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PAYLOAD FLIGHT MANIFEST (National
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SPACE SHUTTLE PAYLOAD FLIGHT MANIFEST

This Fact Sheet was prepared using information taken from the Flight Assignment Manifest 13000-6. All the payloads and launch dates listed are tentative and subject to change.

The columns give additional information about each flight.

In Column 1 is the scheduled launch month and orbiter vehicle.

Orbiter 102 is Columbia, the first orbiter vehicle to fly in space. Orbiter 099 is Challenger. Orbiter vehicles 103 and 104 are named Discovery and Atlantis.

Column 2 is the inclination of the orbit, or how many degrees north and south of the equator the orbiter will travel, and the altitude in nautical miles.

Column 3 is the number of crew members and the duration of the mission.

Column 4 is the payload and Column 5 is the carrier, or upper stage, used for that particular mission.

April 14, 1982

FLT	DATE ORBITER	INCL ALT	CREW DUR	PAYLOAD	CARRIER
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STS-4	7/82 102	38 degrees 130	2 7	DOD 82-1	
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REMARKS: DOD 82-1 is the first Department of Defense payload to be carried into space by the Shuttle. In addition, STS-4 will carry the first "Getaway Special," a small, self contained payload sponsored by the Wasatch Div. of the Thiokol Corp. Some 320 "Getaway Specials" have been booked for future STS flights on a first come, first served, space available basis by 191 experimenters representing 33 states, the District of Columbia and 14 foreign nations. Also in the payload bay will be the Development Flight Instrumentation (DFI) and the Induced Environment Contamination Monitor (IECM).

STS-5	11/82 102	28.5 degrees 160	4 5	SBS-C TELESAT-E	SSUS-D SSUS-D
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REMARKS: SBS-C and TELESAT-E are both commercial communications satellites -- the first commercial payloads scheduled to fly aboard Shuttle. Because the orbiter is not designed to reach geosynchronous altitude -- 41,300 kilometers (22,300 miles) above the Earth -- solid propellant motors are attached to the satellites to propel them beyond the orbiter's nominal parking orbit -- about 280 km (150 mi.) -- up to synchronous orbit. Two classes of solid propellant motors, called Spinning Solid Upper Stages (SSUS) are available, depending upon the weight of the satellite. The SSUS-D is capable of putting about 1,090 kilograms (2,400 pounds) into geostationary orbit, while the SSUS-A will push about 2,000 kg (4,400 lb.) into the same spot. SBS-C is the third satellite in a series of Satellite Business Systems satellites which provide an all-digital domestic communications system to serve large industry, government and other users. TELESAT spacecraft are communications satellites built by Telesat Canada Ltd. Three TELESAT spacecraft will provide voice communications and television coverage to a trans-Canada network of Earth stations.

STS-6	1/83 099	28.5 degrees 150	4 2	TDRS-A	IUS
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REMARKS: This will be the first launch of orbiter 099. The Tracking and Data Relay Satellite (TDRS) is a NASA communications satellite. Two spacecraft (one over the Atlantic and one over the Pacific) will provide a high-capacity communications and data link with the Shuttle as well as other NASA spacecraft and launch vehicles. A third spacecraft will be stationed over the United States to provide domestic communications for Western Union.

A fourth in-orbit spacecraft will function as a spare for any of the first three. An Inertial Upper Stage (IUS) will place TDRS in a synchronous equatorial orbit. This upper stage can be either a two- or three-stage solid propellant booster and is being developed by Boeing under an Air Force contract to add to the Shuttle the capability to place heavy payloads in high orbits or on planetary trajectories.

