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This package contains information pertaining to the planned development of the space shuttle vehicle which was approved by President Nixon at San Clemente, Calif., on January 5, 1972.

On the basis of this decision, which is consistent with the plans approved by Congress in NASA's FY 1972 budget, NASA will issue a request for proposals to prospective contractors in the Spring, with a development contract to be awarded in the Summer.

A decision to use either a pressure-fed liquid recoverable engine or solid rocket motors for the booster stage will be made before the end of February.

The package contains:

1) President's statement

2) Dr. Fletcher's statement

3) Space Shuttle Fact Sheet

4) Importance of the Space Shuttle

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January 6, 1972

THE WHITE HOUSE

STATEMENT BY THE PRESIDENT

I have decided today that the United States should proceed at once with the development of an entirely new type of space transportation system designed to help transform the space frontier of the 1970s into familiar territory, easily accessible for human endeavor in the 1980s and '90s.

This system will center on a space vehicle that can shuttle repeatedly from earth to orbit and back. It will revolutionize transportation into near space, by routinizing it. It will take the astronomical costs out of astronautics. In short, it will go a long way toward delivering the rich benefits of practical space utilzation and the valuable spinoffs from space efforts into the daily lives of Americans and all people.

The new year 1972 is a year of conclusion for America's current series of manned flights to the moon. Much is expected from the two remaining Apollo missions -- in fact, their scientific results should exceed the return from all the earlier flights together. Thus they will place a fitting capstone on this vastly successful undertaking. But they also bring us to an important decision point -- a point of assessing what our space horizons are as Apollo ends, and of determining where we go from here.

In the scientific arena, the past decade of experience has taught us that spacecraft are an irreplaceable tool for learning about our near-earth space environment, the moon, and the planets, besides being an important aid to our studies of the sun and stars. In utilizing space to meet needs on earth, we have seen the tremendous potential of satellites for intercontinental communications and world-wide weather forecasting. We are gaining the capability to use satellites as tools in global monitoring and management of natural resources, in agricultural applications, and in pollution control. We can foresee their use in guiding airliners across the oceans and in bringing televised education to wide areas of the world.

However, all these possibilities, and countless others with direct and dramatic bearing on human betterment, can never be more than fractionally realized so long as every single trip from earth to orbit remains a matter of special effort and staggering expense. This is why commitment to the space shuttle program is the right next step

for America to take, in moving out from our present beachhead in the sky to achieve a real working presence in space -- because the space shuttle will give us routine access to space by sharply reducing costs in dollars and preparation time.

The new system will differ radically from all existing booster systems, in that most of this new system will be recovered and used again and again -- up to 100 times. The resulting economies may bring operating costs down as low as one-tenth of those for present launch vehicles.

The resulting changes in modes of flight and re-entry will make the ride safer and less demanding for the passengers, so that men and women with work to do in space can "commute" aloft, without having to spend years in training for the skills and rigors of old-style space flight. As scientists and technicians are actually able to accompany their instruments into space, limiting boundaries between our manned and unmanned space programs will disappear. Development of new space applications will be able to proceed much faster. Repair or servicing of satellites in space will become possible, as will delivery of valuable payloads from orbit back to earth.

The general reliability and versatility which the shuttle system offers seems likely to establish it quickly as the workhorse of our whole space effort, taking the place of all present launch vehicles except the very smallest and very largest.

NASA and many aerospace companies have carried out extensive design studies for the shuttle. Congress has reviewed and approved this effort. Preparation is now sufficient for us to commence the actual work of construction with full confidence of success. In order to minimize technical and economic risks, the space agency will continue to take a cautious evolutionary approach in the development of this new system. Even so, by moving ahead at this time, we can have the shuttle in manned flight by 1978, and operational a short time later.

It is also significant that this major new national enterprise will engage the best efforts of thousands of highly skilled workers and hundreds of contractor firms over the next several years. The amazing "technology explosion"

that has swept this country in the years since we ventured into space should remind us that robust activity in the aerospace industry is healthy for everyone -- not just in jobs and income, but in the extension of our capabilities in every direction. The continued pre-eminence of America and American industry in the aerospace field will be an important part of the shuttle's "payload."

