



OFFICE OF THE VICE PRESIDENT
WASHINGTON, D. C.

April 28, 1961

MEMORANDUM FOR THE PRESIDENT

Subject: Evaluation of Space Program.

Reference is to your April 20 memorandum asking certain questions regarding this country's space program.

A detailed survey has not been completed in this time period. The examination will continue. However, what we have obtained so far from knowledgeable and responsible persons makes this summary reply possible.

Among those who have participated in our deliberations have been the Secretary and Deputy Secretary of Defense; General Schriever (AF); Admiral Hayward (Navy); Dr. von Braun (NASA); the Administrator, Deputy Administrator, and other top officials of NASA; the Special Assistant to the President on Science and Technology; representatives of the Director of the Bureau of the Budget; and three outstanding non-Government citizens of the general public: Mr. George Brown (Brown & Root, Houston, Texas); Mr. Donald Cook (American Electric Power Service, New York, N. Y.); and Mr. Frank Stanton (Columbia Broadcasting System, New York, N. Y.).

The following general conclusions can be reported:

- a. Largely due to their concentrated efforts and their earlier emphasis upon the development of large rocket engines, the Soviets are ahead of the United States in world prestige attained through impressive technological accomplishments in space.
- b. The U.S. has greater resources than the USSR for attaining space leadership but has failed to make the necessary hard decisions and to marshal those resources to achieve such leadership.

DECLASSIFIED

DOD 11/25/74; NASA 7/19/74; ET AL

E.O. 11652, Sec. 3(E) and 5(D) or (E)

By MFD NARS, Date 3/14/75

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- c. This country should be realistic and recognize that other nations, regardless of their appreciation of our idealistic values, will tend to align themselves with the country which they believe will be the world leader -- the winner in the long run. Dramatic accomplishments in space are being increasingly identified as a major indicator of world leadership.
- d. The U.S. can, if it will, firm up its objectives and employ its resources with a reasonable chance of attaining world leadership in space during this decade. This will be difficult but can be made probable even recognizing the head start of the Soviets and the likelihood that they will continue to move forward with impressive successes. In certain areas, such as communications, navigation, weather, and mapping, the U.S. can and should exploit its existing advance position.
- e. If we do not make the strong effort now, the time will soon be reached when the margin of control over space and over men's minds through space accomplishments will have swung so far on the Russian side that we will not be able to catch up, let alone assume leadership.
- f. Even in those areas in which the Soviets already have the capability to be first and are likely to improve upon such capability, the United States should make aggressive efforts as the technological gains as well as the international rewards are essential steps in eventually gaining leadership. The danger of long lags or outright omissions by this country is substantial in view of the possibility of great technological breakthroughs obtained from space exploration.
- g. Manned exploration of the moon, for example, is not only an achievement with great propaganda value, but it is essential as an objective whether or not we are first in its accomplishment -- and we may be able to be first. We cannot leapfrog such accomplishments, as they are essential sources of knowledge and experience for even greater successes in space. We cannot expect the Russians to transfer the benefits of their experiences or the advantages of their capabilities to us. We must do these things ourselves.

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h. The American public should be given the facts as to how we stand in the space race, told of our determination to lead in that race, and advised of the importance of such leadership to our future.

i. More resources and more effort need to be put into our space program as soon as possible. We should move forward with a bold program, while at the same time taking every practical precaution for the safety of the persons actively participating in space flights.

* * * * *

As for the specific questions posed in your memorandum, the following brief answers develop from the studies made during the past few days. These conclusions are subject to expansion and more detailed examination as our survey continues.

Q.1 - Do we have a chance of beating the Soviets by putting a laboratory in space, or by a trip around the moon, or by a rocket to land on the moon, or by a rocket to go to the moon and back with a man. Is there any other space program which promises dramatic results in which we could win?