STS-7	4/83	28.5 degrees	4	OSTA-2	MPSS
	099	1606	2	SPAS-01	
				TELESAT-F	SSUS-D
				PALAPA B-1	SSUS-D

REMARKS: PALAPA is a synchronous satellite communications system for the Republic of Indonesia. The PALAPA payload is represented by Permutel and they are responsible for the design, development, test, performance and safety. TELESAT-F is another in a series of Canadian communications satellites. SPAS-01 stands for Shuttle Pallet Satellite and is managed by the Messerschmitt-Bolkow-Blohm GMBH Space Division (MBB). The purpose of the SPAS-01 payload is two-fold. The payload consists of a basic platform structure with a complement of experiments to be operated in the attached mode to demonstrate the use of the MBB platform and systems as a carrier for science experiments. The payload is also deployable to serve as a test article for deployment with the remote manipulator arm, provide proximity operations, retrieval and rebirthing by the mechanical arm. The payload has a stabilization and control system for operation in the deployed mode. OSTA-2 is the second payload sponsored by NASA's former Office of Space and Terrestrial Applications, now the Office of Space Science and Applications, and will be used to conduct experiments in materials processing in space. The OSTA-2 mission is also a cooperative venture with the German government. MPSS stands for Mission Peculiar Equipment Support Structure.

STS-8	7/83	28.5 degrees	4	INSAT 1-B	SSUS-D
	099	150	3	TDRS-B	IUS

REMARKS: TDRS-B is the second in a series of Tracking and Data Relay satellites. INSAT, the Indian National Satellite, is a communications (voice and TV) and meteorological satellite for India's Department of Science.

STS-9	9/83	57 degrees	6	SPACELAB 1	Module and
	102	135	7		pallet

REMARKS: Spacelab is a reusable spaceborne laboratory being built for NASA by the European Space Agency.

It will be a frequent passenger aboard the orbiter, transported in the vehicle's cargo bay for missions lasting from seven to 30 days. Spacelab has two main elements: a pressurized laboratory module to allow experimenters to work in a shirt-sleeve environment; and external instrument platforms, or pallets, for direct exposure to space. One European and one American scientist, called Payload Specialists, will man the first Spacelab. The first Spacelab will carry out investigations in stratospheric and upper atmospheric physics, space plasma physics, biology, medicine, astronomy, solar physics, Earth observations and in technology areas such as thermodynamics and lubrication.

STS-10 11/83
 099

DOD 84-1

STS-11 12/83 28.5 degrees 4 LDEF-1
 102 272 5 SMM Repair*

REMARKS: LDEF stands for Long Duration Exposure Facility, a free-flying passive satellite which provides accommodations for experiments which require long-term exposure to the space environment. The satellite is designed to accommodate a large number of experiments in standardized trays. The LDEF will be carried into orbit during one Shuttle flight, then retrieved six or more months later during a subsequent Shuttle flight. The experiments will then be returned to the investigators for data analysis. Also possible is a visit to the ailing Solar Maximum Mission spacecraft. Astronauts would perform an extravehicular activity (EVA) to stabilize the spacecraft so it could be grappled by the remote arm and berthed in the cargo bay for repair. It would then be deployed back into space to continue its investigation of the violent nature of the Sun and its effects on Earth, and particularly solar flares which are violent eruptions on the Sun's surface.

STS-12 1/84 28.5 degrees 4 PALAPA B-2 SSUS-D
 103 150 3 TDRS-C IUS

REMARKS: The first launch of orbiter 103, Discovery, would carry another in a series of PALAPA Indonesian communications satellites, and the third Tracking and Data Relay Satellite.

*Planning Only

STS-13 3/84
 099

DOD 84-2

STS-14	4/84	28.5 degrees	4	OAST-1	MPRESS
	102	160	7	MEA-1	MPRESS
				TELESAT-I	SSUS-D
				RCA-K	SSUS-D

REMARKS: The MEA payload consists of a Materials Experiment Assembly mounted on Mission Peculiar Equipment Support Structure (MPRESS). The MEA is a highly self-contained facility which provides accommodations for multidiscipline experiments in the materials processing field. Four of six bays are designed to accommodate experiment apparatuses, while the other bays include subsystems that provide MEA its own electrical power, data management and recording, low-gravity acceleration data, thermal control and consumables storage. Activation, deactivation and status monitoring capability will be provided by the standard switch panel in the orbiter's aft flight deck. TELESAT is another Canadian communications satellite, and RCA is a commercial communications satellite. The Office of Aeronautics and Space Technology-1 (OAST-1) mission will occupy about 1 meter (3 feet) of the payload bay and conduct investigations in space technology. The major payload on this mission will demonstrate the deployment and retraction of a large solar array which will also be used to study the dynamic response of a large structure to disturbances purposely induced by the orbiter's attitude control thrusters.