Views of the earth from space have shown us how small and fragile our home planet truly is. We are leaning the imperatives of universal brotherhood and global ecology -- learning to think and act as guardians of one tiny blue and green island in the trackless oceans of the universe. This new program will give more people more access to the liberating perspectives of space, even as it extends our ability to cope with physical challenges of earth and broadens our opportunities for international cooperation in low-cost, multi-purpose space missions.

"We must sail sometimes with the wind and sometimes against it," said Oliver Wendell Holmes, "but we must sail, and not drift, nor lie at anchor." So with man's epic voyage into space -- a voyage the United States of America has led and still shall lead.

STATEMENT BY DR. FLETCHER

As indicated in the President's statement, the studies by NASA and the aerospace industry of the space shuttle have now reached the point where the decision can be made to proceed into actual development of the space shuttle vehicle. The decision to proceed, which the President has now approved, is consistent with the plans presented to and approved by the Congress in NASA's FY 1972 budget.

This decision by the President is a historic step in the nation's space program -- it will change the nature of what man can do in space. By the end of this decade the nation will have the means of getting men and equipment to and from space routinely, on a moment's notice if necessary, and at a small fraction of today's cost. This will be done within the framework of a useful total space program of science, exploration, and applications at approximately the present overall level of the space budget.

The space shuttle will consist of an airplane-like orbiter, about the size of a DC-9. It will be capable of carrying into orbit and back again to earth useful payloads up to 15 feet in diameter by 60 feet long, and weighing up to 65,000 lbs. Fuel for the orbiter's liquid-hydrogen liquid-oxygen engines will be carried in an external tank that will be jettisoned in orbit.

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The orbiter will be launched by an unmanned booster.

The orbiter can operate in space for about a week. The men on board will be able to launch, service, or recover unmanned spacecraft; perform experiments and other useful operations in earth orbit; and farther in the future resupply with men and equipment space modules which themselves have been brought to space by the space shuttle. When each mission has been completed, the space shuttle will return to earth and land on a runway like an airplane.

There are four main reasons why the space shuttle is important and is the right step in manned space flight and the U.S. space program. Very briefly:

First, the shuttle is the only meaningful new manned space program which can be accomplished on a modest budget.

Second, the space shuttle is needed to make space operations less complex and less costly.

Third, the space shuttle is needed to do useful things.

Fourth, the shuttle will encourage greater international participation in space flight.

On the basis of today's decision, NASA will proceed as follows:

This spring we will issue a request for prospective contractors. This summer we will place the space shuttle under contract and development work will start. Between now and about the end of February, NASA and our contractors will focus their study efforts on technical areas where further detailed information is required before the requests for contractor proposals can be issued. These areas include comparisons of pressure-fed liquid and solid rocket motor options for the booster stage.

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SPACE SHUTTLE FACT SHEET

What is the space shuttle?

The space shuttle will be the first reusable space vehicle. It will consist of two stages: a booster and an orbiter. It will take off like a rocket, fly in orbit like a spaceship, and land like an airplane.

What will the shuttle look like?

The orbiter will have a delta-wing and will look very much like a modern airplane. It will be powered by three high-pressure oxygen-hydrogen engines. Propellants for these engines will be carried in an external jettisonable tank. Two different kinds of boosters are still under consideration. The first uses liquid propellants, pressure-fed engines, and is recoverable. The second uses solid rocket motors. One of these two booster options will be selected within the next several weeks.

What are the dimensions of the orbiter and booster?

The overall length of the booster is approximately 175 feet or about 17 stories high. The orbiter is about

the size of a DC-9. It measures more than 120 feet in length and has a wing span of 75 feet. Fully fueled and ready for launch, the shuttle will weigh approximately 4.7 million pounds on the launch pad. (The dimensions described above are subject to modification upon completion of contractor studies and analysis of their recommendation.)

