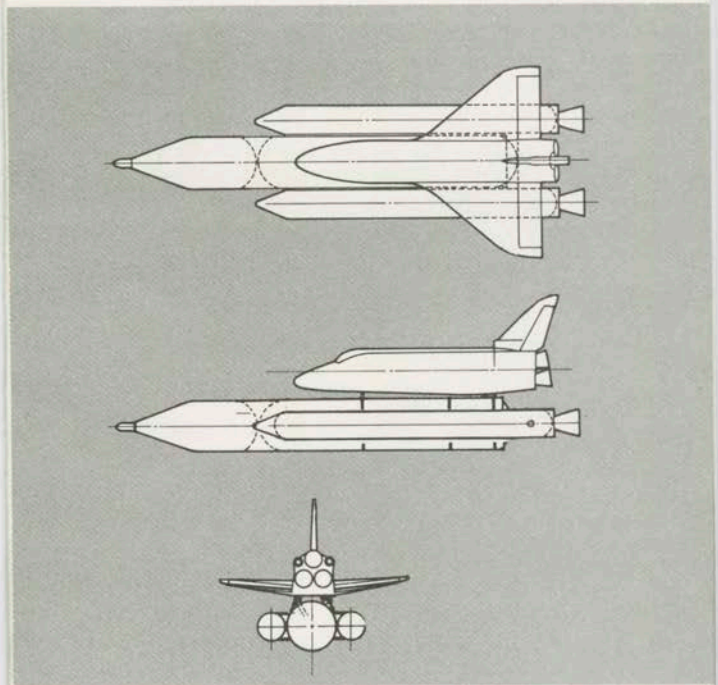
BLUEPRINT for the FUTURE



Space Shuttle Transportation System

Dimensions (approximate)

Orbiter length: 125 ft
Wingspan: 80 ft
Centerline external tank: 187 ft long, 26 ft dia
Solid rocket motors (2): 146 ft long, 13 ft dia
Cargo bay: 60 ft long, 15 ft dia
Maximum payload: 65,000 lb

About the Space Shuttle

America's Space Shuttle transportation system is paramount in furthering this country's scientific knowledge... bringing our tremendous advancement in space sciences back to earth as direct benefits to all.

The Shuttle orbiter (the delta-winged flying machine) is a reusable, cargo-carrying space airplane with workhorse capabilities similar to those of earth-bound freight carriers—ships, overland trucks, and airliners—which are so vital to our economic life and well-being.

With the Shuttle transportation system, we will be able for the first time to carry cargos (payloads) into space, permit scientific work with the cargos outside earth's atmosphere, repair them if necessary, and return them to earth—all with the same reusable transport.

Cargos could include every type of satellite launched into space. They could be scientific laboratories manned for up to 30 days by previously earthbound scientists and technicians, or they could be equipment, fuel, or propulsion systems destined for outer-space exploration.

Over a 10-year period, the Space Shuttle will reduce operational costs of our space program by a multiple factor of nine or ten. It will permit for the first time use of more economical space cargo hardware. No longer will satellites or laboratories require the stringent space flightworthiness presently designed, engineered, and manufactured into manned and unmanned vehicles.

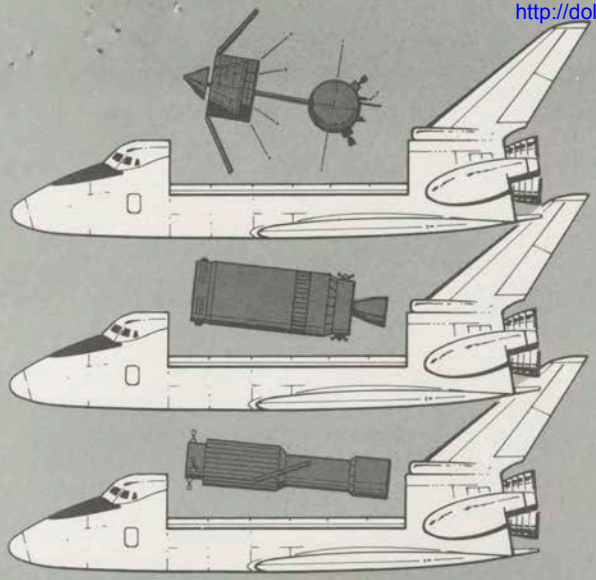
The Space Shuttle will be capable of performing up to 500 flights into earth orbit and back. And every element of the orbiter's systems and subsystems will more than meet the stringent space-rated worthiness requirements. Its cargo bay – 60 feet long, 15 feet in diameter, and capable of carrying 65,000 pounds – will safely house the vital satellites and laboratories which will be used to preserve our natural resources and protect our environment.