A.1 - The Soviets now have a rocket capability for putting a multi-manned laboratory into space and have already crash-landed a rocket on the moon. They also have the booster capability of making a soft landing on the moon with a payload of instruments, although we do not know how much preparation they have made for such a project. As for a manned trip around the moon or a safe landing and return by a man to the moon, neither the U. S. nor the USSR has such capability at this time, so far as we know. The Russians have had more experience with large boosters and with flights of dogs and man. Hence they might be conceded a time advantage in circumnavigation of the moon and also in a manned trip to the moon. However, with a strong effort, the United States could conceivably be first in those two accomplishments by 1966 or 1967.

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There are a number of programs which the United States could pursue immediately and which promise significant world-wide advantage over the Soviets. Among these are communications satellites, meteorological and weather satellites, and navigation and mapping satellites. These are all areas in which we have already developed some competence. We have such programs and believe that the Soviets do not. Moreover, they are programs which could be made operational and effective within reasonably short periods of time and could, if properly programmed with the interests of other nations, make useful strides toward world leadership.

Q. 2 - How much additional would it cost?

A. 2 - To start upon an accelerated program with the aforementioned objectives clearly in mind, NASA has submitted an analysis indicating that about \$500 million would be needed for FY 1962 over and above the amount currently requested of the Congress. A program based upon NASA's analysis would, over a ten-year period, average approximately \$1 billion a year above the current estimates of the existing NASA program.

\$2 billion

While the Department of Defense plans to make a more detailed submission to me within a few days, the Secretary has taken the position that there is a need for a strong effort to develop a large solid-propellant booster and that his Department is interested in undertaking such a project. It was understood that this would be programmed in accord with the existing arrangement for close cooperation with NASA, which Agency is undertaking some research in this field. He estimated they would need to employ approximately \$50 million during FY 1962 for this work but that this could be financed through management of funds already requested in the FY 1962 budget. Future defense budgets would include requests for additional funding for this purpose; a preliminary estimate indicates that about \$500 million would be needed in total.

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Q. 3 - Are we working 24 hours a day on existing programs. If not, why not? If not, will you make recommendations to me as to how work can be speeded up.

A. 3 - There is not a 24-hour-a-day work schedule on existing NASA space programs except for selected areas in Project Mercury, the Saturn-C-1 booster, the Centaur engines and the final launching phases of most flight missions. They advise that their schedules have been geared to the availability of facilities and financial resources, and that hence their overtime and 3-shift arrangements exist only in those activities in which there are particular bottlenecks or which are holding up operations in other parts of the programs. For example, they have a 3-shift 7-day-week operation in certain work at Cape Canaveral; the contractor for Project Mercury has averaged a 54-hour week and employs two or three shifts in some areas; Saturn C-1 at Huntsville is working around the clock during critical test periods while the remaining work on this project averages a 47-hour week; the Centaur hydrogen engine is on a 3-shift basis in some portions of the contractor's plants.

This work can be speeded up through firm decisions to go ahead faster if accompanied by additional funds needed for the acceleration.

Q. 4 - In building large boosters should we put our emphasis on nuclear, chemical or liquid fuel, or a combination of these three?

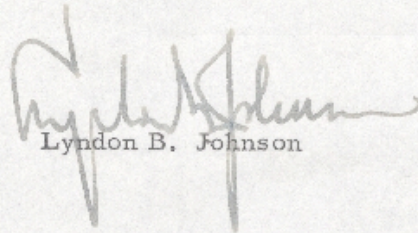
A. 4 - It was the consensus that liquid, solid and nuclear boosters should all be accelerated. This conclusion is based not only upon the necessity for back-up methods, but also because of the advantages of the different types of boosters for different missions. A program of such emphasis would meet both so-called civilian needs and defense requirements.

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Q. 5 - Are we making maximum effort? Are we achieving necessary results?

A. 5 - We are neither making maximum effort nor achieving results necessary if this country is to reach a position of leadership.



Lyndon B. Johnson

IMMEDIATE RELEASE

April 12, 1961

Office of the White House Press Secretary

THE WHITE HOUSE

FOLLOWING IS THE TEXT OF THE
PRESIDENT'S TELEGRAM TO THE
CHAIRMAN OF THE COUNCIL OF
MINISTERS, UNION OF SOVIET
SOCIALIST REPUBLICS, N.S.
KHRUSHCHEV:

12 April 1961

The people of the United States share with the people of the Soviet Union their satisfaction for the safe flight of the astronaut in man's first venture into space. We congratulate you and the Soviet scientists and engineers who made this feat possible. It is my sincere desire that in the continuing quest for knowledge of outer space our nations can work together to obtain the greatest benefit to mankind.