STS-15	5/84	28.5 degrees	4	WESTAR-VI	SSUS-D
	103	150	3	TDRS-D	IUS

REMARKS: TDRS-D is the last in a series of Tracking and Data Relay Satellites. WESTAR is a domestic commercial communications satellite for Western Union.

STS-16	6/84	28.5 degrees	4	PDRS/PFTA	
	102	160	7	OSTA-3	MPRESS
				SBS-D	SSUS-D
				SYNCOM IV-1	

REMARKS: SYNCOM is a geosynchronous communications satellite built by Hughes Communications Service, Inc. This will be the first of five spacecraft planned for launch over a two-year period. The spacecraft is unique because it does not require a Payload Assist Module to boost it up to synchronous altitude. Instead, the SYNCOM contains all the propulsion systems necessary to attain the proper equatorial orbit. SBS-D is another in a series of Satellite Business System satellites.

The PDRS/PFTA is the Payload Deployment and Retrieval System Test Article, also known as the Payload Flight Test Article. The test article, a 4.9-by-4.6-meter (16-by-15-ft.) rectangular frame with lead ballast added, will be deployed and retrieved by the remotely controlled arm. It will be used to test the reactions of the arm's joints -- elbow, wrist and shoulder. Many of the experiments flown on the OSTA-1 mission will be reflown on OSTA-3. The Large Format Camera, a stereoscopic high resolution instrument for observing Earth's geophysical features, will also be flown on OSTA-3.

STS-17	7/84	28.5 degrees	4	SPC-B	SSUS-D
	099	160	5	WESTAR VII	SSUS-D
				Payload Opportunity	

REMARKS: SPC, for Southern Pacific Communications satellite, is a commercial communications satellite. WESTAR is another in a series of commercial communications satellites for Western Union.

STS-18	8/84	28.5 degrees	4	ARABSAT-A	SSUS-D
	103	160	5	TELSTAR 3-C	SSUS-D
				SYNCOM IV-2	
				Payload Opportunity	

REMARKS: ARABSAT, for Arabian Satellite, is a synchronous communications satellite for an Arab consortium. TELSTAR is a domestic commercial communications satellite for AT&T. SYNCOM IV-2 is the second of five commercial communications satellites for Hughes.

STS-19	9/84	57 degrees	6	SPACELAB-3	Module and
	102	200	7		MPSS

REMARKS: Spacelab 3 will be the first operational Spacelab mission. The Spacelab 3 mission will conduct experiments requiring extremely low acceleration levels and will focus on experiments in materials processing, space technology and life sciences. Additional experiments in astrophysics and environmental observations will also be conducted on Spacelab 3.

STS-20	10/84	28.5 degrees	4	OSTA-4	MPSS
	099	160	7	RCA-L	SSUS-D
				INTELSAT V-1	SSUS-A

REMARKS: INTELSAT Vs are high capacity communications satellites launched by NASA for the International Telecommunications Satellite Organization. RCA is another in a series of domestic commercial communications satellites. OSTA-4 is another Office of Space and Terrestrial Applications payload.

