rather than in-house. We provide technical supervision of their efforts but the prime industrial contractor is the system manager just as ABMA functioned as system manager for Redstone and Jupiter.

To recapitulate the workload prospects in my Division, the last Redstone will come off the production line in late 1960. The last Jupiter will be produced early in 1961. The amount of research and development effort in support of Pershing has been much less than was required by the other missile systems.

This situation had long been apparent to General Medaris, our former commander who retired from active duty January 31st, and to the other elements of the Army that are responsible for design, development and procurement of armament required for Army missions. Thus the

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Army found it possible to make increasing use of the development team in the field of outer space exploration. Our customers - if I may use the term - were the Advanced Research Projects Agency of the Department of Defense and NASA. We have conducted satellite and deep space probe experiments for both organizations. We also conduct and monitor basic and applied research programs for both intended to advance the state of the art.

In August, 1958, ARPA assigned to the ABMA team the task of developing a so-called "super booster" expressly intended for significant space missions. I would define such a booster as a rocket system of greater order of thrust than is required for presently established military requirements. This is the Saturn, a cluster of eight IRBM type rocket engines connected to nine tanks carrying fuel and oxidizer, which will yield 1,500,000 pounds thrust at sea level. This is approximately five times greater than the thrust of the liquid propellant Atlas ICBM and ten times greater than the thrust of the IRBMs. I might note, in passing, that it is perhaps twice as great as the thrust demonstrated by the Soviet Union in their successful earth satellite and lunar probe experiments.

By the Fall of 1959 the workload in my Division was divided approximately 53 per cent in military weapons systems and 47 per cent in space-oriented programs. It was quite evident that by 1961 the situation would change to such an extent that about 80 per cent of the available manpower could be devoted to space programs.

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While the Army had built up the organization and provided the unique facilities and equipment which could be utilized in space vehicle design, fabrication, testing and launching, it lacked the mission assignments of service-oriented type to engage the development capability. In September, 1959 the Department of Defense assigned to the U. S. Air Force the responsibility for military operations in outer space with the exception of a communications satellite for which the Army had established a requirement and a navigation satellite for which the Navy likewise had a requirement. To the extent that offsprings of their ICBMs and IRBMs provide sufficient rocket power for these tasks, the Air Force will provide the vehicles to launch these orbiters and will conduct the actual launchings.

On October 21, 1959, the President decided that the nation would concentrate its "super booster" development in a coordinated program to be directed by NASA. He further announced that he would propose to the present Congress the transfer of my Division to NASA.

The Administrator of NASA, Dr. T. Keith Glennan, visited Redstone Arsenal the following day. He announced that it was his intention, if the Congress did not oppose the transfer, to assign the "super booster" development to the personnel of my organization. This would include the Saturn system, which was to be transferred from the Department of Defense to NASA, and the newer development program known as the F-1 engine, the objective of which is to provide a single rocket engine of 1,000,000 pounds of thrust or more, to power the still somewhat futuristic Nova super-rocket.

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I want to make it clear that we did not suggest or request transfer from the Army's management. We had received outstanding support from the Army. It was the Army that brought us together and kept us together, that provided us the facilities, equipment and other resources we needed, to the limit of its total resources. We believed that under the Army's guidance we had made a contribution to the national defense and to the national space program.

The decision to transfer my division to NASA was based on over-riding national considerations, and not on any lack of support from the Army. We accepted this decision. We assured Dr. Glennan that we would be happy to become a part of his fine organization and thus to have an opportunity to continue our work in the space field. He, in turn, pledged his support and we have had ample occasion in the interim to learn that he means it. At no time has Dr. Glennan preempted the prerogatives of the Executive or the Congress in our relations. The Army, NASA and my division have jointly done their best to work out the details of this complicated transfer involving some 4,800 personnel and \$93,000,000 worth of facilities and equipment with minimum friction and maximum assurance that Army and NASA programs will continue without interruption. There has been none.

Every precaution will be taken to protect the rights of individuals involved in the transfer. Both the Army and NASA will give full consideration, insofar as is practical, to their personal desires and capabilities. We anticipate that the bulk transfer would become effective 1 July 1960 at the inception of the next fiscal year. Thereafter my division and the facilities we occupy at Redstone Arsenal would become part of NASA and work under NASA's direct

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management. We have been receiving direct technical directives and some management guidance from NASA since the day of the President's announcement but we are still under Army management and are still Army employees.

We have been greatly encouraged by the President's directive to Dr. Glennan by the terms of which NASA will propose additional funding for the Saturn program. I sincerely hope that this will result in the appropriation of sufficient funds to continue the development on an optimum - not a crash - basis. We have recommended an optimum program that would substantially accelerate the development but would avoid the danger of pouring money into it beyond the point of diminishing return. It is my understanding that supplementary or additional funding would be apportioned between the two programs, Saturn and the F-1 engine for Nova, in a ratio that would allot approximately three-fourths of the money to Saturn and one-fourth to the F-1 engine. I consider this sound because of the fact that Saturn is much further advanced and will be ready operationally at a much earlier point in time than any vehicle powered by the Nova engine.

I have so often expressed myself in favor of a greater sense of urgency in our national space program that it would serve no useful purpose to restate it again. I do want to clear up the question, if I can, which has to do with the scientific urgency of space exploration versus the broad question of national interest. I am sometimes asked why, since the Moon has been there for millions of years, there is any reason for hurry now to photograph its far side. And if, for example, we had to postpone vital medical research in order to fire a big space rocket in 1960, why can't we wait until 1961 for that launching?

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I suggest the question is asked the wrong way because this is not a subject that can be evaluated in purely scientific terms. The fact is clear, it seems to me, that we face expert competition moving ahead under a powerful head of steam. It is a competition in rocketry but its implications extend across the entire spectrum of human endeavor. The price we have paid for failing to achieve parity can best be measured by those whose mission it is to feel the pulse of world opinion.

I can say this - if we can forget the competitive aspect for a moment - that the Saturn will provide a capability to transport really heavy payloads into space. Improved versions are in the design stage that will still further increase its load-carrying potential. This will be the first true space transportation system developed by this country - a system that will enable us to take on all kinds of ambitious spaceflight missions, unmanned and manned.

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