What are the dimensions of the orbiter's passenger compartment/cargo area?

The orbiter will have a large payload, 14 to 15 feet in diameter and 45 to 60 in length. Hatches on top of the compartment will open wide in orbit to facilitate unloading and deployment of large spacecraft.

How will the shuttle operate?

The booster and orbiter stages will be joined for launch, with the orbiter in piggyback position. At altitude, the two stages will separate and the orbiter's engines will fire to carry it into orbit around the earth.

What functions will the shuttle perform?

The multipurpose shuttle will replace almost all

present expendable launch vehicles. It will be used to carry into space virtually all of this nation's payloads, scientific and applications, manned and unmanned, civilian and military. It will also accommodate the future needs of commercial users, other government agencies, and foreign governments. In the future it will be used to ferry passengers and freight between earth and orbiting space laboratories. If necessary, the shuttle will also be available for rescue missions in space.

How long will the orbiter be able to remain in orbit?

Anywhere from a week to a maximum of 30 days, depending on mission requirements. When its mission is completed, its two-man crew will pilot the orbiter back to earth for an airplane type landing at the take-off point or another landing field.

When will the shuttle be operational?

The system is expected to take six years to develop. It should be operational by the end of this decade.

What is the first mission planned for the shuttle?

There will be many mission requirements waiting for the shuttle when it is built, ranging from deployment of weather and communications satellites to the retrieval of automated spacecraft now in oribt.

What NASA centers will be involved with shuttle work?

The Manned Spacecraft Center has been designated the lead center with program management responsibility, overall engineering and systems integration, and basic performance requirements for the shuttle. Houston will also be responsible for the orbiter stage of the shuttle. Marshall Space Flight Center has been given responsibility for the booster stage and the space shuttle main engine. Kennedy Space Center will be responsible for design of launch and recovery facilities. As in the Apollo program, all other NASA center will contribute by providing technical know-how and support.

How much will it cost to develop the shuttle?

Development costs are estimated at $5.5 billion (in current dollars) over a six-year period; this is about one-fourth the cost of the Apollo program.

Will there be cost overruns or growths above this?

The refined cost-estimating techniques used in detailed design studies indicate that the job will be completed within the estimated cost figure.

Are there any other fixed costs?

Yes. Development costs include all research, development and test, and evaluation expenses as well as two flight test vehicles. In addition, development and initial operational facilities will cost about $300 million; each added orbiter $250 million; and each added booster $50 million.

How much will it cost to fly the shuttle?

Less than $10 million per flight--far less than any other space vehicle with an equivalent payload capacity.

By how much will the shuttle reduce space costs?

It is estimated that the reusable space shuttle will reduce the cost per pound of putting a payload into space

from between $600 and $700 at present to $100. By comparison, the first U.S. satellite, Explorer I, which weighed only 30 pounds, represented a payload delivery cost of $100,000 per pound. In addition to the direct savings available with the reusable shuttle, significant additional economies will be achieved through reduction of the number and types of launch vehicles needed to support the nation's space effort, and in the cost of the satellites themselves. With the shuttle, automated satellites can be repaired or serviced in space or returned to earth for refurbishment and reuse. Moreover the size and weight-carrying capacity of the orbiter will free designers from constraints which make design more difficult and costly. This will make it possible to use relatively inexpensive standard laboratory equipment in place of specially constructed, highly miniaturized equipment which is expensive to develop and test. In the final analysis, total savings made possible by the shuttle will depend on its frequency of use.

How will availability of the space shuttle affect future use of space?

With the savings in launch costs, payload costs, and payload development time, it is expected that the space shuttle will greatly increase the use of space by government agencies and commercial users, and lead to the discovery of new uses for space. One of the primary reasons for development of the shuttle is to open the use of space for the practical benefit of mankind. With it we will be better able to survey the earth's resources, monitor and predict weather, improve worldwide communications, develop improved manufacturing processes, enlarge our knowledge of the earth and our solar system, and perhaps even harness the sun's energy as a source of pollution-free energy.

What is the complement of the space shuttle crew?