STS-21	11/84	50 degrees	6	SPACELAB 2	Igloo and
	102	202	7		3 pallets

REMARKS: Spacelab 2 is a pallet-only mission. Twelve investigations will be conducted on this mission. Ten are provided by the United States and two by the United Kingdom. The experiments will perform research in several discipline areas including life sciences, plasma physics, astronomy, astrophysics, atmospheric research and space technology development. The igloo is a small pressurized and temperature-controlled system which houses the essential subsystems for supporting experiments (power, communications, etc.). Spacelab 2's primary objective is to verify the Spacelab system. Secondly, the mission will obtain valuable scientific applications and technology data and demonstrate to the user community the broad capability of Spacelab for scientific research.

STS-22	11/84			DOD 85-1
	103			

STS-23	1/85	28.5 degrees	4	SPACE TELESCOPE
	099	320	3	LDEF RETRIEVAL

REMARKS: The Space Telescope is an optical observatory system designed for extended operations (15 years) in orbit. It will be maintained in orbit by Shuttle revisit flights and replacement of components by astronauts. The Space Telescope will allow scientists to gaze seven times farther into space than ever before, possibly to the edges of the visible universe. Also on this mission, the Long Duration Exposure Facility will be retrieved and brought back to Earth in the cargo bay.

STS-24	1/85	28.5 degrees	4	OSS-3	IG/pallet
	102	160	7	ARABSAT-B	SSUS-D
				INTELSAT V-2	SSUS-A

REMARKS: ARABSAT is the second in a series of Arabian communications satellites. INTELSAT is another in a series of high capacity communications satellites for the International Telecommunications Satellite Organization. Space astronomy in the ultraviolet wavelengths will be the major feature of the OSS-3 mission. The OSS-3 instruments will again be used on later missions to make synoptic observations of Halley's Comet from low Earth orbit.

STS-25	2/85			DOD 85-2
	103			

STS-26	4/85	57 degrees	6	SPACELAB D-1	Module
	104	200	7		

REMARKS: The first flight for orbiter vehicle 104, Atlantis, will carry the first reimbursable dedicated Spacelab mission, D-1, for the West German government. The Spacelab D-1 mission, will conduct investigations devoted to materials processing, life sciences and other disciplines.

STS-27	4/85			DOD 85-3	Optional
	102				

STS-28	5/85	28.5 degrees	4	TELSTAR 3-D	SSUS-D
	099	160	5	RCA-H	SSUS-D
				GSTAR-C	SSUS-D
				SYNCOM IV-3	

REMARKS: GSTAR is a commercial communications satellite being developed by a subsidiary of General Telephone and Telegraph. TELSTAR (AT&T), RCA and SYNCOM (Hughes) are all domestic communications satellites.

STS-29	6/85	28.5 degrees	4	OAST-2	IG/pallet
	104	160	7	ANSCS-A	SSUS-D
				SATCOL-A	SSUS-D
				SPC-C	SSUS-D

REMARKS: ANSCS-A is the first of a series of Australian National Satellite Communication System satellites.

SATCOL-A is a communications satellite for the Republic of Colombia. SPC is one of a series of Southern Pacific Corp.'s commercial communications satellites. OAST-2 is another Office of Aeronautics and Space Technology-sponsored payload.

STS-30	7/85				
	102				DOD 85-4

STS-31	7/85				
	099				DOD 85-5 Optional

STS-32	8/85	28.5 degrees	2		
	104	100-220	2	GALILEO	IUS

REMARKS: Galileo is a planetary mission designed to investigate Jupiter and its satellites. Galileo will conduct the most detailed investigation yet of Jupiter, its environment and moons, including the first direct measurements of the planet's atmosphere.

STS-33	9/85	46 degrees	6		
	102	160	7	SPACELAB-4	Module
				ERBS	

REMARKS: Spacelab 4 will conduct human and non-human life sciences experiments. ERBS is the Earth Radiation Budget Satellite, a free-flying satellite designed to acquire radiation budget data and to measure stratospheric aerosols and trace elements. These data will be used to better understand and predict Earth's climate and to determine how environmental quality affects climate.