John F. Kennedy

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Nuclear Arms Race Lecture Notes

USA produced a bomber - the B52 - that could fly 6,000 miles and deliver a nuclear pay-load. Such a development required massive financial backing from the government - something which America could afford to do and which Russia could not. Russia concentrated on producing bigger bombs - a far more cost effective procedure.

In October 1957, the world was introduced to the fear of a missile attack when Sputnik was launched.

This was to lead to ICBM's : Inter-continental ballistic missiles. As a result, America built the DEW line around the Arctic - Defence and Early Warning system.

The ICBM's were supported with the thermo-nuclear bomb (with a much greater destructive power than the original atomic bomb), inertial guidance systems (defines the difference between weight, the influence of gravity and the impact of inertia), and powerful booster engines for multistage rockets. As a result, ballistic missiles became sufficiently accurate and powerful to destroy targets 8000 km (5000 mi) away. For more than thirty years, the ICBM has been the symbol of the United States' strategic nuclear arsenal.

At the end of the 1950's, American Intelligence estimated that in a Russian missile attack, 20 million Americans would die and 22 million would be injured.

During the 1960's, the Russians put their money into producing more missiles regardless of quality while America built fewer but better quality missiles - the Atlas could go 5,000 miles at a speed of 16,000 mph. By 1961, there were enough bombs to destroy the world.

Despite this, great emphasis was put on new weapon systems - mobile missile launchers were built, missiles were housed underground in silos and in 1960 the first Polaris submarine was launched carrying 16 nuclear missiles. Each missile carried four warheads which could be targeted on different cities; hence one submarine effectively carried 64 nuclear warheads.

In 1967, China exploded an H-bomb. China was a communist country. In the west, NATO felt out-numbered as the table below shows and so had to place her faith in nuclear missiles.

Troops : NATO 2.6 million. Warsaw Pact 4 million

Tanks : NATO 13,000. Warsaw Pact 42,500

Artillery : NATO 10,750. Warsaw Pact 31,5000

During the 1960's the theory of **MAD** developed - **Mutually Assured Destruction**. This meant that if Russia attacked the west, the west would make sure that they would suitably retaliate i.e. there would be no winners.

By 1981, USA had 8,000 ICBM's and USSR 7,000 ICBM's

By 1981, USA had 4,000 planes capable of delivering a nuclear bomb. Russia had 5000.

USA defence spending for 1981 = 178 billion dollars. By 1986, it was 367 billion dollars.

By 1986, it is estimated that throughout the world there were 40,000 nuclear warheads - the equivalent of one million Hiroshima bombs.

British Intelligence estimated that just one medium sized H-bomb on London would essentially destroy anything living up to 30 miles away.