Like any transport vehicle, the orbiter will have countless uses during its operational life, which will extend through the 1980's, the 1990's, and into the 21st century.

Following is a checklist of why we need the Space Shuttle. It is only a partial list, and certainly it will multiply a thousandfold with the scientific imagination and development of the next few years. There is no limit to our advancement with the deployment of a Space Shuttle system—a blueprint for the future.

- ☐ The Shuttle will greatly improve, reduce in cost, and increase efficiency of present satellites used in weather forecasting, communications, and earth and astronomical observations. Already, satellites have reduced cable costs from Japan from $15,000 per month to $4000.
- ☐ Space sensors may be used to detect air and water pollution and help determine their source. Infrared scanners can easily detect such things as oil, sewage, or thermal pollution in water.
- ☐ Sensors can monitor the atmosphere to obtain information on large regional distributions and cross-country movements of polluted air to help determine the source and the spread, and possibly provide clues that will help control the pollution.
- ☐ From space, we orbit the entire world in 90 minutes. On a recent earth-orbiting space flight, almost 80 percent of Peru was photographed in three minutes. Scientists say that space provides more accurate and comprehensive information than any other possible source. Imagine what we could do with this information from space!
- ☐ The least tapped natural resource on earth is the ocean. The Bureau of Commercial Fisheries, in cooperation with the Naval Oceanographic Office, already is investigating how remote sensing from space can be used to survey ocean resources, ocean surface temperatures, current patterns, biological productivity, the sea state, sea ice, and shoaling processes.
- ☐ Scientists say that man has used more of his nonrenewable mineral and petroleum resources in the last 30 years than in all the years since the dawn of civilization. Today, one photograph from space can determine the features of an area, a region, or an entire country. We've already found new oil deposits in Central Australia, Egypt, and Saudi Arabia from photographs taken in space. This is a benefit that could be worth nearly $3 billion a year.
- ☐ Losses caused by plant disease in the United States are estimated at $3.7 billion annually. That's more than the entire space budget. And the losses caused by pests add up to another $3.8 billion. That's $7.5 billion a year in agricultural losses. Today, we have sensor systems in space which can tell the type of crop in each field, the size of the field, the vigor of the crop, the probable yield, and the identity of such damaging agents as blight or insect infestation.
- ☐ Water has become the most limiting and valuable resource in some parts of the world. In many areas, lack of fresh water may soon limit food production and even human occupancy. Sensors in space will assist hydrologists in managing water resources by providing information on surface and undersurface flow. These sensors can determine the suitability of sites for building dams or holding the collecting water. Observations made in space with infrared and microwave devices will provide vital information on snowpacks, glaciers, and ice accumulation, enabling us to predict annual runoffs far more accurately than is now possible.
- ☐ With the Shuttle, we will be able to eliminate the need for the numerous families of launch vehicles now used for U.S. space missions, and all their accompanying facilities. The Shuttle will carry cargo and passengers to orbit, and will place civilian and military satellites in space. Payloads can be larger and heavier; they can be any size and shape that will fit Shuttle's 15- by 60-foot cargo bay.
- ☐ Almost any physically fit person will be able to go into space via the Shuttle. This can include the world's leading agriculturists or geologists or mineralogists.
- ☐ Space exploration is one of the best investments this country ever made. It is critically relevant to today's problems, and it is not costly when viewed in true perspective. In fact, the American taxpayer pays less than 2 cents out of his tax dollar for space.
- ☐ A $40 billion, 14-year space expenditure is less than half of what the Federal Government alone is spending on social action programs this year.
- ☐ During 1972, federal expenditures will be more than $100 billion on social action programs. A total of $3.2 billion will be spent on space. This is only 1.4 percent of the federal budget.
- ☐ Do you know that the farm subsidy is more than double the space budget? Do you know that the American people annually spend about four times as much for alcoholic beverages, two and one-half times as much for tobacco, almost twice as much for toilet articles, and nearly half as much on amusements as they do on the space program?