STS-34	9/85				
	099				DOD 85-6

STS-35	10/85	28.5 degrees	4		
	104	160	7	TELESAT-H	SSUS-D
				ANSCS-B	SSUS-D
				SYNCOM IV-4	

REMARKS: SYNCOM, TELESAT and ANSCS are commercial communications satellites for Hughes, Canada and Australia, respectively.

1V 10/85
 103

DOD 86-1V

REMARKS: First shuttle launch from Vandenberg Air Force Base, Calif.

STS-36	11/85	28.5 degrees	4	OSS-4	
	102	160	7	IRIS	
				GSTAR-D	SSUS-D
				SPC-D	SSUS-D

REMARKS: GSTAR (GTE) and SPC-D are both commercial communications satellite. IRIS is the Italian Research Interim Stage. OSS is another Office of Space Science-sponsored payload.

STS-37 12/85
 099

DOD 86-1

STS-38	1/86	28.5 degrees	4	OSTA-5	IG/pallet
	104	160	7	ANSCS-C	SSUS-D
				STC DBS-A	SSUS-D
				SYNCOM IV-5	

REMARKS: ANSCS and SYNCOM (Hughes) are commercial communications satellites providing Australian and domestic service respectively. STC DBS-A is the first of a series of Direct Broadcast Satellites for Satellite Television Corporation. OSTA is another payload sponsored by NASA's Office of Space and Terrestrial Applications.

STS-39 1/86
 102

DOD 86-2

STS-40	2/86	28.5 degrees	4	EOS-1	
	099	160	7	INTELSAT V-3	SSUS-A
				DBS LUX-A	

REMARKS: INTELSAT V-3 is another in a series of high capacity commercial communications satellites for the International Telecommunications Satellite Organization. DBS LUX-A is a Direct Broadcast Satellite for the country of Luxemburg. EOS is the Electrophoresis Operation in Space, a joint McDonnell Douglas/NASA payload. Electrophoresis is a technique which uses electrical charges to separate vaccines or other desirable sera from parent solutions.

STS-41	3/86	28.5 degrees	4	OSS-5	IG/pallet
	104	160	7	ANSCS-D	SSUS-D
				INTELSAT VI-1	

REMARKS: ANSCS is another of the Australian communications satellites; INTELSAT VI-1 is the first in a series of new, higher capacity communications satellites for INTELSAT; and OSS-5 another Office of Space Science-sponsored payload.

STS-42	4/86			DOD 86-3
	102			

STS-43	4/86	28.5 degrees	4	OSTA-6	MPRESS
	099	160	7	STC DBS-E	SSUS-D
				RCA-M	SSUS-D
				RCA DBS-1	

REMARKS: RCA-M and RCA DBS-1 are two commercial communications satellites for RCA, including the first RCA Direct Broadcast Satellite. STC DBS-B is another of a series of Direct Broadcast Satellites for Satellite Television Corp. and OSTA-6 is another in a series of payloads sponsored by the NASA Office of Space and Terrestrial Applications.

STS-44	5/86	28.5 degrees	2	ISPM (ESA)	IUS
	102	130	2		

REMARKS: In the International Solar Polar Mission a European Space Agency spacecraft will observe the Sun from above its polar regions. ISPM will extend scientific knowledge and understanding of the Sun and its environment and investigate the interplanetary medium and the Jovian magnetosphere.

STS-45	6/86	28.5 degrees	4	OSS-6	IG/pallet
	102	240	7	LDEF-2	

REMARKS: LDEF-2 is the second Long Duration Exposure Facility and OSS-6 is another Office of Space Science payload.

2V	6/86	98.2 degrees	4	LANDSAT RETRV
	103	313	3	

REMARKS: Shuttle launch from Vandenberg to retrieve a Landsat satellite.

DOD 86-4

STS-47	7/86	28.5 degrees	4	OSS-2	IG/pallet
	104	160	7	EOS-2	
				INTELSAT VI-2	

REMARKS: INTELSAT VI-2 is another in a series of commercial communications satellites for the International Telecommunications Satellite Organization; EOS-2, the second Electrophoresis Operation in Space payload; and OSS-2, an Office of Space Science payload.