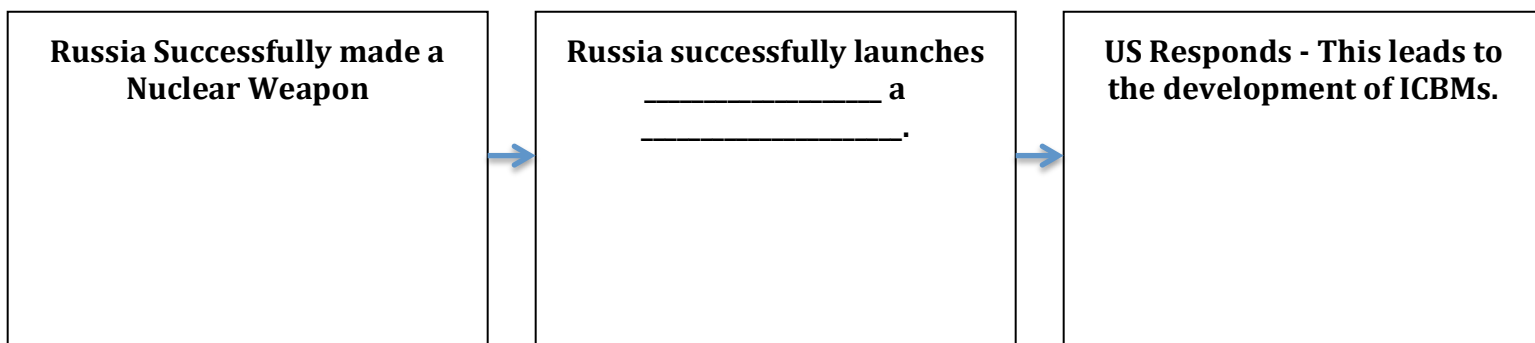
Name: _____ Date: _____ Period: _____

At what point is it appropriate to intervene in the affairs of other nations?:

NUCLEAR ARMS RACE & SPACE RACE

What problems arose because of the advancement of technology?

Immediate affects of the A-Bomb:



By the late 1950s/early 1960s -

M.A.D:

Brinkmanship:

Russia focused on _____

US focused on _____

How did the launch of Sputnik affect the Cold War between the United States and Soviet Union?

US Response to Sputnik

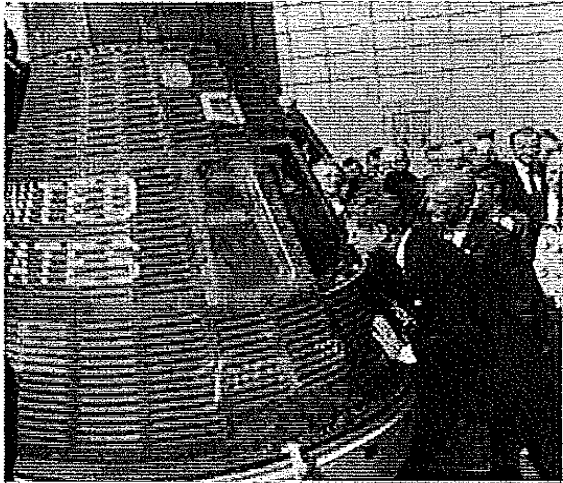
NASA -

As you watch the clip from "Sputnik Mania", explain how the new Space Race affected the youth and schools and what was the "flopnik"?

Activity 1: The Space Race

"We have vowed that we shall see space filled not with weapons of mass destruction, but with instruments of knowledge and understanding"

-President Kennedy, Rice University, Houston, Texas, September 12, 1962



Cape Canaveral, 1962. President Kennedy and Astronaut John Glenn

President Kennedy was eager for the United States to lead the way in exploring space. The Soviet Union was ahead of the United States, having launched the first satellite Sputnik in 1957 and the first cosmonaut Yuri Gagarin to orbit around the earth in 1961. President Kennedy said, "No nation which expects to be the leader of other nations can expect to stay behind in this race for space." In 1961 Kennedy asked Congress to approve more than twenty two billion dollars for Project Apollo, which had the goal of landing an American man on the moon before the end of the decade.

Directions: Explore the telegram and the two memos below and answer the questions that follow:

A. On April 12, 1961 cosmonaut Yuri A. Gagarin from the Soviet Union orbited around the earth in 108 minutes. The same day President Kennedy wrote a telegram to Premier Nikita Khrushchev congratulating the Soviets on the first successful manned flight.

B. A few days later President Kennedy wrote a memo on April 20, 1961 to Vice President Lyndon B. Johnson, who was the chairman of the Space Council.

C. Eight days later, Vice President Johnson responded to President Kennedy's memo.

1. In the telegram to Premier Nikita Khrushchev, how does President Kennedy say he would like the United States and the Soviet Union to work on exploring outer space?
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2. In the memo to Vice President Lyndon Johnson, what is President Kennedy's main objective?

3. What is the main difference between what President Kennedy says in the telegram and what he says in the memo in terms of how the Americans and the Soviets should explore outer space?

4. Why do you think President Kennedy appears to be giving two conflicting statements?

5. How does Vice President Johnson connect the space race with the Cold War in his April 28th memo to President Kennedy?

6. What are Vice President Johnson's suggestions for the President?