The economic and social benefits of America's Space Shuttle Program can be measured in billions of dollars, thousands of jobs, millions of export dollars, technology contributions to our industrial base, and new capabilities for solving the problems that plague the quality of life on earth. Indeed, the Space Shuttle is the backbone of our national space program for the next 20 to 30 years.



What the Shuttle Will Carry Into Space

Communications satellites
Weather satellites
Aeronautics and navigation satellites
Geodetic survey satellites
Medicine and health care laboratories
Educational support satellites
Research applications laboratories for

- *Telescopes*
- *Astronomical and solar instrumentation*
- *Planetary and interplanetary observation*
- *Space physics*
- *Biological, life science, and manufacturing testing*

Earth resources satellites for

- *Agriculture*
- *Forestry*
- *Minerals and fuels*
- *Hydrology*
- *Land-use and earthquake sensing*
- *Urban planning*
- *Ocean surveys*

Internationally sponsored payloads for

- *Multicountries use*
- *World economic-social benefits*
- *International cooperation*

Military satellites for

- *Reconnaissance*
- *Surveillance*
- *Inspection*

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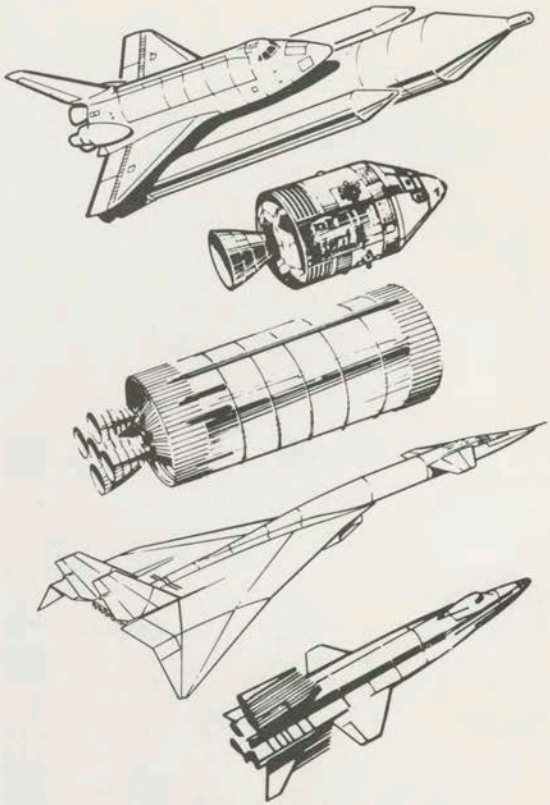

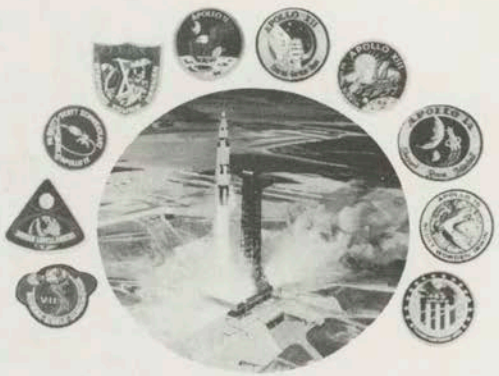

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