The orbiter will be piloted by a crew of two.

How many passengers will the shuttle be able to carry?

The orbiter will carry two passengers in addition to the crew. Provision can also be made to carry six to twelve more (or even more if required) in special modules carried in the payload bay.

Who will be able to fly in the shuttle?

The interior of the shuttle will be pressurized so that passengers and crew can travel in shirtsleeve comfort without spacesuits. No special flight training would be required for passengers, making it possible to send scientists, doctors, artists, photographers--both men and women--into space.

When will NASA issue an RFP for building the vehicle?

A Source Evaluation Board will be selected this month and it is planned to issue requests for proposals in the Spring.

How long after the RFP is issued will it be before a definitive contract is awarded for Phase C/D?

NASA's present timetable calls for awarding a definitive contract for Phase C/D in the Summer of this year.

What kind of support has Congress given to the space shuttle?

The Congress strongly supported and approved the shuttle proposal presented in NASA's budget for Fiscal Year 1972, with the clear understanding that development would proceed at completion of the studies then underway.

IMPORTANCE OF THE SPACE SHUTTLE

There are four main reasons why the space shuttle is important and the right next step in manned space flight and the U.S. space program:

First, the shuttle is the only meaningful new manned space program which can be accomplished on a modest budget. Man has worked hard to achieve--and has indeed achieved--the freedom of mobility on land, the freedom of sailing on his oceans, and the freedom of flying in the atmosphere. And now, within the last dozen years, man has discovered that he can also have the freedom of space. Man has learned to fly in space, and man will continue to fly in space. Given this fact, the United States cannot forego its responsibility--to itself and to the free world--to have a part in manned space flight. And the space shuttle is clearly the meaningful and useful new manned space program for the coming decade.

Second, the space shuttle is needed to make space operations less complex and less costly. Today we have to mount an enormous effort every time we launch a manned vehicle, or even a large unmanned mission. The reusable space shuttle gives us a way to avoid this. This airplane-like spacecraft makes a launch into orbit an almost routine event--at a cost one-tenth of today's space operations. How is this possible?

Simply by not throwing everything away after we have used it just once--just as we don't throw away an airplane after its first trip from Washington to Los Angeles.

The shuttle even looks like an airplane, but it has rocket engines instead of jet engines. It is launched vertically, flies into orbit under its own power, stays there as long as it is needed, then glides back into the atmosphere and lands on a runway, ready for its next use. With the shuttle, space operations will indeed become routine.

Third, the space shuttle is needed to do useful things. Why are routine operations in space so important? There is no single answer to this question as there are many areas--in science, in civilian applications, and in military applications--where we can see now that the shuttle is needed; and there will be many more by the time routine shuttle services are actually available.

Take, for example, civilian space applications. We have already seen the great value of communications and weather satellites. The space shuttle will make it possible, in the future, to routinely launch communications and weather satellites with vastly improved capabilities--to bring education via television to remote areas, and to improve our ability to

predict the weather. Soon, also, we will have satellites that will allow us to monitor, and help us husband, our natural resources--water, minerals, and our agriculture. And perhaps with routine space operations, one could develop a global environmental monitoring system, international in scope, to help control our environment here on earth.

Fourth, the shuttle will encourage far greater international participation in space flight. In his address to the United Nations in September 1969, the President promised that the United States will take positive, concrete steps "toward internationalizing man's epic venture into space--an adventure that belongs not to one nation but to all mankind." With the shuttle's low cost to orbit and inherent flexibility, the rest of the world--the free world at least--can work with us to launch many of their space experiments, and share with us some of the expense of space exploration. With the shuttle's easy and routine access to space, scientists and astronauts of many nations could be taken into orbit--with their experiments--to join at first hand in space studies. We are also discussing compatible docking systems with the Soviet Union so that their spacecraft and ours can join in space. Perhaps ultimately men of all nations will work together in space--in joint

experiments, joint environmental monitoring, or perhaps even other joint enterprises--and through these activities help humanity unite in peace on its planet earth.

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