STS-48	8/86	28.5 degrees	4	SATCOL-B
	102	160	5	Payload Opportunity

REMARKS: SATCOL-B is the second in a series of communications satellites for the Republic of Colombia.

STS-49 9/86 ⑤ DOD 86-5
099

3V 10/86 DOD 87-1V
103

STS-50	10/86	28.5 degrees	4	MPS-2	Pallet
	104	160	7	EUVE	
				INTELSAT VI-3	

REMARKS: INTELSAT VI-3 is a commercial communications satellite; MPS is the second Materials Processing System experiment package; and EUVE is the Extreme Ultraviolet Explorer.

STS-51 10/86 DOD 87-1
102

STS-52	11/86	28.5 degrees	4	OSS-7	IG/pallet
	099	160	7	RCA DBS-2	
				Payload Opportunity	

REMARKS: RCA DBS-2 is the second Direct Broadcast Satellite for RCA and OSS-7, and is an Office of Space Science-sponsored payload.

STS-53	12/86			DOD 87-2	
	104				

4V	1/87			DOD 87-2V	
	104				

STS-54	1/87	57 degrees	6	SPACELAB 6	Module and
	102	160	7		3 pallets

REMARKS: Spacelab 6 experiments will focus on solar terrestrial investigations.

STS-55	2/87	28.5 degrees	4	OSTA-7	IG/pallet
	099	160	7	DBS-LUX-B	SSUS-D
				INTELSAT VI-4	

REMARKS: INTELSAT VI-4 is another of a series of commercial communications satellites for the International Telecommunications Satellite Organization; DBS-LUX-B, the second of a series of Direct Broadcast Satellites for the country of Luxemburg; and OSTA-7, an Office of Space and Terrestrial Applications payload.

STS-56	3/87	57 degrees	6	SPACELAB D-4	Iglóo and
	104	200	7		4 pallets

REMARKS: Spacelab D-4 is another dedicated German Spacelab mission which will carry experiments primarily devoted to investigations of astrophysics.

5V	3/87			DOD 87-3V	
	103				

STS-57	3/87			DOD 87-3	
	103				

STS-58	4/87	57 degrees	6	SPACELAB-10	Module and
	099	160	7		pallet

REMARKS: Spacelab 10 experiments will focus on life sciences investigations.

STS-59	5/87	28.5 degrees	4	OSTA-8	MPSS
	104	160	7	TELESAT-J	SSUS-D
				RCA DBS-3	
				RCA-I	SSUS-D

REMARKS: Telesat-J and RCA-I are commercial communications satellites for Canada and RCA; RCA DBS-3, a Direct Broadcast Satellite for RCA; and OSTA-8, a payload sponsored by NASA Office of Space and Terrestrial Applications.

6V	5/87			DOD 87-4V
	103			

STS-60	6/87	57 degrees	6	SOT-1	Igloo and
	102	160	7		2 pallets

REMARKS: SOT is the Solar Optical Telescope.

STS-61	6/87	28.5 degrees	4	OSS-8	IG/pallet
	099	240	7	LDEF-2 RETR	

REMARKS: The second Long Duration Exposure Facility will be retrieved and OSS-8 is an Office of Space Science-sponsored payload.

7V	7/87	99 degrees	4	OAST-2	IG/pallet
	103	160	7	COBE	

REMARKS: OAST-2 is another in the series of pallet experiments sponsored by the NASA Office of Aeronautics and Space Technology, and COBE is the Cosmic Background Explorer.

STS-62	7/87			DOD 87-4
	104			

STS-63	8/87	57 degrees	6	SPACELAB-J/8	Module and
	102	160	7		pallet

REMARKS: Spacelab-J/8 is a joint NASA and reimbursable Japanese Spacelab mission.

8V	9/87	DOD 87-5V
	103	

STS-64	9/87	DOD 87-5
	099	

-end-